

CHAPTER 4. IMPLEMENTATION PLAN

A program of implementation to protect beneficial uses and to achieve water quality objectives is an integral component of this Basin Plan. The program of implementation is required to include, but is not limited to:

- A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private.
- A time schedule for the actions to be taken.
- A description of surveillance to be undertaken to determine compliance with objectives.

Additional surveillance activities to determine compliance with objectives are described in Chapter Six, "Surveillance and Monitoring".

This chapter includes discussions of:

- Regional Water Quality Control Board Goals;
- General Control Actions and Related Issues;
- Waste Discharge Regulation;
- Hazardous Waste Compliance Issues; and
- Nonpoint Source Measures.

Detailed descriptions of waterbodies with their specific water quality problems and recommended control actions are included in the Region's Water Quality Assessment database and Fact Sheets.

This chapter is organized in the following manner:

- I. Regional Water Quality Control Board Goals
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I. REGIONAL WATER QUALITY CONTROL BOARD GOALS

To insure that the water resources of the Central Coastal Basin are preserved for future generations of Californians, the California Regional Water Quality Control Board, Central Coast Region, determined it was desirable to establish certain planning goals. These goals pertain to utilization of the basin's water resources and guidelines for control of waste discharges, as follows:

1. Protect and enhance all basin waters, surface and underground, fresh and saline, for present and anticipated beneficial uses, including aquatic environmental values.
2. The quality of all surface waters shall allow unrestricted recreational use.
3. Manage municipal and industrial wastewater disposal 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 harmony with the natural environment.
4. Achieve maximum effective use of fresh waters through reclamation and recycling.
5. Continually improve waste treatment systems and processes to assure consistent high quality effluent based on best economically achievable technology.
6. Reduce and prevent accelerated (man-caused) erosion to the level necessary to restore and protect beneficial uses of receiving waters now significantly impaired or threatened with impairment by sediment.

II. GENERAL CONTROL ACTIONS AND RELATED ISSUES

The Regional Water Quality Control Board (Regional Board) regulates the sources of water quality related problems which could result in actual or potential impairment or degradation of beneficial uses or degradations of water quality. The Regional Board regulates both point and nonpoint source discharge activities. A point source discharge generally originates from a single identifiable source, while a nonpoint source discharge comes from diffuse sources. To regulate the point and nonpoint sources, control actions are required for effective water quality protection and management. Such control actions are set forth for implementation by the State Water Resources Control Board (State Board), by other agencies with water quality or related authority, and by the Regional Board.

III. CONTROL ACTIONS UNDER STATE WATER RESOURCES CONTROL BOARD AUTHORITY

The State Board has adopted several water quality plans and policies which complement or may supersede portions of the Water Quality Control Plan. These plans and policies may include specific control measures. See Chapter Five, "Plans and Policies" for summaries of the most significant State Board plans and policies which affect the Central Coast Region.

IV. CONTROL ACTIONS TO BE IMPLEMENTED BY OTHER AGENCIES WITH WATER QUALITY OR RELATED AUTHORITY

Water quality Management Plans prepared under Section 208 of the federal Water Pollution Control Act (Clean Water Act) have been prepared by various public agencies. These Section 208 plans, as well as other plans adopted by federal, State, and local agencies, may affect the Regional Board's water quality management and control activities. A summary of relevant water quality management plans is included in Chapter Five, "Plans and Policies".

V. CONTROL ACTIONS UNDER REGIONAL BOARD AUTHORITY

Control measures implemented by the Regional Board must provide for the attainment of this Basin Plan's beneficial uses and water quality objectives. These uses and objectives can be found in Chapters Two and Three, respectively. In addition the control measures must be consistent with State Board and Regional Board plans, policies, agreements, prohibitions, guidance, and other restrictions and requirements contained within this document.

To prevent water quality problems, waste discharge restrictions are often used. The waste discharge restrictions can be implemented through Water Quality Certification, National Pollutant Discharge Elimination System (NPDES) permits, waste discharge requirements/permits (WDRs), discharge prohibitions, enforcement actions, and/or "Best Management Practices".

V.A. WASTE DISCHARGE RESTRICTIONS

V.A.1. WATER QUALITY CERTIFICATION

Clean Water Act Section 401 Water Quality Certification gives the State extremely broad authority to review proposed federal activities in and/or affecting the Region's waters. The Regional Board can recommend to the State Board that it grant, deny, or condition certification of federal permits or licenses that may result in a discharge to "waters of the United States".

V.A.2. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

NPDES permits are issued to regulate discharges of waste from point sources to "waters of the United States" including discharges of storm waters from urban separate storm sewer systems and certain categories of industrial activity. Waters of the United States are surface waters such as rivers, intermittent streams, dry stream beds, lakes, bays, estuaries, oceans, etc. The permits are authorized by Section 402 of the Clean Water Act and Section 13370 of the California Porter-Cologne Water Quality Control Act. The permit content and the issuance process are contained in 40 Code of Federal Regulations Part 122 and Chapter 9 of the California Code of Regulations. Regional Water Boards are authorized to take a variety of enforcement actions to obtain compliance with an NPDES permit. Enforcement actions the Regional Board may take are described below.

The U.S. Environmental Protection Agency (U.S. EPA) has approved the State's program to regulate discharges of waste water from point sources to "waters of the United States". The State, through the Regional Water Boards, issues the NPDES permits, reviews discharger self-monitoring reports, performs independent compliance checking, and takes enforcement actions as needed.

NPDES permits are required to prescribe conditions of discharge which will ensure protection of beneficial uses of the receiving water. The Regional Board uses this Basin Plan, the Ocean Plan, and water quality control policies adopted by the State Board to develop permits for specific types of discharges or uses of waste water.

In addition to regulating discharges of waste water to surface waters, NPDES permits also require municipal sewage treatment systems to conduct pretreatment programs if their design capacity is greater than five million gallons per day. Smaller municipal treatment systems may be required to conduct pretreatment programs if there are significant industrial users of their systems. The pretreatment programs must comply with 40 Code of Federal Regulations Part 403. The pretreatment program is further described under separate heading in the "Waste Discharge Regulation" Section further in this chapter.

V.A.3. WASTE DISCHARGE REQUIREMENTS (WDRs)

The California Porter-Cologne Water Quality Control Act authorizes Regional Boards to regulate discharges to protect ground and surface water quality. Regional Boards issue WDRs in accordance with Section 13263 of the California Porter-Cologne Water Quality Control Act. Regional Boards are required to review WDRs periodically based on the complexity and threat to water quality. WDRs seek to protect the beneficial uses of ground and surface water. Regional Boards issue WDRs, review self-monitoring reports submitted by the discharger, perform independent compliance checking, and take necessary enforcement action. The California Porter-Cologne Water Quality Control Act authorizes Regional Boards to issue enforcement actions (see below) ranging from orders requiring relatively simple corrective action to monetary penalties in order to obtain compliance with WDRs.

V.A.4. WAIVERS

Regional Boards may waive issuance of WDRs pursuant to California Porter-Cologne Water Quality Control Act Section 13269 if the Regional Board determines that such waiver is in the public interest. The requirement

to submit a Report of Waste Discharge can also be waived. WDRs can be waived for a specific discharge or types of discharges. A waiver of WDRs is conditional and may be terminated at any time by the Regional Board. Regional Boards may delegate their power to waive WDRs to the Regional Board Executive Officer in accordance with policies adopted by the Regional Board and approved by the State Board. The Regional Board's general policy regarding waivers is described in Chapter Five, "Plans and Policies". Regional Boards may not waive NPDES permits.

V.A.5. PROHIBITIONS AND PROHIBITION EXEMPTIONS

The Regional Board can prohibit specific types of discharges to certain areas (California Porter-Cologne Water Quality Control Act Section 13243). These discharge prohibitions may be revised, rescinded, or adopted as necessary. Discharge prohibitions are described in pertinent sections of Chapter Four, "Implementation Plan" and Chapter Five, "Plans and Policies" in the Regional Board Discharge Prohibition Section. Prohibitions can be found by referring to the Table of Contents.

V.A.6. ENFORCEMENT ACTIONS

To facilitate water quality problem remediation or Basin Plan violation remediation, the Regional Board can use different types of enforcement measures. These measures can include:

Notice of Violation

A Notice of Violation is a letter formally advising the discharger that the facility is in noncompliance and that additional enforcement actions may be necessary, if appropriate actions are not taken.

Time Schedule

A Time Schedule (California Porter-Cologne Water Quality Control Act Section 13300) is a time schedule for specific actions a discharger shall take to correct or prevent violations of requirements. A Time Schedule is issued by the Regional Board for situations in which the

Regional Board is reasonably confident that the problem will be corrected.

Cleanup or Abatement Order

A Cleanup or Abatement Order (California Porter-Cologne Water Quality Control Act Section 13304) is an order requiring a discharger to clean up a waste or abate its effects or, in the case of a threatened pollution or nuisance, take other necessary remedial action. A Cleanup or Abatement Order can be issued by the Regional Board or by the Regional Board Executive Officer. Cleanup or Abatement Orders are issued for situations when action is needed to correct a problem caused by regulated or unregulated discharges which are creating or threatening to create a condition of pollution or nuisance. A Cleanup or Abatement Order is also used by the Regional Board to establish the acceptable level of cleanup.

Cease and Desist Order

A Cease and Desist Order (California Porter-Cologne Water Quality Control Act Section 13301) is an order requiring a discharger to comply with Waste Discharge Requirements or prohibitions according to a time schedule. If the violation is threatening water quality, a Cease and Desist Order can be used to require appropriate remedial or preventative action. A Cease and Desist Order is issued by the Regional Board when violations of requirements or prohibitions are threatened, are occurring, or have occurred and probably will continue in the future. Issuance of a Cease and Desist Order requires a public hearing.

Administrative Civil Liabilities

Administrative Civil Liabilities (monetary liabilities or fines) may also be imposed administratively by the Regional Board after a public hearing.

State Attorney General Referral

State Attorney General referral is used under certain circumstances. Enforcement actions may be referred to either the General or District Attorney.

PRACTICES

Property owners, managers, or other dischargers may implement "Best Management Practices" to protect water quality. (Implementation and enforcement of Best Management Practices are discussed below under the "Nonpoint Source Measures" section of this chapter). The term "Best Management Practices" is used in reference to control measures for nonpoint source water pollutants and is analogous to the terms "Best Available Technology/Best Control Technology" used for control of point source pollutants. The U.S. EPA (40 Code of Federal Regulations Section 103.2[m]) defines Best Management Practices as follows:

"Methods, measures, or practices selected by an agency to meet its nonpoint source control needs. Best Management Practices include, but are not limited to structural and nonstructural controls and operation and maintenance procedures. Best Management Practices can be applied before, during, and after pollution producing activities to reduce or eliminate the introduction of pollutants into receiving waters."

U.S. EPA regulations (40 Code of Federal Regulations Section 103.6[b][4][i]) provide that Basin Plans:

"...shall describe the regulatory and nonregulatory programs, activities, and Best Management Practices which the agency has selected as the means to control nonpoint source pollution where necessary to protect or achieve approved water uses. Economic, institutional, and technical factors shall be considered in a continuing process of identifying control needs and evaluating and modifying the Best Management Practices as necessary to achieve water quality goals."

Best Management Practices fall into two general categories:

1. Source controls which prevent a discharge or threatened discharge.

V.A.7. BEST MANAGEMENT

These may include measures such as recycling of used motor oil, fencing stream banks to prevent livestock entry, fertilizer management, street cleaning, revegetation and other erosion controls, and limits on total impervious surface coverage. Because the effectiveness of Best Management Practices is often uncertain, source control is generally preferable to treatment. It is also often less expensive.

2. Treatment controls which remove pollutants from a discharge before it reaches surface or ground waters.

Examples include infiltration facilities, oil/water separators, and constructed wetlands.

Several important points about Best Management Practices must be emphasized;

- Best Management Practices are not officially considered "best" practices for use in California unless they have been certified by the State Board.
- The use of Best Management Practices does not necessarily ensure compliance with effluent limitations or with receiving water objectives. Because nonpoint source control has been a priority only since the 1970's, the long-term effectiveness of some Best Management Practices has not yet been documented. Some source control Best Management Practices (e.g., waste motor oil recycling) may be 100 percent effective if implemented properly. Monitoring and evaluation of Best Management Practice effectiveness is an important part of nonpoint source control programs.
- The selection of individual Best Management Practices must take into account specific site conditions (e.g., depth to ground water, quality of runoff, infiltration rates). Not all Best Management Practices are applicable at every location. High ground water levels may preclude the use of runoff infiltration facilities, while steep slopes may limit the use of wet ponds.
- To be effective, most Best Management Practices must be implemented on a long term basis. Structural Best Management Practices (e.g., wet ponds and infiltration trenches) require periodic maintenance, and may eventually require replacement.
- The "state-of-the-art" for Best Management Practices design and implementation is expected to change over time. The State planning process will

include periodic review and update of Best Management Practices certifications.

General information on recommended nonpoint source management practices is provided under different water quality problem categories throughout this chapter. For detailed information on the design, implementation, and effectiveness of specific Best Management Practices, the reader should consult the appropriate Best Management Practices Handbook for the project type or location.

V.A.8. COMPLIANCE SCHEDULES

The California Porter-Cologne Water Quality Control Act (Section 13242[b]) requires a Basin Plan's implementation program for achieving water quality objectives to include a "time schedule for the actions to be taken". Regional Board prohibitions are effective upon adoption, unless specifically mentioned otherwise. The Regional Board issues discharge permits. Each includes an effective date. (Often compliance is effective upon Regional Board adoption). Waste discharge permits for construction projects generally require implementation of Best Management Practices during and immediately after construction. Long-term maintenance of permanent Best Management Practices is expected. Regional Board enforcement orders for specific problems also generally include compliance schedules.

The 1975 Basin Plans included recommendations that specific studies be carried out by specific dates on community wastewater collection and treatment facilities needs in certain areas of the Central Coast Region. These plans also recommended that some communities construct specific facilities by the given dates. Most of these schedules were not met. Because expected year-to-year changes in availability of and priorities for funding will ensure that long term schedules are unrealistic, this Basin Plan does not include such recommendations. Priorities are set on a short term basis for studies through the State Board's use of the Clean Water Strategy ranking system various grant programs, and for facilities construction through the State Board Division of Clean Water Programs needs assessment process for loans and grants. Once funding is allocated, completion schedules are set through the contract process.

V.B. NONPOINT SOURCE PROGRAM

Nonpoint source pollution has been identified as a major cause of water pollution throughout the United States, and the California Central Coast Region is no exception. Nonpoint sources of water pollution are generally defined as sources which are diffuse (spread out over a large area). These sources are not as easily regulated or controlled as are point sources. Nonpoint source pollution is caused by land use activities or anthropomorphic activities. Deposition of pollutants may occur in lakes, rivers, wetlands, coastal waters, or ground waters.

In order to address the nonpoint source pollution problem nationwide, the U.S. Congress incorporated Section 319 into the 1987 amendments to the Clean Water Act. By amending the Clean Water Act, Congress shifted the federal emphasis from nonpoint source pollution planning and problem identification to a new nonpoint source action program. Section 319 of the federal Clean Water Act required each state to develop a State Nonpoint Source Management Program describing the measures the State would take to address nonpoint sources of pollution. In November 1988, the State Water Resources Control Board adopted a Nonpoint Source Management Plan which outlined steps to initiate the systematic management of nonpoint sources in California. For effective management of nonpoint sources the Management Plan required:

- An explicit long-term commitment by the State Board and Regional Boards;
- More effective coordination of existing State Board and Regional Board nonpoint source related programs;
- Greater use of Regional Board regulatory authority coupled with nonregulatory Regional Board programs;
- Stronger links between the local, State, and federal agencies which have authority to manage nonpoint sources; and
- Development of new funding sources.

The 1988 State Board Nonpoint Source Management Plan advocates three approaches for addressing nonpoint source management:

1. Voluntary implementation of Best Management Practices

Property owners or managers may volunteer to implement Best Management Practices. Implementation could occur for economic reasons and/or through awareness of environmental benefits.

2. Enforcement of Best Management Practices

Although the California Porter-Cologne Water Quality Control Act constrains Regional Boards from specifying the manner of compliance with water quality standards, there are two ways in which Regional Boards can use their regulatory authorities to encourage implementation of Best Management Practices.

First, the Regional Board may encourage Best Management Practices by waiving adoption of waste discharge requirements on condition that discharges comply with Best Management Practices. Alternatively, the Regional Board may enforce Best Management Practices indirectly by entering into management agency agreements with other agencies which have the authority to enforce Best Management Practices.

The Regional Board will generally refrain from imposing effluent requirements on discharges that are implementing Best Management Practices in accordance with a waiver of waste discharge requirements, and approved Management Agency Agreements, or other State or Regional Board formal action.

3. Adoption of Effluent Limitations

The Regional Board can adopt and enforce requirements on the nature of any proposed or existing waste discharge, including discharges from nonpoint sources. Although the Regional Board is precluded from specifying the manner of compliance with waste discharge limitations, in appropriate cases, limitations may be set at a level which, in practice, requires implementation of Best Management Practices.

Not all of the categories of nonpoint source pollution follow this three-tiered approach. For example, silviculture activities on non-federal lands are administered by the California Department of Forestry. The State Board has entered into a Management Agency

Agreement with California Department of Forestry which allows the Regional Boards to review and inspect timber harvest plans and operations for implementation of Best Management Practices for protection of water quality.

The Regional Board approach to addressing or regulating categories of nonpoint source pollution is discussed in various sections throughout this chapter.

VI. WASTE DISCHARGE PROGRAM IMPLEMENTATION

Water Quality Control Plans to regulate wasteloads in the Central Coastal Basin have been developed to insure protection of beneficial uses of water described in Chapter Two, as well as water quality objectives described in Chapter Three.

VI.A. EFFLUENT LIMITS

Effluent limitations for disposal of wastes are based on water quality objectives for the area of effluent disposal and applicable State and federal policies and effluent limits. Water quality objectives and policies are based on beneficial uses established for receiving waters. Decisions in treatment process selection are discussed for four general disposal modes considered: stream disposal, estuarine disposal, ocean disposal, and land disposal. There is no discussion provided for disposal to lakes or confined sloughs since these water bodies are protected by discharge prohibitions. Separate discussions of treatment for wastewater reclamation and reuse and sludge processing and disposal are also provided.

Management Principles and Regional Board Policies contained in Chapter Five should be reviewed for further information concerning discharge to surface waters.

VI.A.1. STREAM DISPOSAL

Most streams in the Central Coastal Basin are ephemeral in character. During summer months, there is little or no flow in stream channels. In several instances, flow during the dry season is composed of irrigation runoff or, in a very few cases, wastewater treatment plant effluent. Usually, these flows infiltrate into the stream bed a short distance downstream of discharges. In such instances, the concept of receiving water assimilative capacity has little meaning. Disposal of wastewater in ephemeral streams must be accomplished in a manner that safeguards public health and prevents nuisance conditions. Where possible, discharges should be beneficial as stream flow augmentation. When recharge of a useful ground water basin occurs through stream channel recharge, impacts on ground water quality must be considered.

There are a few streams in the basin which flow on a year-round basis and support an inland fishery. Disposal of wastewater to such streams requires that essentially all oxygen demanding substances and toxicity be removed.

Principal factors governing treatment process selection for stream disposal are federal effluent limits, State public health regulations, and water quality requirements for beneficial use protection. As a minimum, secondary treatment, as defined by the Environmental Protection Agency (EPA), is required in all cases. Where rapid percolation occurs, conventional secondary treatment is currently adequate. EPA guidelines for best practicable treatment would also apply in these cases. Where water contact recreational use is to be protected, the California Department of Health Services (DOHS) recommends coagulation, filtration, and disinfection providing a median coliform MPN of 2.2/100 ml. Detoxification is required where fishery protection is a concern. Detoxification would include effluent limits for identified toxicants, pursuant to Section 307 of the federal Water Pollution Control Act. Source control of specific toxicants may be necessary to comply with the Act.

VI.A.2. ESTUARINE DISPOSAL

Water quality objectives applying to estuaries are contained in Chapter Three.

Receiving waters considered estuaries are one of two groups: (1) shallow waters of an open bay, and (2) confined tidal estuaries or lagoons. Flushing action is usually present in a shallow open bay and natural dispersion and dilution is available on a limited scale. In confined waters, flushing action is limited or nonexistent except during high stream inflow or storms. Since these shorelines frequently are heavily developed and waters are extensively used, requirements for wastewater disposal into such areas are the most stringent of any for marine receiving waters. The "Water Quality Control Policy for Enclosed Bays and Estuaries of California," adopted by the State Water Resources Control Board, prohibits discharge of waste to most enclosed bays and estuaries in the State, unless the discharge will enhance water quality.

Water quality objectives in Chapter Three prevent discharges that could raise natural nutrient levels to an extent that nuisance algal blooms or other aquatic growths occur. Excessive eutrophication in coastal estuaries of California often is characterized by floating and stranded mats of green marine seaweeds Enteromorpha and Ulva. These algae generally grow on mud or other substrates in estuarine water and can produce nuisance conditions along shorelines. These algae have a high sulfur content and emit foul smelling hydrogen sulfide and mercaptans during decomposition. Caution should be given in determining control measures for estuaries, as many of the seasonal algal growths that occur on mud flats are natural and may not be significantly affected by waste discharges in the watershed. Where eutrophication problems are apparent, secondary treatment with denitrification, or phosphorus removal and disinfection should be provided prior to discharge.

VI.A.3. OCEAN DISPOSAL

Water quality objectives applicable to ocean waters are contained in Chapter Three.

Federal guidelines for secondary treatment apply to ocean discharges. The State Water Resources Control Board's Water Quality Control Plan for Ocean Waters of California (Ocean Plan) establishes effluent limits achievable by alternative processes, such as advanced primary treatment. The Ocean Plan contains water quality objectives, requirements for effluent quality and management of waste discharges, and discharge prohibitions (including Areas of Special Biological Significance). Effluent quality requirements establish limitations for grease and oil, solids, turbidity, pH, and toxicity. Limits are also established for heavy metals, chlorine residual, various chlorinated pesticides, PCBs, toxaphene and radioactivity outside the zone of initial dilution.

For municipal discharges, the Clean Water Act allows waiver of secondary treatment standards on a case-by-case basis. Secondary treatment waivers are further discussed as they apply to specific discharges in the following section on Municipal Wastewater Management. If full secondary treatment is required but funding is inadequate, treatment levels should be achieved through staged construction. Ocean Plan objectives can be achieved as an interim measure. Secondary treatment must be added later if a waiver is not issued, or if receiving water monitoring indicates additional treatment is necessary to protect ocean waters. Industrial wastewater management is discussed later in this chapter.

VI.A.4. LAND DISPOSAL

To protect ground water resources, the Regional Board allows few waste discharges to land. Those that are permitted are closely regulated under existing laws and regulations to maintain and to protect ground water quality and beneficial uses.

Disposal of waste to land in the Central Coast Region is regulated by California Code of Regulations, Title 23, Chapter 15; the federal Resource Conservation and Recovery Act; the Toxic Pits Cleanup Act; the Porter-Cologne Water Quality Control Act; and State Health Department Regulations. Types of land disposal operations being regulated by the Central Coast Region include landfills, surface impoundments, septage and sludge disposal, mining operations, confined animal facilities, and some oil field exploration and production facilities.

California Code of Regulations, Title 23, Chapter 15

All land disposal operations are regulated by Chapter 15. Formerly called Subchapter 15. This is the most significant regulation used by the Regional Board in regulating hazardous and nonhazardous waste treatment, storage, and disposal. These regulations include very specific siting, construction, monitoring, and closure requirements for all existing and new waste treatment, storage, and disposal facilities. Chapter 15 requires operators to provide assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from waste management units. Detailed technical criteria are provided for establishing water quality protection programs, and corrective action programs are mandated for releases from waste management units.

Resource Conservation and Recovery Act

The State implements Resource Conservation and Recovery Act's Subtitle C (Hazardous Waste Regulations for Treatment, Storage, and Disposal) through the Department of Toxic Substances Control and the Regional Boards. In August 1992, the U.S. EPA formally delegated the Act program implementation authority to Department of Toxic Substances Control. As described above, regulation of hazardous waste discharges is also included in California Code of Regulations, Title 23, Chapter 15. (Chapter 15 monitoring requirements were also amended in August 1991 so as to be equivalent to Act requirements). These will be implemented through the adoption of Waste Discharge Requirements for hazardous waste sites covered by the Act. The discharge requirements will then become part of a State Resource Conservation and Recovery Act permit issued by Department of Toxic Substances Control.

Federal regulations required by Resource Conservation and Recovery Act Subtitle D have been adopted for Municipal Solid Waste landfills (40 Code of Federal Regulations Parts 257 & 258). The California Integrated Waste Management Board is the State lead agency for Subtitle D implementation. The State Board and the California Integrated Waste Management Board received U.S. EPA State program approval. Delegation of authority for the State Board to implement Subtitle I (Underground Storage Tanks) will occur after U.S. EPA approval of the State's program application. (The Underground Storage Tank Section is discussed later in this chapter).

Toxic Pits Cleanup Act

The Toxic Pits Cleanup Act of 1984 required all impoundments containing liquid hazardous wastes or free liquids containing hazardous waste be retrofitted with a liner/leachate collection system, or dried out by July 1, 1988. Impoundments "dried out" were closed to remove all contaminants and/or to stabilize any residual contamination.

VI.A.4.a. WASTEWATER DISPOSAL

Principal factors affecting treatment process selection for land disposal are the nature of soils and ground waters in the disposal areas and, where irrigation is involved, the nature of crops. Wastewater characteristics of particular concern are total salt content, nitrate, boron, pathogenic organisms, and toxic chemicals. Where percolation alone is considered, the nature of underlying ground waters is of particular concern. Treatment processes should be tailored to insure that local ground waters are not degraded.

Nitrate removal is required in many cases where percolation is to usable ground water basins. Percolation basins operated in alternating wet and dry cycles can provide significant nitrogen removal through nitrification/denitrification processes in the soil column. Finer textured soils are more effective than coarse soils. Nitrate removal would not necessarily be required, and secondary treatment may be adequate where recharge is for other purposes such as prevention of seawater intrusion or where soil percolation constraints do not require further treatment. Monitoring in the immediate vicinity of the disposal site is required in either case. Where the need for nitrate removal is not clear, removal could be considered at a possible future stage depending on monitoring results. Where well controlled irrigation is practiced, nitrate problems in the dry season will be controlled. Vegetative uptake will utilize soluble nitrates which would otherwise move into ground water under a percolation operation. Demineralization techniques or source control of total dissolved solids may be necessary in some inland areas where ground waters have been or may be degraded. Presence of excessive salinity, boron, or sodium could be a basis for rejection of crop irrigation with effluent.

State Health Department regulations, described in Title 22 of the California Code of Regulations, stipulate disinfection levels required for specific crops. In some cases, such as pasture for milking animals, the California Code of Regulations requires oxidation with disinfection to a median number of coliform organisms of 23 MPN/100 ml. Environmental Protection Agency guidelines for secondary treatment do not apply to land disposal cases. However, municipal treatment facilities must provide effective solids removal and some soluble organics removal for percolation bed operations and for reduction of nuisance in wastewater effluent irrigation operations. Disinfection requirements are dictated by the disposal method. Oxidation ponds may be cost-effective in some remote locations and may be equivalent to secondary treatment.

VI.A.5. RECLAMATION AND REUSE

Water shortages in California are resulting in increased demand for reclamation. Reclamation and reuse is encouraged where feasible and beneficial. Where practicable, land disposal by spray irrigation shall be accomplished by proper reclamation techniques rather than by over-irrigation. This will aid water shortages and maximize nutrient removal.

Treatment process selection for reclamation of wastewater is dependent upon the intended reuse. Where irrigation reuse or ground water recharge is intended, treatment requirements will depend on conditions described under land disposal. Clearly, the nature of the crop to be irrigated, soil percolation, and water characteristics are important considerations. Title 22 of the California Code of Regulations provides wastewater reclamation criteria to regulate specific uses of reclaimed water. Where reuse is extended to water contact recreation, secondary treatment with coagulation, filtration, and disinfection is required. Where golf course irrigation is practiced, this level of treatment minus coagulation and filtration may be adequate. More stringent measures may be necessary with increased risk of public exposure (for example, residents adjacent to fairways). However, where more complete reclamation is envisioned, such as creation of recreational lakes for fishing, swimming, and water skiing, nutrient removal may also be required to minimize algae growths and to encourage fish

propagation. Comparable treatment may also be needed for industrial water supplies used for cooling and uses where algae growth in transfer channels or cooling towers is of concern. Nitrogen removal and demineralization processes may also be necessary for selected reclamation projects as discussed under land disposal.

To meet the increased demand for reclamation, existing regulations contained in the California Code of Regulations, Title 22, are being expanded. California Code of Regulations, Title 22, are hereby incorporated as applicable reclamation requirements.

Dual water systems may be feasible in some instances. Reclaimed wastewater should be investigated as an alternative water source for toilets.

Management Principles contained in Chapter Five should be reviewed for further reclamation information. This section is located after the "Recommended State Water Resources Control Board Actions" section.

VI.A.6. PRETREATMENT PROGRAMS

State and federal regulations require certain municipalities to develop and administer pretreatment programs to control the discharge of industrial wastes to the treatment plant. All municipal plants discharging to navigable waters with design flows greater than 5.0 mgd are required to develop and implement a pretreatment program. Other municipalities may be required to develop a pretreatment program if circumstances warrant such a program. The Environmental Protection Agency has established specific industrial subcategories of industries which discharge certain quantities or concentrations of pollutants to municipal systems. Pretreatment is required to meet effluent standards established for each industrial category. The objectives of a pretreatment program are to: (1) prevent introduction of pollutants into publicly-owned treatment works which will interfere with treatment operations and/or use or disposal of municipal sludge, (2) prevent introduction of pollutants into publicly owned treatment works which will pass through treatment works or be incompatible with treatment techniques, (3) increase feasibility of recycling and reclaiming municipal and industrial wastewaters and sludges, and (4) enforce applicable EPA Categorical Standards.

A pretreatment program must include: (1) a local pretreatment ordinance, (2) a use permit system, (3) a program of monitoring and inspection to insure compliance with the ordinance and use permit, and (4) an enforcement program sufficient to obtain compliance with provisions of the ordinance or use permit. Pretreatment programs are further discussed as they apply to specific dischargers in the section on Municipal Wastewater Management.

Municipalities required to comply with federal pretreatment regulations in the Central Coast Region are:

City of Santa Cruz,
Cities of Gilroy/Morgan Hill,
City of Watsonville,
Monterey Regional Wastewater Treatment Plant,
City of Salinas Industrial Plant,
City of San Luis Obispo,
City of Santa Maria,
City of Lompoc, and
City of Santa Barbara

VI.A.7. SLUDGE TREATMENT

Sludge management is a difficult aspect of wastewater treatment. The methods used for sludge disposal or reuse tend to determine the sludge processing methods. Major goals of sludge treatment include pathogen destruction, vector attraction reduction, odor reduction, moisture removal, and contaminant removal. Treated sludge is commonly referred to as "Biosolids."

Solids removed during wastewater treatment include grit, primary sludge, and biological sludges. Grit is typically removed in a grit chamber and is usually inert and easily dewatered, so landfilling is usually the preferred management option. Primary sludges are generally solids that readily float or sink, whereas biological sludges are suspended organic materials and necessitate biological treatment (e.g., trickling filter, activated sludge, or oxidation pond) to float or sink. Polymers are widely used to increase settling and thickening efficiencies and to reduce chemical sludge handling problems. Primary and biological sludges are usually combined prior to final treatment. Anaerobic digestion and lagoon stabilization are common sludge

treatment methods, but methods which can render sludge pathogen and odor free, such as lime stabilization, composting, thermophilic aerobic digestion, and heat treatment, are becoming increasingly popular. Public acceptance of beneficial sludge uses, such as spreading on farm land and reclamation of strip mines, may be improved by advanced sludge treatment technologies.

Sludge treatment methods are evolving as disposal is discouraged and beneficial reuse is encouraged. Ocean disposal of sludge is prohibited by the California Ocean Plan. Landfilling of sludge is generally allowed if the sludge is nonhazardous and meets specific moisture content requirements. Sludge may be disposed in Class I and Class II waste management units, but this practice is uncommon due to its high cost. Disposal of sludge is becoming less attractive as landfill capacity decreases, recycling mandates (Assembly Bill 939) must be met, and society becomes aware that sludge can be a valuable resource as a soil amendment/fertilizer.

VI.B. MUNICIPAL WASTEWATER MANAGEMENT

Municipal wastewater conveyance, treatment, and disposal facilities recommended for the Central Coastal Basin are described in the following pages. Recommended plans for municipal facilities are described in geographic sequence by hydrographic units. Hydrographic units are identified in Chapter Two, Figure 2-1. Numbers in parentheses throughout the chapter refer to design capacity unless otherwise stated. Pretreatment programs and modifications to secondary treatment are discussed as part of the recommended plan where applicable. Further discussion of these topics can be found under the subheadings "Ocean Disposal" and "Pretreatment Programs" at the beginning of this chapter.

Further specific municipal management information can be found in the Management Principles section of Chapter Five. General municipal wastewater management information is also included in the State Water Resources Control Board Plans and Policies section, Discharge Prohibitions section, Control Actions section, and Regional Board Policies section.

VI.B.1. BIG BASIN HYDROLOGIC UNIT

The Big Basin Hydrologic Unit includes discharges from the City of Santa Cruz and the City of Scotts Valley, in addition to unsewered areas and several small waste dischargers. Table 4-1 displays summarized Big Basin Hydrologic Unit dischargers.

Table 4-1. Big Basin Hydrologic Unit Summarized Municipal Dischargers

Davenport County Sanitation District
California Department of Parks and Recreation -
Big Basin State Park
California Department of Forestry -
Ben Lomond Conservation Facility
City of Santa Cruz
City of Scotts Valley
Santa Cruz County Service Area No. 7 -
Boulder Creek Golf and Country Club
Santa Cruz County Service Area No. 10 -
Rolling Woods Subdivision
San Lorenzo Valley Water District -
Bear Creek Estates
Big Basin Woods
Santa Cruz County Service Area No. 5 -
Sand Dollar Beach and Canon del Sol
Santa Cruz County Service Area No. 20 -
Trestle Beach
Individual Septic Tank Systems

The City of Santa Cruz operates a wastewater collection, primary treatment, and ocean disposal system with a capacity of 21 mgd. Sewerage service is provided to the City of Santa Cruz, Santa Cruz County Sanitation District (SCCSD), and the City of Scotts Valley. The SCCSD serves East Cliff, Capitola, Aptos, and Seacliff areas. The recommended plan for the City is to upgrade the existing treatment plant at Neary's Lagoon to secondary level treatment. A new outfall was completed in 1988. The new outfall is 12,250 feet long terminating in 100 feet of water about one mile offshore. It replaces a 2,000 foot outfall which was a source of many complaints due to its proximity to the shore water-contact recreation area.

Mitigation measures to offset environmental impacts to Neary's Lagoon and an adjacent park must be resolved before the plant can proceed. The City has

implemented a pretreatment program affecting the City of Santa Cruz, and Santa Cruz County Sanitation District.

Wastewaters from sewer areas of the City of Scotts Valley are transported to Scotts Valley's secondary treatment plant. Effluent is transported through a land outfall to the City of Santa Cruz marine outfall for disposal to the Pacific Ocean. A recommended plan for Scotts Valley includes: (1) increasing wastewater treatment capacity from 0.65 mgd to 0.95 mgd, (2) providing reclaimed water to Pasatiempo Golf Course and other green belt areas for irrigation purposes, and (3) transporting excess wastewater through the Scotts Valley land outfall to the City of Santa Cruz ocean outfall. An alternative plan is to transport raw wastewater through the Scotts Valley land outfall to the Santa Cruz wastewater treatment plant for treatment and disposal through the ocean outfall. Local water agencies (Scotts Valley Water District and San Lorenzo Valley Water District) may benefit from reclamation efforts and should be involved in reuse planning.

Davenport County Sanitation District (DCSD) was created in 1979 to provide sewer and water services to the Davenport-Newtown area located on the coast north of Santa Cruz. Davenport-Newtown area has interceptors and an aerated wastewater lagoon on property owned by Lone Star Industries. Disposal is through evaporation/ percolation and industrial reuse. DCSD is responsible for wastewater collection, treatment, and disposal.

The State Department of Parks and Recreation is responsible for Big Basin State Park facilities (.04 mgd). Discharge provides stream flow augmentation. The wastewater treatment plant includes secondary treatment with sand filtration and coagulation. This stream discharge qualifies as an acceptable wastewater reclamation project. The discharge is upstream from a popular swimming hole, so this plan emphasizes the need to enhance water quality and protect beneficial uses in Waddell Creek. The Department of Parks and Recreation must correct wastewater system deficiencies in order to protect public health and the beneficial uses of Waddell Creek and tributaries.

The recommended plan for the Ben Lomond Conservation Facility is to retain the existing septic tank, evaporation/percolation ponds, and spray field. Existing facilities are adequate so long as operation and maintenance are effective.

Wastewater management in San Lorenzo Valley (SLV) is provided by three community treatment and disposal

facilities (Bear Creek Estates, Big Basin Woods, and Boulder Creek Golf and Country Club). Remaining areas are served by individually owned septic tank and soil absorption systems. Bear Creek Estates uses septic tank treatment with disposal to a soil absorption system. This facility is the responsibility of San Lorenzo Valley Water District and Bear Creek Estates.

The recommended plan for Big Basin Woods Subdivision is to retain the existing extended aeration treatment facility with leachfield disposal, presently operating at approximately ten percent of total capacity (.35 mgd). Flow from County Service Area No. 7 has been diverted to Big Basin Woods' leachfield during equipment repair periods. Leachfield capacity is adequate to serve both Big Basin Woods and CSA No. 7. Existing facilities are adequate so long as operation and maintenance are effective. This plan will be implemented by Big Basin Sanitation Company, Big Basin Woods Subdivision, and the San Lorenzo Valley Water District.

The recommended plan for Boulder Creek Golf and Country Club is to retain the existing activated sludge treatment facility with leachfield disposal and add filtration for golf course irrigation. Existing facilities are adequate so long as operation and maintenance are effective. Operation and maintenance of the system is the responsibility of the Santa Cruz County Department of Public Works. This plan will be implemented by Santa Cruz County Service Area No. 7 through Santa Cruz County Department of Public Works and San Lorenzo Valley Water District.

Rolling Woods Subdivision, Santa Cruz County Service Area No. 10, provides treatment with a redwood bark biofilter and disposes treated effluent through percolation pits. This facility should be replaced with an interceptor that would convey wastes to the City of Santa Cruz for treatment and disposal.

Individually owned septic tank leachfield systems in the San Lorenzo Valley have been inspected and monitored from 1986 through 1994. Problem areas have been identified and the suitability of these problem areas for the continued use of septic systems has been determined as documented in the County of Santa Cruz, Environmental Health Services reports (1) Preliminary Report, An Evaluation of Wastewater Disposal and Water Quality in the San Lorenzo Watershed, September, 1989; (2) Final Project Report, Boulder Creek Wastewater Feasibility Study, October, 1991; and (3) Final Project Report, San Lorenzo Valley Community Wastewater Feasibility Studies, March, 1994. Alternatives have been evaluated and solutions

proposed to reduce septic system problems in certain areas of the valley. Solutions are contained in the "Wastewater Management Plan for the San Lorenzo River Watershed, County of Santa Cruz, Health Services Agency, Environmental Health Service", February 1995 and "San Lorenzo Nitrate Management Plan, Phase II Final Report", February 1995, County of Santa Cruz, Health Services Agency, Environmental Health Service (Wastewater Management Plan). The Wastewater Management Plan documented standards and conditions that shall be met for the protection and enhancement of beneficial uses.

Dischargers in the Aptos-Soquel area include Santa Cruz County Service Area No. 5 (Sand Dollar Beach and Canon del Sol), SCCSA No. 20 (Trestle Beach), and Monterey Bay Academy. Flows from Aptos and East Cliff are conveyed through interceptors and pumping stations for treatment at the City of Santa Cruz Wastewater Treatment Plant.

The recommended plan for SCCSA No. 5 is to retain the existing extended aeration package treatment plant and disposal to seepage pits. Wastewater treatment and disposal at Canon del Sol will be by the same methods as Sand Dollar Beach. Facilities will be adequate so long as operation and maintenance are effective. This plan will be implemented by SCCSA No. 5 through Santa Cruz County Department of Public Works.

Wastewater treatment at Trestle Beach (SCCSA No. 20) will be provided by an extended aeration package treatment plant with disposal to seepage pits. This plan will be implemented by SCCSA No. 20 through the Santa Cruz County Department of Public Works. It is recommended that CSA No. 5 and No. 20 be connected to regional collection systems when service is extended to adjacent areas.

The recommended plan for the Monterey Bay Academy is to retain the existing settling pond with disposal to a series of evaporation-percolation ponds.

VI.B.2. PAJARO RIVER HYDROLOGIC UNIT

Summarized municipal dischargers in the Pajaro River Hydrologic Unit include the City of Gilroy/ Morgan Hill, City of Hollister, City of San Juan Bautista, and the City of Watsonville. Table 4-2 displays dischargers summarized for the Pajaro River Hydrologic Unit.

Table 4-2. Pajaro River Hydrologic Unit Summarized Municipal Dischargers

Unsewered San Martin
 City of Gilroy/Morgan Hill
 San Benito County Facilities
 Sunnyslope County Water District
 Tres Pinos County Water District
 City of Hollister
 City of San Juan Bautista
 City of Watsonville

The Gilroy area includes the unsewered San Martin area and the City of Gilroy's advanced primary treatment and land disposal facilities serving the Cities of Gilroy and Morgan Hill. The Cities are currently attempting to develop facilities to resolve disposal capacity deficiencies. Primary treatment provided via two oxidation ponds with surface aeration. Effluent disposal is to a series of evaporation/percolation ponds. Wastewater reclamation facilities were constructed in 1977 to alleviate water shortages during drought conditions. When reclamation facilities are in use (seasonally), primary effluent is provided further treatment in an aeration pond. Effluent is then screened, chlorinated, and pumped through nine miles of distribution pipe to various users (for irrigation purposes). The reclamation system's economics have not been favorable. Industrial flows of 6.3 mgd are treated and disposed of in a separate series of sedimentation, oxidation, and percolation ponds.

The recommended plan for the Gilroy-Morgan Hill wastewater treatment facilities is to continue geohydrological assessments to determine impacts of continued effluent disposal by percolation at the Gilroy site. If beneficial uses of surface and ground waters are not adequately protected, other treatment and/or disposal methods must be used. Disposal will continue to be by percolation, evaporation, and reclamation. Before a discharge to surface waters is considered, the City will be required to evaluate feasible land disposal options. If current percolation practices are not causing receiving water problems, feasibility of existing disposal area expansion should be considered. The Cities are also evaluating stream disposal. Currently, the Cities of Gilroy and Morgan Hill are responsible for collection, treatment, and disposal of wastewater. They are also responsible for operating the wastewater reclamation facilities. Santa Clara Valley Water District is responsible for administrative tasks for the reclamation system. In addition, the Cities of Gilroy and Morgan

Hill have implemented a pretreatment program since 1983.

Individual on-site systems are used for sewage disposal in the San Martin area. Twenty percent of the area's wells exceed the nitrate drinking water objective. This is a significant problem since this area serves as the sole recharge area for the Santa Clara Valley. Methods of providing a water supply that is free of excessive nitrate concentration should be investigated and implemented. Nitrate loadings from various sources should be calculated for the area to determine the contribution from various sources. The need for on-site system restrictions should be determined.

Small discharges (less than 0.10 mgd) in the Hollister area include flows from San Benito County Facilities, Sunnyslope County Water District, and Tres Pinos County Water District. City of Hollister wastewater is treated at the City of Hollister Wastewater Treatment Facilities (1.2 mgd). San Juan Bautista wastewater is treated at the City of San Juan Bautista Wastewater Treatment Facilities (0.15 mgd).

The recommended plan for Tres Pinos is to retain the existing evaporation/percolation ponds. The recommended plan for San Benito County Hospital Facilities and Sunnyslope County Water District is to study the feasibility of constructing interceptors to the Hollister facilities or consolidating into a single subregional system. Existing facilities consisting of aerated pond treatment followed by land disposal to evaporation/percolation ponds may be maintained if project level studies determine this to be the more feasible method of wastewater treatment and disposal. Sunnyslope County Water District owns and operates a wastewater treatment and disposal system serving approximately 300 homes in Ridgemark Estates subdivision located approximately 2-1/2 miles south-east of Hollister. Wastewater is treated in two aerated ponds and disposed of in evaporation/percolation ponds. Effluent may be used in the future to irrigate a golf course.

The recommended plan for the City of Hollister is to retain the existing advanced primary treatment facilities and percolation ponds which started operating in 1979. The Hollister industrial system is to be maintained separately to receive seasonal flows from the spinach and tomato processing operations. The recommended plan for the City of San Juan Bautista is development of a land disposal system. The City currently discharges secondary effluent to a drainage ditch tributary to Pajaro River.

Land disposal of wastewaters in the Hollister region must be monitored carefully to assure ground water quality is protected. Source control of salt must be stressed to reduce effluent salinity to levels acceptable for disposal to local ground waters.

Wastewaters in the Watsonville area are transported to regional treatment facilities in the City of Watsonville with a design capacity of 13.4 mgd. Collection, primary treatment, and disposal to Monterey Bay are provided for the City of Watsonville, and the local sewerage entities of Freedom County Sanitation District, Pajaro County Sanitation District, and Salsipuedes Sanitary District. The City submitted an application to EPA for waiver of secondary treatment requirements and the Regional Board has approved a waiver permit. Project level studies determined ocean disposal to be the most feasible method of waste disposal. Ocean outfall improvements and a phased approach to secondary treatment are included in Watsonville's Clean Water Grant Project. If a waiver from secondary treatment is granted, the project will provide advanced primary treatment. Local sewerage entities retain ownership and direct responsibility for wastewater collection and transport systems up to the point of discharge to interceptors owned and operated by Watsonville. The City is implementing a pretreatment program and the Regional Board has approved a waiver permit.

VI.B.3. CARMEL RIVER HYDROLOGIC UNIT

Summarized municipal dischargers in the Carmel River Hydrologic Unit include Carmel Sanitary District. Table 4-3 displays dischargers summarized for the Carmel River Hydrologic Unit.

Table 4-3. Carmel River Hydrologic Unit Summarized Municipal Dischargers

Carmel Sanitary District
Carmel Valley Sanitation District
Village Green
White Oaks
Carmel Valley Ranch
Carmel Highlands Inn
Carmel Sanitary Association

The Carmel Sanitary District operates a secondary wastewater treatment plant with ocean disposal serving

Carmel-by-the-Sea, Del Monte Forest, and a few adjacent areas. The outfall system terminates within a portion of Carmel Bay that is designated an Area of Special Biological Significance (ASBS). The District is developing a reclamation project for irrigation of Monterey Peninsula Golf Courses. A high concentration of golf courses in a water short area makes reclamation particularly desirable and attractive.

Carmel Valley Sanitation District operates three facilities in Carmel Valley. These include community septic tank/subsurface disposal systems at Village Green and White Oaks and a tertiary type treatment plant with golf course reclamation at Carmel Valley Ranch. No changes are recommended unless public health or water quality problems develop. Should the need arise for specific septic system maintenance in Carmel Valley, local agencies should be considered for management responsibilities.

Comprehensive studies to determine the feasibility of establishing separate treatment plants have been completed for the Carmel Valley area. These studies conclude that on-site septic systems should remain operational until further ground water monitoring data shows sewers are necessary. Wastewater treatment and reuse on the Carmel Valley Ranch Golf Course provides an optimal way of managing waste generated in the area.

Carmel Highlands wastewaters should continue to be treated in on-site wastewater systems except at the Highlands Inn and the Carmel Highlands Sanitary Association. Both of these systems will continue to discharge treated secondary quality effluent to the Pacific Ocean.

VI.B.4. SANTA LUCIA HYDROLOGIC UNIT

The U.S. Navy's Point Sur wastewater facilities and the State Department of Parks and Recreation Pfeiffer Big Sur State Park facilities are the only significant facilities in this hydrologic unit. Ocean discharge from the U. S. Navy is being discontinued and is being replaced with a subsurface land disposal system. The subsurface land disposal system at Pfeiffer Big Sur State Park also seems adequate. If expansion to this facility is considered or if ground or surface water degradation from this discharge is detected, other means of disposal, such as reclamation, are recommended.

VI.B.5. SALINAS RIVER HYDROLOGIC UNIT

The extensive Salinas River Hydrologic Unit includes the Monterey Peninsula and southern coastal area of Monterey Bay, the City of Salinas, agricultural and small urban centers of the Salinas Valley, and recreational developments in the upper watersheds. Major dischargers in the Salinas River Hydrologic Unit include the Monterey Regional Water Pollution Agency (MRWPCA). Table 4-4 displays dischargers summarized below for the Salinas River Hydrologic Unit.

Table 4-4. Salinas River Hydrologic Unit Summarized Municipal Dischargers

Monterey Regional Water Pollution Control Agency (MRWPCA)
U.S. Army Fort Hunter Liggett
California Army National Guard - Camp Roberts
King City
City of Paso Robles
City of Atascadero
San Luis Obispo County Service Area No. 7A Oak Shores
San Luis Obispo County Service Area No. 19 Heritage Ranch Development

The recommended plan for the Monterey Peninsula-Salinas area calls for consolidation of Monterey Peninsula, Salinas, Castroville, and other Monterey Bay municipal wastewater flows into a regional wastewater treatment plant and outfall. Discharge is to central Monterey Bay outside the prohibition zone described in Chapter 5 "Discharge Prohibitions" under "Waters Subject to Tidal Action." Upon completion of the regional plant, wastewater treatment plants in Monterey, Salinas (2), Castroville, and Fort Ord will be taken out of service. The Monterey Regional Water Pollution Control Agency (MRWPCA) was established to manage and implement regional consolidation.

It is recommended MRWPCA implement wastewater reclamation. MRWPCA plans to provide reclaimed water to the Castroville Irrigation Project which involves irrigating food crops in the Castroville area with water reclaimed at the regional plant blended with water diverted from the Salinas River.

New major residential developments proposed within the service area of the Regional Project should connect to the regional system unless studies can show that water quality and public health concerns can be properly mitigated. Sewerage feasibility studies and aerial ground water studies should continue in this sub-basin to assure that adequate sewage treatment and disposal capabilities are maintained for both existing and proposed development.

Recommended plans for Salinas Valley communities, the U. S. Army's Fort Hunter Liggett, the California Army National Guard's Camp Roberts, and recreational areas in the upper watershed involve separate wastewater treatment and disposal facilities.

Dischargers along the Salinas River should remain as separate treatment facilities with land disposal to evaporation/percolation systems and land application (irrigation) systems where possible. Disposal should be managed to provide maximum nitrogen reduction (e.g., through crop irrigation or wet and dry cycle percolation). Facility expansions shall include means for nitrogen reduction. Shallow ground water monitoring at these facilities will determine if additional improvements are necessary. King City should consider expanding its service area to include Pine Canyon if development continues in that area.

The City of Paso Robles owns and operates a secondary treatment plant (4.9 mgd) utilizing trickling filtration followed by oxidation ponds. Disposal is by evaporation and percolation from the oxidation ponds and by discharging from the last pond to the Salinas River channel. Use of reclaimed water should be investigated and implemented, if feasible. A reduction of inorganic salt in the effluent would increase its desirability to potential users. A report, "Water Quality in the Paso Robles Area," published by the California Department of Water Resources in 1981 made water quality control recommendations, including a recommendation for more stringent control of total dissolved solids and sodium in the City's wastewater treatment plant discharge. A Regional Board Salt Balance Study is planned to further define the need and methods of salt reduction.

The City of Paso Robles also owns and operates the wastewater facility serving the California Youth Authority and Paso Robles Airport Wastewater treatment plant (0.10 mgd). Disposal is to a series of oxidation-percolation ponds located adjacent to Huerhuero Creek. Wastewater reclamation uses should be investigated. An effluent pump exists at the plant in case wastewater reclamation potential develops. The

City is planning an interceptor sewer to eliminate this facility and provide all treatment and disposal at its main City facility.

The City of Atascadero (1.67 mgd) owns and operates a wastewater collection, treatment, and disposal system serving part of the City. Pond treatment is provided followed by land disposal to percolation ponds and by irrigation of a golf course. San Luis Obispo County Health Department has documented public health problems and water quality problems arising from failing on-site sewage disposal systems in areas within the City. The City was sewered in the most significant problem areas, but additional sewerage is needed.

Dischargers in the Nacimiento Reservoir area include San Luis Obispo County Service Area No. 7A, Oak Shores Development (0.1 mgd); and, San Luis Obispo County Service Area No. 19, Heritage Ranch Development (0.40 mgd). Wastewater facilities for the Oak Shores Development consist of two aerated treatment ponds and spray disposal. Part of the collection system is located below the spillway elevation of Nacimiento Reservoir. This has been a source of excessive infiltration in the past and the problem has been corrected. This area should be watched closely as reservoir level rises and wastewater flows increase to insure infiltration and/or exfiltration do not reoccur. Major expansion of wastewater facilities is expected in the future. As the development grows, new disposal facilities should be relocated well away from Nacimiento Lake.

Wastewater at Heritage Ranch is treated in aerated lagoons at the development. Discharge is to a holding pond, filtered, and then discharged to a drainageway located outside the Nacimiento Reservoir watershed.

Camp Roberts is a U. S. Army installation that is leased by the California National Guard as a major training site. Wastewater flows that vary from 3000 gpd in winter to nearly 1.0 mgd in summer are treated to secondary levels prior to disposal in a series of percolation/evaporation ponds located near the Salinas River. The facility was upgraded in 1980 and there are no additional recommendations.

Dischargers in the San Antonio Reservoir watershed include Monterey County's Department of Parks and Recreation and the U.S. Army's Fort Hunter Liggett. There are no recommended changes to facilities operated by the Monterey County Department of Parks and Recreation. The U.S. Army, Fort Hunter Liggett operates wastewater treatment facilities located adjacent to the San Antonio River. The recommended plan is to

maintain the existing facilities with improvement of the spray disposal area.

VI.B.6. ESTERO BAY HYDROLOGIC UNIT

Municipal wastewater management plans for the Estero Bay Hydrologic Unit are described for each of these four areas: North Coast, Morro Bay, San Luis Obispo Creek, and South County Regions. Table 4-5 displays dischargers summarized below.

Table 4-5. Estero Bay Hydrologic Unit Summarized Dischargers

Cambria Community Services District
San Simeon Acres Community Services District
City of Morro Bay and Cayucos Sanitary District
California Men's Colony
Los Osos septic tank/leachfield systems
City of San Luis Obispo
Avila Beach County Water District
San Luis Obispo County Service Area No. 18-
Country Club Estates
City of Pismo Beach
South San Luis Obispo County Sanitation District
Lopez Recreation Area Wastewater Treatment Plant

Dischargers in the North San Luis Obispo Coast include Cambria Community Services District (1.0 mgd) and San Simeon Acres Community Services District (0.2 mgd).

Secondary treatment facilities at Cambria have a design capacity of 1.0 mgd and include a land outfall and spray irrigation system for effluent disposal, and an effluent holding reservoir. Excess effluent that cannot be spray-irrigated is pumped to the reservoir for later land disposal or discharged during wet weather through a sand filter bed to Van Gordon Creek. The District is evaluating land disposal improvements. Implementation of this plan is the responsibility of Cambria Community Services District.

San Simeon Acres Community Services District owns and operates a secondary treatment (activated sludge) plant with design capacity of 0.2 mgd. Wastewater visitor complex generated at Hearst Castle and within the community is treated and discharged to the Pacific

Ocean through an ocean outfall. The recommended plan is to retain the treatment plant.

Dischargers in the Morro Bay area include the City of Morro Bay and Cayucos Sanitary District (2.1 mgd), California Men's Colony (CMC) (1.2 mgd), and Los Osos- Baywood septic tank leachfield systems.

The City of Morro Bay and the Cayucos Sanitary District jointly own treatment facilities with ocean outfall disposal. Wastewater is being treated by a newly constructed plant and discharged through a newly constructed ocean outfall. In order to maximize plant capacity and meet Ocean Plan requirements, part of the effluent receives primary treatment only and part receives secondary treatment. Primary and secondary quality effluents are blended before disposal to the Pacific Ocean in compliance with a secondary treatment waiver.

Recently renovated wastewater treatment facilities at California Men's Colony also serve the California National Guard Camp, Cuesta College, the County Educational Center, and the County Operational Facility. Secondary treatment with coagulation/filtration, and subsequent disposal to Chorro Creek (stream flow augmentation) are provided. Effluent is also used to irrigate fodder crops on nearby lands owned by California State Polytechnic University.

Development on small lots in Los Osos-Baywood has resulted in one of the most densely populated areas without public sewers on the central coast. Septic tank effluent is discharged in predominantly sandy soil over a ground water basin which is the sole source of water for the area. Some shallow wells have approached and exceeded the public health maximum nitrate concentration limit. The County of San Luis Obispo conducted a Clean Water Grant funded study of this situation. Study findings resulted in a Basin Plan Prohibition of discharges effective November 1, 1988. The County has not implemented the recommended project of sewerage the area. (A new septic system discharge prohibition now exists for the area).

Dischargers in the San Luis Obispo Creek area include the City of San Luis Obispo (5.1 mgd), Avila Beach County Water District (0.1 mgd), and San Luis Obispo County Service Area (CSA) No. 18, Country Club Estates (0.12 mgd).

The City of San Luis Obispo wastewater treatment facilities serve as a regional plant for the City and certain proximal unincorporated county areas. Trickling filters provide secondary treatment before disposal to San Luis Obispo Creek. Infiltration and

inflow in the wastewater collection system causes excessive wet weather flows and intermittent discharges to San Luis Obispo Creek of partially treated wastewater. The recommended plan for San Luis Obispo is improving the collection and treatment facilities capacity to eliminate these discharges. The City's Wastewater Management Plan should be implemented to provide treatment necessary to comply with stringent permit requirements.

The small community of Avila Beach is served by a small advanced primary trickling filter wastewater treatment facility owned and operated by the Avila Beach County Water District. Design capacity of the plant was originally 0.18 mgd, but was downgraded in 1986 to 0.1 mgd as the NPDES permit was revised to include secondary treatment standards for trickling filters. Current average flow is only 0.07 mgd. Wastewater disposal is through an ocean outfall to the Pacific Ocean. Additional treatment and/or outfall modification will be necessary as flow increases. Oceanographic studies would be required to determine appropriate modifications (e.g., lengthen the outfall and add a multiport diffuser).

Country Club Estates (CSA No. 18) is a small subdivision in South San Luis Obispo County that historically relied on septic tank systems for wastewater treatment and disposal. A septic tank system performance survey completed in January, 1981, identified significant public health hazards from numerous failing septic tank systems in the subdivision. The septic systems were replaced in 1988 by a small secondary treatment plant (0.12 mgd) with effluent disposal via golf course irrigation at the San Luis Obispo Golf and Country Club.

Dischargers in the South San Luis Obispo County Region include the City of Pismo Beach (1.2 mgd), South San Luis Obispo County Sanitation District (3.0 mgd) (serving the City of Arroyo Grande, City of Grover City, and Ocean Community Services District), and Lopez Recreation Area wastewater treatment plant (0.10 mgd). These dischargers provide secondary treatment of wastewater through three separate facilities. Pismo Beach has a land outfall to the South San Luis Obispo County Sanitation District ocean outfall. Plant reliability improvements were made in 1987. Future treatment plant enlargements should provide duplicate process units for improved operation and maintenance. A long range solids management plan must be developed and implemented.

South San Luis Obispo County Sanitation District disposes of secondary effluent through an ocean outfall

to the Pacific Ocean. The District has enlarged its facilities to 3.0 mgd and changed from activated sludge to fixed film reactor. A long range solids management plan is also needed for this plant.

The Lopez Recreation Area treatment facilities serve County facilities adjacent to Lopez Lake. Lopez Lake serves as a municipal water supply for downstream coastal communities. It is recommended land disposal of wastes be continued. Ground water quality monitoring should be used to provide warning of any potential ground water problems downstream of the disposal area. Implementation of this plan is the responsibility of the County of San Luis Obispo.

VI.B.7. CARRIZO PLAIN HYDROLOGIC UNIT

There are no municipal sewerage systems in the Carrizo Plain Hydrologic Unit; recommended practices for individual disposal systems will pertain to this area.

VI.B.8. SANTA MARIA RIVER HYDROLOGIC UNIT

The municipal wastewater management plans for the Santa Maria Valley and the Cuyama Valley are described separately for the City of Guadalupe, the City of Santa Maria, the Laguna County Sanitation District, Nipomo, and the New Cuyama wastewater treatment plant.

It is recommended that separate wastewater treatment and disposal/reclamation facilities be maintained by the City of Guadalupe (0.5 mgd), the City of Santa Maria (7.8 mgd), and the Laguna County Sanitation District (3.2 mgd). Discharge will be to land in each case.

The City of Guadalupe provides primary treatment followed by mechanically aerated lagoons. An unincorporated neighborhood known as the Gularte Tract is located adjacent to Guadalupe. A lift station and interceptor have been constructed to transport Gularte's wastewater to the City's collection system.

The recommended plan for Guadalupe is to complete additional storage ponds and disposal facilities to insure containment of wastewaters during wet weather and accommodate planned growth and to continue effluent discharge to land. Use of reclaimed water to irrigate nearby pasture lands is encouraged and should be maximized. Implementation of this plan is the responsibility of the City of Guadalupe. The County of Santa Barbara will be responsible for wastewater collection and transport systems for Gularte Tract up to the point of discharge to interceptors owned and operated by Guadalupe.

The City of Santa Maria provides wastewater collection, treatment, and disposal services to the City of Santa Maria, Santa Maria Airport District, and part of Laguna County Sanitation District. Biological secondary treatment is provided with disposal to percolation ponds and irrigation lands. The recommended plan for Santa Maria is to retain the existing treatment and disposal facilities. Since the Santa Maria ground water basin is in a state of adverse dissolved solids balance, it is imperative that quantities of total dissolved solids, sodium, chloride, nitrogen, and nitrogen compounds be kept to a minimum by implementing a strict source control ordinance. Additional measures -- importing better quality water, drilling new wells, partial desalting, etc. - may be required in the future to provide a suitable water supply for the area. Laguna County Sanitation District retains ownership and direct responsibility for wastewater collection and transport systems up to the point of discharge into interceptors owned and operated by the City of Santa Maria.

A secondary wastewater treatment plant owned and operated by Laguna County Sanitation District treats most of the wastewater generated within the District. Wastewater is discharged to approximately 2,250 acres of private lands located adjacent to the facility. The landowners and the County have a 30-year agreement for irrigation of fodder, fiber, and seed crops. The recommended plan for Laguna is to improve plant performance and increase capacity through a staged construction plan. Enough land is available to allow expansion and continue reclamation. Recommended improvements include increasing capacity and reliability of the Orcutt Lift Station, increasing sludge drying bed area, and expanding effluent, pumping, storage, and conveyance facilities. Funding of future improvements and plant expansions would be through connection and user charges. Laguna County Sanitation District is responsible for implementation of the recommended plan. Impact of salts must be minimized by implementing a strict source control ordinance and

discharging to areas outside the main ground water recharge area.

Failing individual on-site sewage disposal systems in the community of Nipomo resulted in a treatment facility being completed in 1987. Treatment is by aerated lagoons and disposal is by percolation beds. Sewer service is provided to downtown Nipomo and County operated systems of Nipomo Palms, Black Lake Estates, and Galaxy Subdivisions. The recommended plan is to extend the sewer system to small lot areas as growth allows.

Existing facilities at the New Cuyama Wastewater Treatment Plant provide primary treatment of wastewater, with some aeration. Effluent is chlorinated before discharge to Salisbury Creek. The recommended plan for New Cuyama is to study existing facilities, determine future needs of the community, and, since water is in short supply, explore wastewater reclamation alternatives. Cuyama Community Services District is the responsible party for wastewater and water supply facilities in New Cuyama. It is recommended that exploratory wells be drilled to find a higher quality water supply. If a lower salt content water is not available, the existing water supply should be partially demineralized.

VI.B.9. SAN ANTONIO CREEK HYDROLOGIC UNIT

Los Alamos Community Services District owns and operates a wastewater treatment and disposal facility to serve the Los Alamos community. Wastewater (0.1 mgd) is treated in mechanically aerated ponds and discharged to disposal ponds and a spray reclamation area.

VI.B.10. SANTA YNEZ RIVER HYDROLOGIC UNIT

Municipal wastewater management plans for the Santa Ynez River Hydrologic Unit are described below. Table 4-6 displays dischargers discussed below.

Table 4-6. Santa Ynez River Hydrologic Unit Summarized Municipal Dischargers

City of Lompoc
Mission Hills Community Services District
Vandenberg Air Force Base
U. S. Department of Justice, Bureau of Prisons
Buellton Community Services District
City of Solvang
Cachuma County Sanitation District

Parts of Lompoc Valley ground water basin are in a state of adverse salt balance because of municipal and agricultural discharges. It is imperative that impacts of point source waste discharges to land be reduced by continuing to implement strict salt limitations, source control programs, and other salt management practices.

The City of Lompoc operates a secondary treatment facility (5.0 mgd) and discharges treated effluent to Santa Ynez River. The City also provides service to Vandenberg Village Community Services District and sewered areas of Vandenberg Air Force Base. The recommended plan for Lompoc is to control mineral concentrations in the effluent by enforcing strict limits on discharges to the sewer system and to continue to implement a pretreatment program. Implementation of this plan is the responsibility of the City of Lompoc. Vandenberg Air Force Base and Vandenberg Village Community Services District retain ownership and direct responsibility for wastewater collection and transport systems up to the point of discharge into the wastewater treatment plant and/ or interceptors owned and operated by the City of Lompoc.

In 1980, the Mission Hills Community Services District (0.4 mgd) was formed, assuming ownership and responsibility for water supply and sewage disposal in Mission Hills. The District expanded and upgraded its La Purisima Plant and eliminated the Rucker Road Plant. Wastewater is treated in mechanically aerated ponds and discharged to a series of evaporation/percolation ponds and reclamation areas. Separate water reclamation requirements were adopted for Mission Belle Dairy as a primary user of reclaimed water for pasture and fodder crop irrigation.

There are isolated areas of Vandenberg Air Force Base that are not served by the Base's collection system. Separate treatment and disposal systems exist to serve these areas. Due to the isolation of these systems, it is recommended that they be retained. Efficient operation and maintenance of these systems will protect public health and water quality.

The United States Department of Justice, Bureau of Prisons, owns and operates existing facilities at the U.S. Penitentiary (0.6 mgd) which provide secondary treatment of wastewater. Treated wastewater is reclaimed for irrigation of forage crop land.

It is recommended that facilities be maintained separately at Buellton Community Services District (0.65 mgd), City of Solvang (1.0 mgd), and Cachuma County Sanitation District (0.22 mgd). Secondary treatment prior to land disposal coupled with a strict source control program will be necessary to protect local ground waters in these three areas.

The City of Solvang operates a secondary wastewater treatment facility to serve the City and Santa Ynez Community Services District with effluent disposal to evaporation/percolation ponds. Since the disposal ponds are located in a flood-prone area, it is imperative that sufficient disinfection capacity be available to disinfect effluent during wet weather. Expansion of capacity should be considered for ongoing growth in areas adjacent to present City and District boundaries. Implementation of this plan is the responsibility of both the City of Solvang and Santa Ynez Community Services District. Need for, and feasibility of providing, sewerage facilities for the Los Olivos-Ballard areas should be investigated by the County of Santa Barbara. Treatment and disposal service for this area be contracted with the City of Solvang.

The recommended plan for Cachuma County Sanitation District is to continue to treat and dispose of wastewater in percolation ponds and spray fields outside the Cachuma Reservoir watershed. Since ground waters down gradient from the spray field are used for domestic water supply, sampling of the nearest down gradient well is recommended to insure that water supply quality is not adversely affected by the discharge.

VI.B.11. SOUTH COAST HYDROLOGIC UNIT

Summarized municipal wastewater treatment and disposal agencies in the South Coast Hydrologic Unit are described separately for the Goleta Sanitary District (9.7 mgd), City of Santa Barbara (11.0 mgd), Montecito Sanitary District (1.5 mgd), Summerland Sanitary District (0.20 mgd), and, Carpinteria Sanitary District (2.0 mgd) wastewater treatment plants.

Goleta Sanitary District operates a wastewater collection system within the District and a treatment and ocean disposal system to provide service to Goleta Sanitary District, Isla Vista Sanitary District, University of California at Santa Barbara, Santa Barbara Municipal Airport, and facilities of Santa Barbara County. EPA granted the District a waiver from secondary treatment requirements. The waiver permit limits flow to 7.9 mgd provided mass emission rates do not exceed limits based on a flow of 7.3 mgd. In order to meet EPA's conditions and Ocean Plan criteria, part of the effluent receive primary treatment only and part receives secondary treatment. Primary and secondary effluent are blended before disposal to the Pacific Ocean. The District implements a pretreatment program. Isla Vista Sanitary District, University of California at Santa Barbara, Santa Barbara Municipal Airport, and Santa Barbara County retain ownership and direct responsibility for wastewater collection and transport systems up to the point of discharge into interceptors owned and operated by Goleta Sanitary District. A long range solids management plan is needed to assure sludge disposal needs are met.

The recommended plan for the City of Santa Barbara is to retain El Estero Wastewater Treatment Plant, with disposal to the Pacific Ocean, along with implementation of the City of Santa Barbara wastewater reclamation project. The City could consider implementing a cost-effective composting program to reduce transportation costs. The City implements a pretreatment program and also provides service to an unincorporated community in Mission Canyon located above the City.

The recommended plan for Montecito Sanitary District is to continue secondary treatment with disposal to the Pacific Ocean.

The recommended plan for Summerland Sanitary District is to expand and upgrade existing facilities to insure reliable plant operations and to accommodate planned growth. Recommended improvements are addition of standby power, dual processes, and continuous monitoring of total chlorine residual.

The recommended plan for Carpinteria Sanitary District is to retain existing secondary treatment facilities with disposal to the Pacific Ocean.

VI.C. INDUSTRIAL WASTEWATER MANAGEMENT

In general, the alternatives available to industrial discharges are the following: (1) ocean discharge and compliance with the State Ocean Plan, the State Thermal Plan, and Public Law 92-500; (2) containment of nonsaline and non-toxic wastes on land; (3) reinjection of oil and gas production brines; (4) inland surface water discharge, if other alternatives are proved infeasible; and, (5) abandonment of the treatment facility and connection to a publicly owned treatment works. In most cases, alternatives will be limited by standards of performance and pretreatment standards being developed by EPA. It should also be noted that federal guidelines will be subject to regional considerations such as important fishery resources or wildlife areas which could necessitate making regional industrial discharge requirements more stringent than national performance standards.

Specific effluent limitations are being promulgated for existing industrial waste discharges together with standards of performance and pretreatment standards of performance for new sources pursuant to sections 304(b), 306 (b), and 307(b), of the federal Water Pollution Control Act. Effluent limitations were being circulated for comment by the EPA. Waste source categories of particular interest in the basin which will be covered by those sections of the federal law include:

Meat product and rendering processing

Dairy product processing

Canned and preserved fruits and vegetables processing

Canned and preserved seafood processing

Cement Manufacturing

Feedlots

Electroplating

Beet sugar processing

Petroleum production and refining
Steam electric power plants

Leather tanning and finishing

Further information pertaining to industrial discharges can be found in the Management Principles and Control Actions Section of Chapter 5. The State Water Resources Control Board Plans and Policies Section, Discharge Prohibition Section, and Regional Board Policies Section are likely to apply (depending on site specific circumstances).

VI.D. SOLID WASTE MANAGEMENT

The protection and maintenance of water resources requires consideration and regulation of solid waste management practices. This section discusses present and future solid waste production, existing disposal practices and their effect on water quality, and proposed plans for solid waste disposal within the study area.

Land disposal is regulated by the California Code of Regulations, Title 23, Chapter 15 (Chapter 15). In the vernacular of Chapter 15, wastes are classified as either hazardous waste, designated waste, nonhazardous solid waste, or inert waste. Waste Management Units (WMUs) are classified as either Class I, II, or III depending on the type of waste to be disposed of in the unit. Class I WMUs have the most restrictive siting criteria and must be constructed to provide optimum conditions for isolation of wastes from waters of the State. A double liner and a leachate collection and removal system (LCRS) is required for all Class I units. Class II WMUs also have relatively restrictive siting and construction standards and are designed to totally isolate wastes from the environment. Double liners and LCRSs are typically, but not always, required for Class II units. Class III WMUs must be sited and constructed such that no impairment of beneficial uses of surface or ground water beneath or adjacent to the site occurs. Siting and construction standards for Class III units are the least restrictive of the three, but the requirements are still considerable.

Wastes are considered hazardous if they meet the criteria defined in CCR Title 22, Section 66300. Examples of wastes that are considered hazardous include: waste solvents, waste pesticides, and waste electroplating solutions, to name a few. Hazardous wastes must be discharged only at Class I WMU.

Wastes are classified as designated if, under ambient conditions at the WMU, they may be released in concentrations in excess of applicable water quality objectives or cause degradation of waters of the State. Some examples of designated waste include, wet sewage treatment plant sludge, oil field wastes, and some drilling muds. Designated wastes must be disposed of only at Class I WMU's, or at Class II WMU's which are approved for that particular type of waste.

Nonhazardous solid wastes consist of the more typical household and industrial wastes including: trash; rubbish; ashes; demolition and construction wastes; discarded home and industrial appliances; manure; and vegetable or animal solid or semi-solid wastes provided they do not meet the criteria mentioned above for hazardous or designated wastes. Nonhazardous solid waste may be disposed of at any classified WMU, but normally it is disposed of only at Class III WMUs to conserve the diminishing volume in the few operating Class I and Class II WMUs.

Inert waste does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives and does not contain significant quantities of decomposable waste. Some examples of inert wastes include: broken up concrete rubble and excess clean earth fill. Inert wastes do not necessarily need to be disposed of at classified waste management units (i.e., Class I, II or III), but waste discharge requirements may be issued for the discharge at the discretion of the Regional Board.

There are 28 authorized active waste disposal sites regulated by the Central Coast Regional Board. Of the 28 sites, 26 are Class III landfills, with one Class I landfill, and one Class II surface impoundment. Additional information regarding a specific waste management unit can be found in the respective County Waste Management Plan in which the unit is located.

In recent years, data indicates municipal solid waste landfills may be having a greater impact on water resources than was previously anticipated. Legislation was passed in 1984 which requires all owners of active, inactive, or former landfills to initiate a study to determine if the landfilling operation has had an impact on waters of the State. Approximately 150 sites are evaluated per year throughout the State, with approximately nine sites per year coming from the Central Coast Region. Further studies and/or corrective actions are initiated at all sites impacting State waters.

A recent report from the Assembly Office of Research has documented California's dwindling remaining landfill capacity. In general, remaining landfill capacity within the Central Coastal Region is higher than most areas of the State. However, the ratio of landfill closures to landfill expansions or opening of new landfills within the region for the last five years is approximately 4:1. This ratio will probably remain the same or increase with the more stringent regulatory requirements and the time consuming permitting process required for siting of new waste management units. In order to avoid a landfill capacity crisis similar to the situation on the East Coast, our solid waste handling and disposal practices should be reevaluated and a more environmentally sound management practice should be developed.

The Toxic Pits Cleanup Act of 1984 (TPCA) declares that discharges of liquid hazardous wastes or hazardous wastes containing free liquids into lined or unlined impoundments pose a serious threat to the quality of the waters of the State. Therefore, the legislature enacted TPCA as Article 9.5 (Surface Impoundments) of Chapter 6.5 (Hazardous Waste Control) of Division 20 of the California Health and Safety Code with the intent of insuring that existing surface impoundments were either made safe or were closed.

The effect of TPCA was to prohibit discharge (defined to include storage) of liquid hazardous wastes and hazardous wastes containing free liquids to surface impoundments, which did not satisfy specific construction and monitoring standards, by June 30, 1988, or December 31, 1988, depending on the location and characteristics of the impoundment. TPCA allows specific exemptions with varying application and granting deadlines. However, on and after January 1, 1989, all discharge of liquid hazardous wastes and of hazardous wastes containing free liquids to surface impoundments which had not been granted exemptions, and which did not meet specific construction and monitoring standards, was prohibited. There is a rare set of circumstances which may exempt a surface impoundment from the January 1, 1989, deadline.

TPCA is fulfilling its goal of reducing the threat of liquid hazardous wastes to the waters of the State.

VI.D.1. SOLID WASTE DISCHARGE PROHIBITIONS

Discharge is prohibited as follows:

1. Any Class I solid waste material to any location other than Class I solid waste disposal site.
2. Any Class II solid waste materials to any location other than Class I or II solid waste disposal sites.
3. Solid wastes shall not be discharged to rivers, streams, creeks, or any natural drainage ways or flood plains of the foregoing.

VI.E. STORM WATER MANAGEMENT

Storm water runoff can be a significant pollution source. The United States Environmental Protection Agency (U.S. EPA) estimates that at least 33% of all contamination in lakes and estuaries and 10% of all river contamination are caused by storm water runoff. Sources of pollution include runoff from industrial facilities, construction sites, and urban municipalities.

Federal regulations (40 Code of Federal Regulations 122.26) require certain industrial facility owners and/or operators to obtain storm water discharge permits. The specific types of facilities that need coverage is dependent upon the facility's Standard Industrial Classification Code. The program is primarily directed at manufacturing facilities, oil and gas extraction facilities, transportation maintenance facilities (trucking and mass transit), and construction sites (with greater than five acres of land disturbance). In addition, municipalities with populations greater than 100,000 must participate in a municipal storm water permitting program.

In August and September 1992, the State Water Resources Control Board (State Board) adopted the statewide General Construction Activity Storm Water Permit and amended the statewide General Industrial Activities Storm Water Permit. The statewide permits expire five years after adoption. At that time, Regional Boards will most likely adopt Region specific General Permits.

The storm water program objectives include identification and elimination of pollutant contact with storm water by implementation of Best Management

Practices. To obtain coverage under a General Permit, an applicant (i.e., those facilities required under 40 Code of Federal Regulations 122.26) must submit a Notice of Intent and the appropriate fee. The Notice of Intent is an agreement accepting the discharge specifications and monitoring requirements of the General Permit.

General Industrial Permit Requirements include the development of a Storm Water Pollution Prevention Plan and storm water runoff monitoring. The Storm Water Pollution Prevention Plan is a facility specific document which includes: a site description, facility processes, pollutant sources, storm water management system, employee education and training program, and measures proposed to eliminate non-storm water discharges. Minimum monitoring and reporting requirements include: sampling and analysis of four pollutant indicator parameters, wet and dry weather storm water conveyance system inspections, and annual reporting. The Regional Board can recommend additional monitoring parameters based on the presence of specific pollutant sources.

The Construction Permit has similar requirements regarding development of a storm water pollution prevention plan, but mainly deals with reducing pollutant sources associated with erosion and sediment transfer and chemicals used at construction sites. The monitoring requirements are less stringent and no sampling is required.

Annual monitoring reports required by the Industrial permit are due July 1 of each year. Sampling results and annual report information will be used to prioritize Regional Board staff education and enforcement efforts and to develop future group general permits. Compliance is measured through implementation of pollution prevention Best Management Practices, reduction in pollutant loadings, and accurate and timely report submittal.

VI.F. BAY PROTECTION AND TOXIC CLEANUP PROGRAM

The State Water Resources Control Board (State Board) established the Bay Protection and Toxic Cleanup Program in response to legislation enacted in 1989 (Chapter 269; Senate Bill 475 Torres) which added

Chapter 5.6, Sections 13390 through 13396, to the California Porter-Cologne Water Quality Control Act. The Bay Protection and Toxic Cleanup Program is a statewide program that is coordinated with the California Department of Fish and Game and California Environmental Protection Agency's Office of Environmental Health Hazard Assessment. The Water Code requires the State and Regional Water Quality Control Boards to do the following to attain the goals of the Bay Protection and Toxic Cleanup Program:

1. Develop and maintain a program to identify toxic hot spots, plan for their cleanup or mitigation, and amend Water Quality Control Plans/Policies to abate toxic hot spots;
2. Formulate and adopt a Water Quality Control Plan for enclosed bays and estuaries;
3. Review and, if necessary, revise Waste Discharge Requirements to conform to the Plan;
4. Develop a database of toxic hot spots;
5. Develop an ongoing monitoring and surveillance program;
6. Develop sediment quality objectives;
7. Develop criteria for assessment and priority ranking of toxic hot spots; and
8. Fund the program through fees on point and nonpoint dischargers. (California Code of Regulations, Title 17, Section 2236, authorizes the fee program).

Funds for the Bay Protection and Toxic Cleanup Program will come from user fees, as proposed by State Board staff. User fees have been drafted for the following:

1. All NPDES and WDR dischargers to the ocean, bays, or estuaries;
2. Counties or cities which operate a storm drain system which discharges to the ocean, a bay, or estuary;
3. Dischargers of agricultural drainage to the ocean, bays, or estuaries;
4. Boat construction and repair facilities;

5. Boat marinas and recreational facilities;
6. Operators of commercial harbors and ports; and
7. Operators of dredging discharges.

The fees are based on threat to water quality, as defined by the Waste Discharge System (WDS) ranking system (threat to water quality and complexity criteria).

The Central Coast Regional Board has identified 17 potential toxic hot spots to be addressed under this program. These 17 sites are identified in the Appendix. An assessment/monitoring plan has been developed for potential toxic hot spots. Potential hot spots are ranked according to threat to beneficial uses. The assessment/monitoring plan includes the following:

1. Definition of the extent of degradation;
2. Analysis of existing point and nonpoint discharges in the area;
3. Identification of contaminant sources; and
4. Development of options for removing the threat to beneficial uses, including consideration of additional effluent limits on point and nonpoint discharges and actual cleanup.

VI.G. MILITARY INSTALLATIONS

Military installations throughout the country include some of the largest and most complex contamination problems. In 1987, President Reagan signed into law Executive Order No. 12580 directing all federal facilities to investigate and remediate areas of environmental contamination. As a result, the U.S. Department of Defense has assumed responsibility for investigation and remediation at military bases. Certain environmental restoration projects involving hazardous materials and wastes from past military activities are being addressed through what is known as the U.S. Department of Defense Program. Although U.S. Department of Defense has assumed environmental restoration responsibility, the Regional Board is an active oversight participant.

From its inception, the Regional Board has been involved with a variety of military installation activities. Since 1990, this Regional Board has been actively and extensively involved in U.S. Department of Defense Program investigations and remedial activities at numerous military facilities within its jurisdiction. Active military installations in the Region addressed by the U.S. Department of Defense Program (current as of 1993) include Fort Ord, Presidio of Monterey, Monterey Naval Post Graduate School, Fort Hunter Liggett, Camp Roberts, Estero Bay Defense Fuel Supply Point, and Vandenburg Air Force Base. Fort Ord is unique since it is a closing base and has been identified as a federal superfund site. Four formerly used defense sites in the Region undergoing U.S. Department of Defense remediation (as of 1993) include: Camp San Luis Obispo - California National Guard, Camp San Luis Obispo - San Luis Obispo County, Paso Robles Airport, and Santa Barbara Airport. Potentially additional military facilities can be added to the U.S. Department of Defense Program.

Program Background

Decades of intense military activities have generated significant quantities of hazardous waste. As a result of insufficient internal control, improper handling and disposal practices, and inadequate regulation, military installations are now considered one of the Nation's most significant environmental polluters. Pollution problems are exacerbated by the large base size, the complex and varying missions, as well as routine personnel changes and inconsistent regulation and control. Many bases are actually small to midsize, totally contained communities providing complete services for base operations. Services vary from base to base, but range from aircraft, vehicle, or shop maintenance and repair facilities to laundry services, photo shops, gas stations, and other typical municipal services (e.g., utilities, streets, water supply, sewerage, and solid waste disposal).

Past waste disposal practices in both government and private industries were insufficient to protect public health and the environment. Environmental laws and regulation developed in the 1970s addressed many deficiencies, but federal operations, especially the military, remained inadequately addressed. The military was adamant that sovereign immunity protected them from State and local environmental regulation.

Enforcement actions to force the military to comply with State and federal regulation were often protracted or disregarded. In 1976, U.S. Department of Defense developed its Installation-Restoration Program to help identify, investigate, and cleanup contamination from past operations. Due to funding and timing, Program activities were initiated at most military facilities in the early 1980s.

In 1980, the federal Comprehensive, Environmental Response, Compensation, and Liability Act (CERCLA), which is also referred to as "Superfund" was enacted to address cleanup of hazardous substance disposal and spill sites. The Superfund Amendments and Reauthorization Act was enacted in 1986 to enhance hazardous waste cleanup. The Superfund Amendments and Reauthorization Act, in part, mandated the Defense Environmental Restoration Program specifically to address cleanups at U.S. Department of Defense facilities. The Defense Environmental Restoration Program included an Inland Restoration Program as a component. To carry out required environmental restoration at its military facilities, U.S. Department of Defense established the Defense Environmental Restoration Account as the funding mechanism.

Executive Order No. 12580 was enacted in 1987 to intensify investigation and remediation of environmental problems. The Executive Order directed all federal agencies to ensure environmental restoration. To comply with this Executive Order, U.S. Department of Defense has assumed lead responsibility to cleanup military bases throughout the world. California has the largest number of active military bases covered by the military cleanup plan.

As a result of Executive Order No. 12580 and growing public awareness, U.S. Department of Defense is now actively pursuing environmental restoration at military facilities. U.S. Department of Defense has demonstrated its restoration sincerity by providing oversight reimbursement to the State. The Defense/State Memorandum of Agreement signed by U.S. Department of Defense and State of California officials, provides State oversight cost reimbursement to a maximum of one percent (1%) of the total cleanup cost. The Memorandum of Agreement requires preparation and administration of a cooperative agreement between the State and Corp of Engineers to verify funding and services for remedial responses. The Memorandum of Agreement lists specific sites for which the State will receive federal funding for its oversight and regulatory involvement. In California,

Regional Boards and the Department of Toxic Substances Control share State regulatory responsibility and reimbursement dollars allocated to the U.S. Department of Defense Program.

To ensure proper regulatory compliance and environmental restoration, Executive Order No. 12580 requires all federal agencies to complete cleanup pursuant to "Superfund." This means cleanups at all military installations must comply with the stringent federal CERCLA requirements, whether or not the base is a listed Superfund site. The Act requires federal facilities which are placed on the Superfund National Priorities List by the U.S. Environmental Protection Agency (U.S. EPA), to conduct cleanup following the National Contingency Plan and U.S. EPA procedures and standards. In this Region, Fort Ord is the only currently listed U.S. Department of Defense Superfund National Priority List site.

In addition to following federal CERCLA requirements, Superfund National Priority List sites must be conducted pursuant to agreements called Federal Facility Agreements. These agreements are between the federal agency owning the base (e.g., Department of the Army at Fort Ord) and the U.S. EPA. The agreements may include certain State agencies. The Fort Ord Federal Facility Agreement includes the Regional Board and Department of Toxic Substances Control as signatories.

By federal law non-Superfund military sites must cleanup hazardous waste releases pursuant to federal Comprehensive, Environmental Response, Compensation, and Liability Act requirements and to State laws. Federal non-Superfund facilities may enter into a State compliance agreement. Such an agreement is called a Federal Facility Site Remediation Agreement. At Vandenburg Air Force Base (a non-Superfund site), a Federal Facility Site Remediation Agreement was signed by the Department of the Air Force, the Regional Board, and Department of Toxic Substances Control in June 1991. Both Federal Facility Agreements and Federal Facility Site Remediation Agreements identify roles, responsibilities, dispute resolution procedures, and schedules.

By signing an agreement (Federal Facility Agreement and Federal Facility Site Remediation Agreement), and following federal CERCLA requirements, site remediation is modified from typical State procedures. The modification eliminates the need for State and local permits and enforcement action. Generally, Waste Discharge Requirements, Cleanup of Abatement Orders, and local agency permits are not imposed. Such provisions were included to ensure compliance with

stringent federal cleanup standards, while limiting permit and enforcement involvement by local or State Agencies. In some parts of the Country, local and State involvement slowed or obstructed cleanup efforts.

The federal CERCLA (Section 121) does require compliance with State and federal laws and regulations which are more stringent than the CERCLA, and which are necessary to ensure site-specific environmental and public health protection. This compliance process is referred to as "Applicable" or "Relevant and Appropriate" requirements, because it allows consideration of either "Applicable" or "Relevant and Appropriate" requirements pursuant to State or federal law and regulations. At Superfund sites, U.S. EPA has final authority to approve "Applicable" or "Relevant and Appropriate" requirements. At non-Superfund sites, the lead State agency is responsible to ensure "Applicable" or "Relevant and Appropriate" requirements are identified.

Federal Comprehensive, Environmental Response, Compensation, and Liability Act (Superfund) Response Process

Although cleanup pursuant to the federal CERCLA is quite complex, it was developed with the intent of simplifying regulatory requirements in a uniform manner and expediting environmental cleanup and restoration. The Act, although similar, is significantly more complex than the Regional Board's typical cleanup procedures pursuant to the California Porter-Cologne Water Quality Control Act. Following is a very simplified summary of the basic "Superfund" response process.

Many initial past military installation investigations included a Preliminary Assessment/Site Inspection. The Preliminary Assessment is an assessment based on existing, readily available information. The Preliminary Assessment attempts to evaluate the magnitude of a potential hazard and identify the source and nature of hazard release. The Site Inspection includes a site visit and possibly sample collection, soil borings, and well installation. The Site Inspection is intended to better characterize the problem and determine the need for further action. Often, information from the Preliminary Assessment/Site Inspection is used to place a site on the Superfund list.

Once a site has been Superfund listed, or has been identified as requiring remedial activities, more in-depth characterization is required. The next phase of remedial activities-site characterization is called the Remedial Investigation/Feasibility Study. The Remedial

Investigation is the mechanism for collecting detailed site data to define fully the nature and extent of contamination. During the Remedial Investigation, treatability studies may be conducted to evaluate available treatment technologies in support of remedy selection. The Feasibility Study focuses on developing and screening specific remedial alternatives. The Feasibility Study goal is to identify preferred cleanup alternatives. The Remedial Investigation/Feasibility Study includes risk assessment, identifies "Applicable" or "Relevant and Appropriate" requirements, and develops cleanup goals.

The next phase is the Proposed Plan, which presents the preferred cleanup alternatives and allows public input. After public comments are considered, a Record of Decision is prepared at Superfund sites. The Record of Decision establishes cleanup levels and discharge standards and is based, in part, on identified "Applicable" or "Relevant and Appropriate" requirements. When the Record of Decision is complete and acceptable, the selected remedy is administratively approved by the military department, U.S. EPA, and the State (Regional Boards and Department of Toxic Substances Control). The final cleanup levels are established and "frozen" in the Record of Decision. Agencies that signed the Federal Facility Agreements also sign the Final Record of Decision. At non-Superfund sites in California, the typical document establishing the cleanup levels and discharge standards is called the Remedial Action Plan. The Remedial Action Plan is signed by the agencies that signed the Federal Facility Site Remediation Agreement. Decision Documents are used sometimes to identify cleanup levels for individual sites at non-Superfund installations. Agencies and the public can petition U.S. EPA to change the Record of Decision levels (or the State to change the Remedial Action Plan), if substantial evidence is available demonstrating that an established cleanup level is not protective of human health and the environment.

Once the Record of Decision (or Remedial Action Plan) is signed, Remedial Design plans are prepared to implement the Record of Decision. Remedial Action, the long-term remediation, begins when Remedial Design and construction are complete. Operation and maintenance, including monitoring, evaluate long term performance and ensure that the Remedial Action is carried out as intended. Long term remediation (e.g., ground water cleanup) continues until conditions of the Record of Decision (or Remedial Action Plan) have been met. Remediation progress must be evaluated at least every five years.

The federal CERCLA includes the Removal Action process to allow remediation of small/limited areas of contamination or time critical cleanups. A Removal Action may be undertaken at any time to address problems that do not require a full scale remediation project. Removal Actions are short term activities that remove immediate threats to public health or that can be implemented in a timely manner. Generally, Removal Actions are limited to \$2 million and are completed in twelve months or less (e.g., removal and proper disposal of a small volume of surface soil contamination).

It is worthy to note that environmental assessment is addressed during the Remedial Investigation/Feasibility Study process. All military installations must comply with the National Environmental Policy Act by preparing an Environmental Impact Statement or Finding of No Significant Impact. An Environmental Impact Statement is similar to an Environmental Impact Report and a Finding of No Significant Impact is similar to a Negative Declaration in California. In California, National Environmental Policy Act compliance may not be sufficient to address all environmental impacts; thus, environmental assessment must also comply with the California Environmental Quality Act.

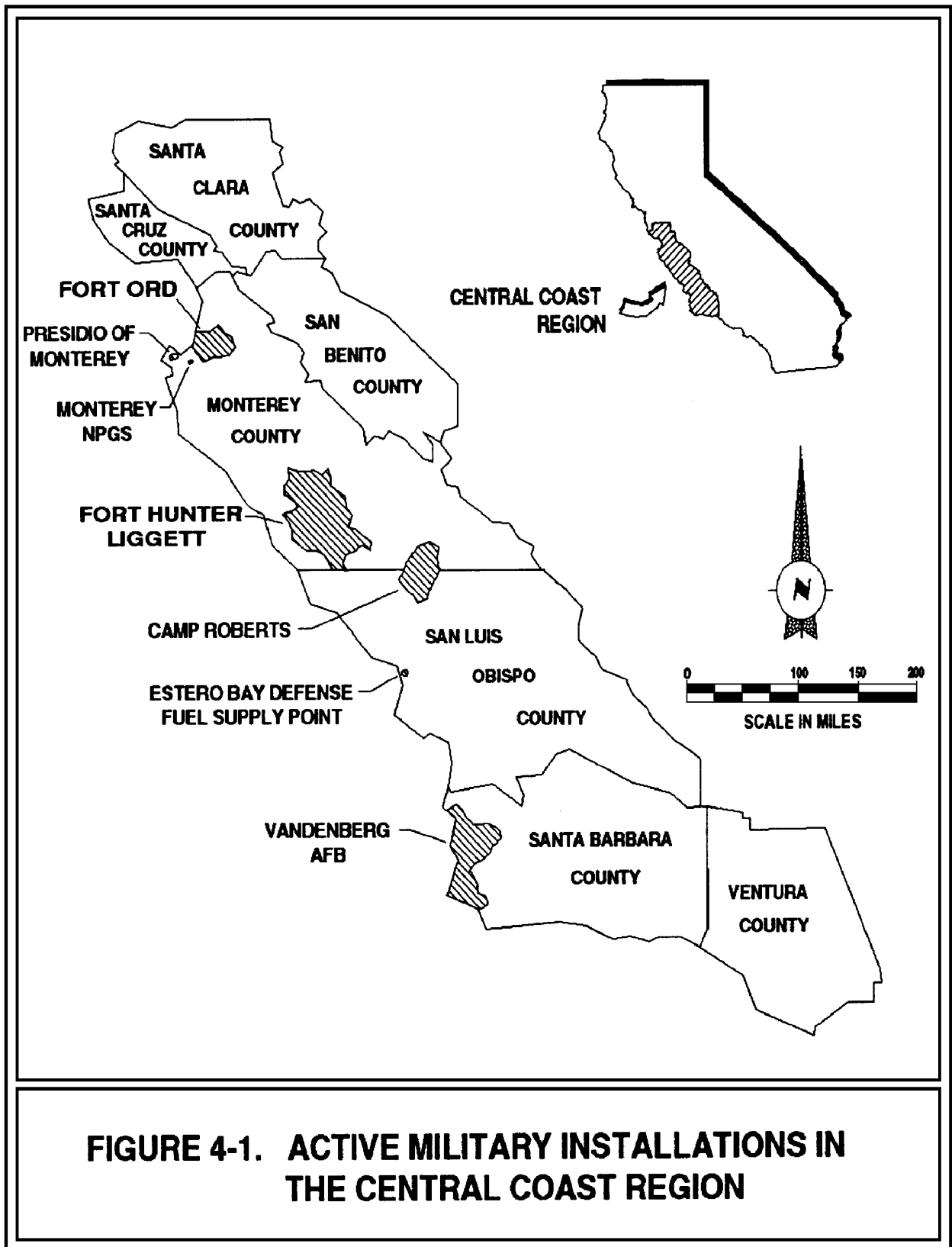
Regional Board Responsibility

The federal Clean Water Act and the California Porter-Cologne Water Quality Control Act give the Regional Board regulatory responsibility and authority to protect water quality, including waters within and beneath federal lands. The primary role of the Regional Board and its staff, relative to military installations (U.S. Department of Defense Program) is to ensure that waters of the State are adequately protected. Involvement includes review and direction of all investigation and remediation documents, site visits to guide field activities, and oversight to ensure that cleanup/remediation is carried out properly to protect beneficial uses of water resources. Identification of "Applicable" or "Relevant and Appropriate" requirements and direction on cleanup level establishment require considerable involvement by the Regional Board and its staff.

Typically, the U.S. EPA is the lead regulatory agency at Superfund sites (e.g., Fort Ord). The Regional Board and Department of Toxic Substances Control are responsible State agencies. In the past, at non-Superfund sites (all other military installations in the Region) either the Regional Board or Department of Toxic Substances Control has been the lead regulatory agency. At military installations where water quality

and public health is threatened or impacted due to the release of hazardous substances, the Regional Board and Department of Toxic Substances Control may have overlapping jurisdiction. A Memorandum of Understanding exists between the State Water Resources Control Board, the Regional Boards, and Department of Toxic Substances Control specifying roles and responsibilities in hazardous waste cleanups where overlap may occur. In September 1993, the California Environmental Protection Agency requested the overall State "lead" become Department of Toxic Substance Control's responsibility. This transition should not impact the basic responsibilities. In general, Regional Boards have primary regulatory responsibility for water and soils directly related to water quality protection. Department of Toxic Substances Control has primary regulatory responsibility for public health protection, soil (where waters are not involved), air, and hazardous waste treatment and storage.

In this Region, the Regional Board has been the lead State agency at six of the currently active (1993) U.S. Department of Defense facilities (Vandenberg Air Force Base, Estero Bay Defense Fuel Supply Point, Camp Roberts, Fort Hunter Liggett, Monterey Naval Post-Graduate School, and Presidio of Monterey). These sites are shown in Figure 4-1. The lead may be shared with Department of Toxic Substances Control at Fort Hunter Liggett, since there are several federal Resource Conservation and Recovery Act sites requiring investigation. In California, U.S. EPA has authorized Department of Toxic Substances Control to implement



Resource Conservation and Recovery Act program compliance.

Agreements have been signed only at Fort Ord and Vandenberg Air Force Base in this Region. The Federal Facility Agreements for Fort Ord identifies the Regional Board as a support agency since the U.S. EPA is the lead regulatory agency. The current Federal Facility Site Remediation Agreement identifies the Regional Board as the lead agency at Vandenberg Air Force Base. Agreements could be negotiated at other military installations, or re-negotiated when they currently exist, if and when it becomes necessary to clarify roles and responsibilities. Changes are being considered in California to streamline regulatory processes associated with military installation cleanup, particularly at closing bases. The California Environmental Protection Agency has recently designated (September 1993) Department of Toxic Substances Control as the overall State lead at military installations. This designation will impact program activities, roles, and responsibilities.

VI.H. SPILLS, LEAKS, INVESTIGATIONS AND CLEANUP PROGRAM

The Spills, Leaks, Investigations, and Cleanup program was established to allow Regional Boards to address water quality problems and potential problems resulting from discharges not covered by other State programs. Investigations and cleanups of Spills, Leaks, Investigations, and Cleanup program sites proceed as described in State Board Resolution No. 92-49 explained in the "Hazardous Waste Compliance Issues" section later in this chapter.

Spill, Leak, and Complaint Responses

Regional Board staff responds to complaints of nuisance conditions (e.g., odors from sewage treatment plants) and discharges or threatened discharges of substances which may impact ground and/or surface water quality. Complaints are followed up as soon as feasible. Proper response to a complaint includes the following:

- Completion of a Central Coast Region spill report form.
- Notification to other responsible agencies, or interested parties, as needed.
- Site inspection to determine validity of the complaint and to assess the situation, including determination of responsible party/parties.
- Written follow-up as needed (letters, cleanup or abatement orders, and/or waste discharge requirements)
- Except in cases where anonymity is requested, notification to complainant of findings and subsequent actions, if any.

Except for a discharge in compliance with waste discharge requirements, any person who causes or permits any reportable quantity of hazardous substance or sewage to be discharged in or on any waters of the State, or discharged or deposited where it is or probably will be discharged into or on any waters of the State, shall, as soon as possible, notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan. The person shall also immediately notify the State Board or the appropriate Regional Board of the discharge (California Porter-Cologne Water Quality Control Act Section 13271).

Similarly any person who discharges any oil or petroleum product under the above stated conditions shall, as soon as possible, notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State oil spill contingency plan. Immediate notification of an appropriate agency of the federal government, or of the appropriate Regional Board (in accordance with the reporting requirements set under California Porter-Cologne Water Quality Control Act Section 13267 or 13383) shall satisfy the oil spill notification requirements of this paragraph (California Porter-Cologne Water Quality Control Act Section 13272).

The Regional Board staff will assist other agencies and work cooperatively at large-scale hazardous material releases resulting from surface transportation accidents. The Regional Board staff's role is primarily to provide immediate, on-site technical assistance concerning water quality in order to minimize the potential damage to the public health and safety, and the environment. In cases of railroad incidents, Regional Board staff will

work with other agencies pursuant to the Office of Emergency Services Railroad Accident Prevention and Immediate Deployment Plan. Specifically, Regional Board staff are required to:

- Provide information on existing downstream beneficial uses and potential impacts from released substances.
- Provide toxicity information about released substances.
- Set up water sediment monitoring program.
- Collect water samples or provide technical assistance for others to collect samples.
- Coordinate available resources and equipment.

VI.I. UNDERGROUND STORAGE TANK PROGRAM

In 1981, citizens of Santa Clara County determined the cause of numerous birth defects to be polluted ground water. The source of pollution was traced to underground storage tanks leaking chlorinated solvents. This revelation prompted the San Francisco Bay Regional Water Quality Control Board to investigate numerous other underground storage tanks, the majority of which were found to be leaking. The Santa Clara County Fire Chiefs Association then sponsored a task force which developed, in 1982, a Model Hazardous Material Storage Permit Ordinance. The Ordinance addressed materials regulated, secondary containment, permits, inspections, and so forth.

Recognizing the problem was a statewide problem, the Legislature passed the initial State underground storage tank law in 1983, and numerous counties and cities followed with local ordinances to regulate underground storage of hazardous materials. The State law contains a sunset provision with a termination date of January 1, 1998.

Since 1985, over 21,000 leaking tank sites have been reported statewide and over 1250 have been reported within the Central Coast Region. Of the reported cases,

approximately 90% are petroleum product cases and one-third have impacted ground water. As one might expect, Regions with the larger cities (thus more gasoline stations) have the largest number of reported leaks. The same holds true in the Central Coast Region. Santa Barbara County has almost fifty percent of the cases in this Region (up from 37% a few years ago) and San Benito County has only four percent; Monterey County has about twenty percent.

The Health and Safety Code gives both Regional Boards and local agencies authority to oversee investigation and cleanup of leaky Underground Petroleum Storage Tank sites. The California Code of Regulations, Title 23, Chapter 16, Article 11 requires local agencies to oversee leak reporting and tank closures. Two agencies within the Central Coast Region, Santa Clara and Santa Barbara Counties, also provide oversight for cleanup of leaky Tank sites under a Local Oversight Program contract with the State Board.

Unauthorized releases from underground tanks are reported to the Regional Board by local agencies or private parties. Generally, investigation and cleanup of leaky Underground Petroleum Storage Tank sites is shared between the Regional Board and local agencies. Typically the Regional Board oversees cases involving impact to surface and ground water and local agencies oversee impacts to soil. However, in some circumstances the Regional Board oversees both soil and ground water cleanup, and, in Santa Barbara and Santa Clara Counties, Local Oversight Programs oversee both soil and ground water cleanup.

Investigations and cleanup of leaky Tanks are carried out in a manner similar to investigations and cleanups in the Spills, Leaks, Investigations, and Cleanup Program mentioned earlier.

To assist responsible parties to pay for cleanups and to meet federal financial responsibility requirements, the State has established a Tank Cleanup Fund. Money for the fund is generated by a fee paid for each gallon of petroleum delivered to Tanks. Owners and operators of Tanks may draw upon the fund after paying for the initial \$10,000 in cleanup costs. The Fund will pay up to \$990,000 per cleanup.

Underground Petroleum Storage Tank regulations regarding construction, monitoring, repair, release reporting, and corrective action are found in the California Code of Regulations, Title 23, Division 3, Chapter 16. Regulations regarding the State's

Underground Petroleum Storage Tank Cleanup fund are found in California Code of Regulations, Title 23, Division 3, Chapter 18, and regulations regarding underground testers are found in California Code of Regulations Title 23, Division 3, Chapter 17.

VI.J. ABOVEGROUND PETROLEUM STORAGE TANKS

Above ground petroleum storage tanks and associated piping leaks have been found to cause impacts to surface and ground water. Prior to 1990, above ground tank sites were regulated by the United States "Environmental Protection Agency Regulations on Oil Pollution Prevention", 40 Code of Federal Regulations Section 112, as amended. On January 1, 1990, the Above Ground Petroleum Storage Act became effective as Chapter 6.67 (commencing with Section 25270), Division 20, of the Health and Safety Code and amendment to Section 3106 of the Public Resources Code. The regulations require:

- Regional Boards to inspect above ground storage tanks used for crude oil and its fractions;
- Owners or operators of tank facilities to prepare and initiate a spill prevention control and countermeasure plan in accordance with Part 112, Subchapter D, Chapter I, Title 40 of the Code of Federal Regulations by January 1, 1991 and any required monitoring program within 180 days later;
- Tank facility owners or operators to report releases of crude oil and its fractions in excess of one barrel; and
- Owners or operators of tank facilities to submit a storage statement and appropriate filing fee every two years.

The Above Ground Petroleum Storage Act provides for recovery of cost incurred by Regional Board staff for oversight of above ground tank site cleanups.

VI.K. CALIFORNIA CODE OF REGULATIONS, TITLE 23, CHAPTER 15

The California Code of Regulations, Title 23, Chapter 15 (Chapter 15) contains minimum, prescriptive standards for proper management of applicable wastes. Landfills, surface impoundments, septage and sludge disposal, mining operations, confined animal facilities, and some oil field exploration and production facilities are regulated according to Chapter 15. Regional Boards may impose more stringent requirements to accommodate regional and/or site-specific conditions. Factors affecting site specific considerations include: depth to ground water, permeability of underlying soils, geologic structure, importance of underlying ground water uses, waste characteristics, ability to remediate leaks, adequacy of the monitoring system, proximity of beneficial uses such as aquatic life, and others.

Dischargers may propose engineering alternatives to the construction or prescriptive standards contained in Chapter 15 if they can show the prescriptive standard is not feasible (i.e., too difficult or costly to implement, or not likely to perform adequately under the given circumstances). The proposed alternative must be able to provide equivalent management of the waste, and must not be less stringent than the prescribed standards.

Discharges to land which may be exempt from Chapter 15 are listed in the Basin Plan Waiver Policy in Chapter Five.

Wastes fall into four categories under the current classification system. These four categories are: Hazardous, Designated, Non-Hazardous, and Inert, and are defined in Article 2 of Chapter 15. Hazardous and Designated wastes can often be generated by the same source and may differ only by their concentrations of given constituents.

Wastes must be disposed of differently depending on their liquids content and the waste category into which they fall. A table containing the Summary of Waste Management Strategies for Discharge of Waste to Land is provided in the appendix.

Receiving water monitoring is required at all waste management units. Article 5 discusses the monitoring requirements for the various classes of waste management units, and describes the progressive phases of monitoring.

The routine ground water monitoring conducted during the entire compliance period of a project's life is referred to as "detection monitoring". If a release (leak) is detected during the course of detection monitoring, an "evaluation monitoring" program must be established. If the evaluation monitoring verifies the presence of a leak, a decision must be made as to whether the release represents a significant enough threat to water quality and the environment to warrant corrective action. If the leak is a significant water quality threat, a "corrective action program" must be established, including monitoring of the effectiveness of corrective action, and conducted until the problem has been successfully corrected.

Vadose zone monitoring must be conducted at all waste management units where feasible. Article 5 discusses the minimum requirements for an acceptable vadose zone monitoring program.

Special requirements for confined animal facilities are discussed in Article 6 of Chapter 15 and in Chapter 5 of this Basin Plan. These facilities are also subject to other portions of Chapter 15 as applicable.

Under Chapter 15, mining waste discharges are only subject to the requirements of Article 7, or other portions of Chapter 15 as referenced by Article 7. (Mining wastes are also subject to regulation under the Surface Mining and Reclamation Act, Public Resources Code Title 14, Division 2, Chapter 9).

Discharges of hazardous and nonhazardous waste, and the waste management units at which the wastes are discharged (e.g., landfills, surface impoundments), are regulated by the Regional Board through Waste Discharge Requirements to properly contain the wastes, and to ensure effective monitoring is undertaken to protect water resources of the Region. These waste discharges are also concurrently regulated by other State and local agencies. Local agencies implement the State's solid waste management programs as well as local ordinances governing the siting, design, and operation of solid waste disposal facilities (usually

landfills) with the concurrence of the California Integrated Waste Management Board.

The California Integrated Waste Management Board also has direct responsibility for review and approval of plans for closure and post-closure maintenance of solid waste landfills. The Department of Toxic Substance Control issues permits for all hazardous waste management, treatment, storage, and disposal facilities. The State Board, Regional Boards, California Integrated Waste Management Board, and Department of Toxic Substances Control have entered into Memorandums of Understanding to coordinate their respective roles in the concurrent regulation of these discharges.

The laws and regulations governing both hazardous and nonhazardous solid waste disposal have been revised and strengthened in recent years.

An inactive waste management unit can still pose a threat to water quality. In fact, due to the nature of some wastes and the characteristics of some disposal sites, sometimes water quality problems do not become evident until years after a site has closed. Therefore, Chapter 15 requires all waste management units have a plan for acceptable closure procedures and post-closure maintenance and monitoring.

VI.K.1. SOLID AND LIQUID WASTE REQUIREMENTS (LANDFILLS AND SURFACE IMPOUNDMENTS)

Solid wastes are usually disposed of in a landfill or Solid Waste Disposal Site. A landfill, as defined in Chapter 15, is a waste management unit at which waste is discharged in or on land for disposal. A landfill may be classified as Class I, II, or III, depending on the type of waste being accepted, but the term "landfill" typically refers to a Class III municipal solid waste landfill which accepts only inert or non-hazardous, municipal solid waste. Class I units are for hazardous wastes, Class II units are for designated wastes, and Class III landfills are for nonhazardous wastes as defined in Chapter 15, Article 3. Landfills are an integral component of many communities in the Central Coast Region. Hazardous and/or designated solid wastes must be disposed of in Class I or II landfills or waste piles, respectively, also referred to as Resource Conservation and Recovery Act

or non-Resource Conservation and Recovery Act solid waste management units.

Liquid wastes may not be disposed of to Class III waste management units. Rather, liquid wastes must be discharged to Class I or II surface impoundments, depending on the waste classification.

Discharges from solid and liquid waste management units can impact both ground and surface waters. The receiving water most likely to be at risk from a waste management unit is the ground water beneath the site. Precipitation or runoff may enter the unit and contact the waste, percolate through it, and travel to ground water, carrying constituents of the waste with it to the vadose zone or ground water beneath the unit. Solid waste may contain enough free liquids to form a leachate which can migrate to ground water. Vapors may migrate from a waste management unit into the soils and ground water below the unit. Gases forming in a closed waste management unit may pressurize the unit and force contaminants into the ground water. A liquid waste impoundment may leak its content into the soils and ground water beneath the unit. Liquids may exit a waste management unit and travel to nearby surface waters. Uncontained solid waste may also be transported to surface waters by wind.

The Regional Board regulates all the active waste management units and some of the closed units in the Region under Waste Discharge Requirements which contain pertinent Chapter 15 regulations. Some of the applicable requirements include:

1. Waste management units must be sited in locations where they will not extend over a known Holocene fault, other areas of rapid geologic change or into areas with inadequate separation from ground water.
2. Waste management units must be constructed to minimize (Class III) or prevent (Class I and II) the possibility of leachate contacting ground water. The probability of accomplishing this goal may be improved by siting the unit in an area where the depth to ground water is very great or where natural geologic features will provide containment. A Class III waste management unit is required to have a composite clay and synthetic liner with a leachate collection and removal system, in accordance with federal Subtitle D requirements. New Class I and II

units must also be lined. A discharger may propose engineered alternatives to the Chapter 15 and Subtitle D containment requirements, but the alternatives must provide equal or greater protection to the receiving waters at the site, per Article One.

3. To minimize or prevent the formation of leachate, solid waste management units shall be covered periodically (typically daily) with soil or other approved materials. The importance of effective interim cover is illustrated by recent improvements to some landfill interim covers which resulted in an apparent cessation of ground water degradation. Rainwater surface flow from offsite should be prevented from entering a waste management unit and contacting the wastes in the unit.
4. The potential receiving waters shall be monitored. A waste management unit shall have sufficient ground water monitoring wells at appropriate locations and depths to yield ground water samples from the uppermost water bearing strata with continued saturation at depth, to provide the best assurance of the earliest possible detection of a release from the waste management unit. Perched ground water zones shall also be monitored. Background monitoring should be conducted for at least one year prior to opening a new waste management unit.

Chapter 15 requires vadose zone monitoring at all new sites and at any existing site, unless it can be shown to the satisfaction of the Regional Board no vadose zone monitoring devices would work at the site, or that installation of vadose zone monitoring devices would require unreasonable dismantling or relocating of permanent structures.

5. All operating waste management units must have an approved closure/post-closure monitoring and maintenance plan and their operators must provide the Regional Board with assurance sufficient funds are irrevocably committed to ensure the site will be properly reclaimed and maintained.
6. The operator of a waste management unit must obtain and maintain assurances of financial responsibility for known and foreseeable releases from the unit.

VI.K.2. WASTEWATER SLUDGE/SEPTAGE MANAGEMENT

Wastewater sludge (biosolids) is a by-product of wastewater treatment. Treated domestic sludge is now referred to as biosolids to encourage using this material for fertilizer and soil amendment. Raw sludge usually contains 93 to 99.5 percent water with the balance being solids present in the wastewater and added to or cultured by wastewater treatment processes. Most Publically Owned Treatment Works treat the sludge prior to ultimate use or disposal. Normally, this treatment consists of dewatering and/or digestion.

Treated and untreated sludges may contain high concentrations of heavy metals, organic pollutants, pathogens, and nitrates. Improper storage and disposal of municipal sludges on land can result in degradation of ground and surface water. Therefore, sludge handling and disposal must be regulated.

Septage and grease are usually considered liquid waste, so landfill disposal is usually restricted. Septage, the residual solids periodically pumped from septic tanks, is commonly applied to farm land as fertilizer. Grease waste is usually recycled, but grease trap pumpings are commonly rejected by grease recyclers. Grease and septage usually must be disposed in a Class I or II waste management unit.

The Regional Board will regulate disposal of sludge and septage pursuant to Chapter 15 and Department of Health Services standards for sludge management.

Sludge containing less than 50% solids by weight may be placed in a Class III landfill (see section on Chapter 15) if it can meet the following requirements, otherwise it must be placed in a Class II surface impoundment:

1. The landfill is equipped with a leachate collection and removal system;
2. The sludge must contain at least 20 percent solids if primary sludge, or at least 15 percent solids if secondary sludge, mixtures of primary and secondary sludges, or water treatment sludge; and
3. A minimum solids-to-liquid ratio of 5:1 by weight must be maintained to ensure that the co-disposal

will not exceed the initial moisture-holding capacity of the nonhazardous solid waste. The Regional Board may require that a more stringent solids-to-liquid ratio be maintained, based on site-specific conditions.

4. Non-hazardous sludge containing greater than 50% solids by weight is generally considered solid waste.

Beneficial reuse of sludge/septage is increasing in popularity. Sludges and septage, (including composted, liquid, dewatered and dried sludges) have been successfully used as a soil amendment/fertilizer on farmland, orchards, forest lands, pasture, land reclamation projects (e.g., strip mines and landfills), parks and home gardens. As the concentrations of heavy metals has dropped in municipal sludge, and as advanced sludge treatment methods are utilized, the public's acceptance of beneficial reuse projects has improved. However, improper land application of sludge/septage can cause significant odor nuisance, attract flies, contain high levels of pathogens and heavy metals, and be aesthetically offensive due to the presence of plastics.

Currently, regulation of sludge and septage management projects is under the jurisdiction of the Regional Board. Handling and disposal of sludge/septage can be regulated under Chapter 15 of Title 23, California Code of Regulations and California Department of Toxic Substance Control Standards for hazardous waste management. If sludge is used beneficially, the project may be exempted from Chapter 15, but the Regional Board may issue waste discharge requirements.

The U.S. Environmental Protection Agency (U.S. EPA) has promulgated a policy of promoting those municipal sludge management practices that provide for the beneficial use of sludge and septage while maintaining or improving environmental quality and protecting public health. On February 19, 1993, the U.S. EPA published final sewage sludge regulations in 40 Code of Federal Regulations 503. The 503 regulations are intended to assure that use and disposal of sewage sludges and septage comply with federal sludge use and disposal criteria developed by the U.S. EPA. The State Board or the California Integrated Waste Management Board may develop a State sludge management program consistent with the U.S. EPA's policy and criteria for land application, surface disposal, and incineration of

sludge to seek federal authorization to implement the 40 Code of Federal Regulations 503 sludge regulations.

VI.K.3. MINING ACTIVITIES (NONFUEL COMMODITIES)

The Central Coast has had a rich and varied mining history. Currently extracted products include asbestos, decomposed granite, diatomite, dimension stone, dolomite, gypsum, limestone, sand and gravel, shale, specialty sand and stone. The hundreds of inactive metal mines and prospects appear to be the worst polluters though. Mercury, used partly to amalgamate gold ore, was mined from the Little Bonanza deposit, San Luis Obispo County, as early as 1862. The Buena Vista Mine, which ceased production in 1970 or 1971, is believed to have been the last mercury producer in the Central Coast Region. Chromite deposits have been mined in San Luis Obispo County since about 1870. By 1944, and probably until the demise of production possibly 20 years ago, San Luis Obispo County produced more chromite than any other California county. Other products mined or prospected for historically include gold, silver, manganese, magnesium, antimony, copper, nickel, iron, barite, coal, feldspar, gemstones, biotite, molybdenum, peat, phosphate, sodium sulfate, sulfur, titanium, uranium, zircon, and possibly platinum.

The extent of environmental degradation by all mining ventures is not yet known. Active operations are regulated individually pursuant to the California Code of Regulations, Chapter 15, the Porter-Cologne Water Quality Control Act, the California Surface Mining and Reclamation Act and/or the federal Clean Water Act (including the NPDES permit program). About 25 active mines currently hold Waste Discharge Requirements and/or NPDES surface water discharge permits and a few operations have been granted waivers. Chapter 15 land disposal requirements are imposed as required.

Inactive operations with responsible parties fall under the same purview, as warranted. Inactive mines, with or without responsible parties (those without are considered abandoned) may be remediated as federal Superfund sites pursuant to federal Comprehensive, Environmental Response, Compensation, and Liability Act, or as State Board Cleanup and Abatement Account sites. Low interest loans or government or academic grants may, in rare cases, be applied to inactive mine remediation.

Mines are subject to the Resource Conservation and Recovery Act, although comprehensive regulations have not yet been written. If hazardous constituents are present, Resource Conservation and Recovery Act, Subtitle C, and California Code of Regulations Title 22 may apply to active and inactive sites.

VI.K.4. OTHER INDUSTRIAL ACTIVITIES

Cement Industry -- Concrete manufacturing operations generate two significant types of solid waste, kiln dust and "off-specification" concrete. The first, kiln dust, is classified as a designated waste under Title 22 and is typically disposed of in Class II or III landfills operated by the concrete manufacturers. The second waste, "off-spec" concrete, is generated in much greater quantities and, while classified as a hazardous waste due to its very high pH (often ranging from 12.5 to 13.5 pH units), is frequently dumped on-site at the concrete plants and spread.

Cement batch plants generate large quantities of liquid and semi-solid wastes from rinsing of cement trucks and/or cement covered equipment. This waste, referred to as "washout" is very alkaline (pH may be as high as 12.5 in fresh cement), is high in total dissolved solids, and may contain assorted heavy metals. Washout may also contain various air-entrainment additives or other chemicals.

The Regional Board regulates cement kiln dust disposal and all ready mix cement plants where water quality could be impacted. Wastewater from cement batch plants is considered to be a designated waste, and may need to be discharged to a lined impoundment, if site-specific characteristics (e.g., soil type, depth to ground water, ground water quality, etc.) will not protect ground water from degradation. The Regional Board will consider, on a case-by-case basis, the need to line cement wastewater ponds. Solid or semi-solid wastes should be deposited in landfills or other legal points of disposal unless the discharger can demonstrate the waste will not pose a threat to water quality if deposited onsite.

Asphalt production -- Asphalt batch plants generally involve mixing heavy long chain hydrocarbons with aggregates. Occasionally other hydrocarbon sources (diesel and gasoline contaminated soil) are mixed with asphalt as a beneficial reuse. Diesel fuel and other solvents are used to clean equipment and as "lubricants" to prevent asphalt from sticking to equipment. Large quantities of these materials are generally stored on-site. Water quality can be significantly degraded if these materials reach water courses. Waste control measures are fairly straightforward at such sites. Petroleum products should be stored in tanks, and the tanks placed in lined holding areas. If spillage to soil occurs, contaminated soils should be scraped up, stored on a liner, and incorporated into asphalt as soon as possible. A berm (or other runoff control) should be placed down gradient from earthen material stockpiles.

Oil Field Exploration and Production Facilities -- Oil exploration and production is a thriving business in the Central Coast Region. Although drilling muds are exempt from Resource Conservation and Recovery Act, Oil Exploration and Production Operations are often subject to the requirements of Chapter 15 because they represent a threat to water quality. Due to the significant Chapter 15 workload, remote oil operations may not reach the top of the regulatory priority list. The Interstate Oil and Gas Compact Commission recently recommended:

"The review team recommends State Board obtain the resources necessary to fully discharge its responsibilities...seek adequate resources from the legislature or use some other mechanism to enable Regional Boards to process applications for WDRs in a timely manner...One option is to remove or raise the statutory cap on discharger fees so that State Board may restructure its fee system to improve its equity and cure substantial resource shortcomings."

The Interstate Oil and Gas Compact Commission also commended the Central Coast Regional Board for having a road spreading policy. This policy, Resolutions No. 73-05 and 89-04, is located in the appendix.

VI.L. RESOURCE CONSERVATION RECOVERY ACT (SUBTITLE D)

Policy for Regulation of Discharges of Municipal Solid Waste

On June 17, 1993, the State Water Resources Control Board (State Board) adopted Resolution 93-62, entitled Policy For Regulations Of Discharges Of Municipal Solid Waste. A copy of this policy is available in the appendix.

The Policy implements the State Board's regulations governing the discharge of waste to land, California Code of Regulations, Title 23, Chapter 15 (23 California Code of Regulations Section 2510 et seq., "Chapter 15"), and implements those water quality related portions of the federal regulations governing the discharge of municipal solid waste at landfills (40 Code of Federal Regulations Section 258.1 et seq., "federal municipal solid waste regulations") that are not addressed by Chapter 15. The federal municipal solid waste regulations apply to all landfills that receive waste on or after October 9, 1991; the majority of the federal provisions become effective on October 9, 1993 (federal deadline).

The Policy directs Regional Boards to revise-or adopt, as appropriate-prior to the Federal Deadline, the waste discharge requirements (WDRs) for each landfill subject to the federal municipal solid waste regulations. The revised WDRs must implement those regulations in the manner described in the Policy and must implement the Chapter 15 regulations as well.

Landfills are subject to Subtitle D in California beginning October 9, 1993 or October 9, 1995 depending on landfill size and whether it is within one mile of a drinking water intake.

These federal regulations apply to municipal solid waste landfills (Class III landfills, under Chapter 15). The Subtitle D regulations outline the classification of municipal landfills, siting criteria, design criteria, operation procedures, water quality monitoring parameters and standards, closure and post-closure care requirements, and financial assurance guidelines similar to Chapter 15. U.S. EPA considers Subtitle D to be minimum standards for landfill operation. States may have equal or more stringent requirements, but may not have less stringent requirements. If a state's landfill regulation program meets U.S. EPA's approval, that state may apply to become an U.S. EPA "approved state" for landfill regulation.

California received Subtitle D approval in October 1993 and will be able to consider engineering alternatives to certain provisions of Subtitle D.

VI.M. SOLID WASTE WATER QUALITY ASSESSMENT TEST

In 1984, California Porter-Cologne Water Quality Control Act Section 13273 was adopted to require operators (and/or owners) of active and inactive solid waste disposal sites to perform a Solid Waste Assessment Test investigation. About 150 sites per year are to be analyzed statewide. The State Board has approved a statewide ranked list including 2,242 sites in 15 ranks. It has prioritized all sites on the basis of the potential threat to water quality and has established schedules for Investigation Workplan (Workplan) and Solid Waste Assessment Test report's submittals. The Central Coast Region's 15 ranks include 131 sites. Test reports are due the first day of July each year, depending on their ranking. Rank One sites were due July 1, 1987.

If monitoring information conclusively demonstrates hazardous waste is migrating, or has migrated to State waters, the site owner/operator may request a waiver of

the Test reporting requirements pursuant to Water Code Section 13273(c). Waiver requests are usually requested within 120 days of the notification date. Water Code Section 13273.1 allows the site operator to request an exemption from Test reporting requirements by submitting a Solid Waste Assessment Questionnaire. Questionnaires may be submitted if a site contains less than 50,000 cubic yards of waste and is not known nor suspected of containing hazardous substances, other than household hazardous wastes. Based on this Questionnaire, the Regional Board may exempt the Operator from all or part of the Solid Waste Assessment reporting requirements.

Solid Waste Assessment Test reports are required to contain:

1. An analysis of the surface and ground water on, under, and within one mile of the solid waste disposal site to provide a reliable indication whether there is any leakage of hazardous waste.
2. A chemical characterization of the soil-pore liquid in those areas which are likely to be affected if the solid waste disposal site is leaking, as compared to geologically similar areas near the solid waste disposal site which have been affected by leakage or waste discharge (Porter-Cologne §13273[b]).
3. A finding whether hazardous waste is leaching into surface or ground water on, under, and within one mile of the disposal site.

If hazardous waste has migrated, the Regional Board must notify the Department of Health Services and the Integrated Waste Management Board, and take appropriate remedial action (Porter-Cologne §13273[e]).

More than eighty percent of Test sites (mostly unlined) evaluated in all climates and geologic terrain in California have been found to impact ground water quality as part of the Solid Waste Assessment Test program.

From the beginning, the Test program was supported by the California General Fund. In recent years, agencies with programs with such funding have been under increasing pressure to find alternative funding or face elimination. These pressures resulted in the Test Program being understaffed and, in the summer of 1991, eliminated. At that time, almost 200 Test Reports had been accepted and reviewed by the Regional Water

Boards. However, a backlog of nearly 300 additional Test Reports had been submitted and had not been reviewed. The Central Coast Region had reviewed and accepted 29 reports, however 14 were backlogged.

In 1992, the Legislature adopted Assembly Bill 3348 (Eastin) which allocated \$2,500,000 from the Integrated Waste Management Board's "Solid Waste Disposal Site Cleanup and Maintenance Account" to the State and Regional Boards to fund the review of the above backlog. This law restricted these funds to the review of Solid Waste Assessment Reports from Ranks One through Five only and required the work be in accordance with a Memorandum of Understanding between the Regional Boards and the California Integrated Waste Management Board. This Memorandum of Understanding was signed by the Executive Directors of the two agencies in January 1993.

VII. HAZARDOUS WASTE COMPLIANCE ISSUES

The Regional Board obtains information regarding hazardous waste discharge through two reporting programs. These programs are "Reportable Qualities of Hazardous Waste and Sewage Discharges" and the "Proposition 65" program. These mechanisms are discussed below:

VII.A. REPORTABLE QUANTITIES OF HAZARDOUS WASTE AND SEWAGE DISCHARGES

California Porter-Cologne Water Quality Control Act Section 13271 requires the State Board and the Department of Health Services to adopt regulations establishing reportable quantities for substances listed as hazardous wastes or hazardous materials pursuant to

Section 25140 of the Health and Safety Code. Reportable quantities are those which should be reported because they may pose a risk to public health or the environment if discharged to ground or surface water.

Similarly, the State Board was required to adopt regulations establishing reportable quantities for sewage. These requirements for reporting the discharge of sewage and hazardous materials do not supersede waste discharge requirements or water quality objectives.

The regulations for reportable quantities adopted by the State Board are included in Subchapter 9.2 of the California Code of Regulations.

VII.B. PROPOSITION 65

The Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) went into effect January 1, 1987. Proposition 65 is found in the Health and Safety Code, Section 25249.5, et seq. It prohibits discharges of chemicals known to the State to cause cancer or reproductive toxicity to a potential source of drinking water, with certain exceptions. The Governor is required to publish a list of such chemicals. The list must be updated yearly. The current list is found in 22 California Code of Regulations, Section 12000.

Section 25180 of the Health and Safety Code requires designated governmental employees to disclose information to the local Board of Supervisors and local health officer regarding an illegal discharge of hazardous waste if the discharge is likely to cause substantial injury to the public. A designated employee is one who is required to sign a conflict of interest statement. Any designated employee who knowingly or intentionally fails to report information, as required by Proposition 65, is subject to fines and imprisonment (Section 25180.7). The following information should be reported:

- Discharge type
- How discharge was discovered
- Location of discharge

- Probable discharger
- Possible contacts
- Concentration of contaminant in soil and/or water.

VIII. NONPOINT SOURCE MEASURES

The State Nonpoint Source Management Plan initiated development of specific program objectives to be implemented at the State and Regional level. Currently, Regional Board staff are implementing the following State Board program objectives:

- A. Control of Nonpoint Source pollution (urban runoff; agriculture; land disturbance activities such as road construction/maintenance, land construction, timber harvesting, and mining; hydrologic modification; and individual disposal systems). These activities include outreach, education, public participation, technical assistance, financial assistance, interagency coordination, demonstration projects, and regulatory activities such as imposing septic tank area prohibitions.
- B. Preparation of contracts for projects selected for grant funding. Regional Board staff also participate in these projects by providing technical assistance and publicizing their results.
- C. Implementation of the 1990 Coastal Zone Act Reauthorization Amendments, as developed by the State Board and the California Coastal Commission. This shall be an enforceable Nonpoint Source Management Program to control land use and anthropomorphic activities impacts that have a significant affect on coastal waters. (Further discussion of the Amendments is provided later.)
- D. Initiation of nonpoint source watershed pilot programs.

Using State program objectives, Regional Board staff developed task-specific workplans to address nonpoint sources of pollution. For the Central Coastal Region, the following tasks are managed and implemented by the Nonpoint Source Program staff:

Task 1: Water Quality Assessment

Regional Board staff reviewed and updated the nonpoint source portion of the Water Quality Assessment and prepared water body fact sheets. (The Water Quality Assessment and water body fact sheets are discussed in Chapter Six.)

Task 2: Watershed Studies/Planning

Three impaired watersheds (Morro Bay Watershed, San Luis Obispo Creek Watershed, and San Lorenzo River Watershed) have been targeted for intensive activity. Major activities for San Luis Obispo Creek watershed include:

1. Develop a Demonstration "Total Maximum Daily Load" model.
2. Create a "San Luis Obispo Creek Riparian Task Force".
3. Implement a riparian corridor restoration project.
4. Identify major nonpoint pollutants and sources.
5. Develop a watershed management program.

For Morro Bay watershed, the activities include:

1. Develop a long term monitoring program to assess water quality improvements associated with the implementation of nonpoint source pollution control measures.
2. Develop funding for the long term monitoring program.
3. Implement a sediment reduction program using best management practices.
4. Participate in the Morro Bay Task Force.

For San Lorenzo River watershed, the activities include:

1. Develop a detailed assessment of Nonpoint Source impacts in the watershed.
2. Develop a wastewater management plan for on/off-site wastewater disposal.

3. Develop of a nutrient objective for the river.
4. Conduct experimental on-site wastewater treatment to reduce nitrogen discharge into the environment.

Task 3: Outreach Program

Staff meets regularly with individuals and local government agencies to promote education and solutions on Nonpoint Source problems. Additionally, the use of grant and loan resources to correct Nonpoint Source problems is emphasized during outreach activities.

Specific outreach activities include participation on the San Luis Obispo Creek Riparian Task Force, Morro Bay Task Force, and various 319(h)/205(j)/Basin Planning Technical Advisory Committees, and development of grant applications with local agencies.

Task 4: Project Tracking and Participation

Regional Board staff prepare contracts, coordinate with project proponents, track project progress, review and approve invoices, and provide technical support for Nonpoint Source grant funded projects.

VIII.A. COASTAL ZONE ACT REAUTHORIZATION AMENDMENTS

In November 1990, Congress enacted Section 6217 of the Coastal Zone Act Reauthorization Amendments to help address the problem of nonpoint source pollution in coastal waters. Section 6217 requires that coastal states with federally approved coastal management programs develop Coastal Nonpoint Pollution Control Programs. The legislative history indicates that the central purpose of section 6217 is to strengthen the links between federal and State coastal zone management and water quality programs in order to enhance efforts to manage land use activities that degrade coastal beneficial uses. The State coastal zone management agency designated under Section 306 of the Amendments and nonpoint source management agency designated under section 319 of the Clean Water Act

will have a dual and co-equal role and responsibility in developing and implementing the coastal nonpoint program.

The program gives the U.S. Environmental Protection Agency (U.S. EPA) and the National Oceanic and Atmospheric Administration joint authority to approve programs developed by the State to address 6217 requirements.

The State agencies chosen to develop California's Coastal Nonpoint Pollution Control Program are the State Board and the Coastal Commission. The statute requires that the State program be "coordinated closely with State and local water quality plans and programs." This means that the State's nonpoint source programs under Sections 208 and 319 of the Clean Water Act and the coastal program must be examined to determine if they comprehensively address land use activities and anthropomorphic effects that have a significant effect on coastal waters. In addition, the State agencies are charged with developing a coordinated program that:

- identifies categories of nonpoint sources that adversely impact coastal waters;
- describes management measures to be implemented;
- identifies the land uses and critical coastal areas that will require more stringent or additional management measures;
- describes the State-developed additional management measures to be implemented in critical areas;
- documents the authorities the State will use to implement both the guidance and additional management measures, including designation of a lead agency for each source category and/or subcategory; and
- sets forth a schedule to achieve full implementation of the guidance management measures within three years of program approval by U.S. EPA and National Oceanic and Atmospheric Administration, and full implementation of additional management measures within six years of program approval.

The Coastal Commission and the State Board staff have been working on a strategy to develop the required Coastal Nonpoint Pollution Control Program plan. Recently, the State Board directed staff to review and

revise the statewide Nonpoint Source Management Plan to include a strong coastal component. Revision of the Plan is intended to satisfy the requirements of Section 6217 within the existing framework of current nonpoint source activities.

On a Regional Board level, staff has been involved with the statewide program since 1991. A pilot project, "The New Coastal Nonpoint Pollution Control Program using the Morro Bay Watershed as a Model" was performed to assess the feasibility of establishing the Coastal Nonpoint Pollution Control Program in California. Regional Board staff supplied technical information and reviewed reports. Concerted planning and implementation efforts on target coastal watersheds such as Morro Bay will be major accomplishments to satisfy Coastal Nonpoint Pollution Control Program requirements. As the program goes statewide, Regional Board staff will attend technical advisory committee meetings and will work closely with staff of the State Board and other Regional Boards, as well as staff of other relevant local, State, and federal agencies to develop a workable Coastal Nonpoint Pollution Control Program.

Wastewater originating from nonpoint sources includes those from urban runoff, agricultural activities, on-site sewage disposal systems, and land disturbance activities. Management of these types of nonpoint source discharges are discussed in the following section. The Regional Board will be developing management practices for marinas and recreational boating; hydromodification facilities; and wetlands, riparian areas, and vegetated treatment systems at a future date.

VIII.B. URBAN RUNOFF MANAGEMENT

The effect of urban runoff on receiving water quality is a problem which has only recently come to be recognized. Most of the work up to the present has centered on characterizing urban runoff: concentrations of various constituents have been measured, attempts to relate these to such factors as land use type and rainfall intensity have been made, and studies concerning the amounts of these constituents present on street surfaces have been conducted. It appears that considerable quantities of contaminants, heavy metals in particular,

may enter the receiving waters through urban runoff. The federal Water Pollution Control Act Amendments of 1972 stress future "control of treatment of all point and nonpoint sources of pollution." Thus the federal government has concluded that nonpoint sources, such as urban runoff, are indeed deleterious to the aquatic environment and that measures should be taken to control such emissions.

There are four basic approaches to controlling pollution from urban runoff: (1) prevent contaminants from reaching urban land surfaces, (2) improve street cleaning and cleaning of other areas where contaminants may be present, (3) treat runoff prior to discharge to receiving waters, and (4) control land use and development. Which approach or combination of approaches is most effective or economical has not yet been studied extensively. Thus only the basic characteristics of each approach can be discussed. In addition to these direct approaches, measures to reduce the volume of runoff from urban areas are also available.

VIII.B.1. SOURCE CONTROLS

The first approach, which emphasizes source control, has many aspects. Tough effective air pollution laws can probably aid in reducing the amount of certain materials deposited on the land. An obvious example is lead in automobile exhaust emissions. Effective anti-litter ordinances and campaigns can aid in reducing floatable materials washed to surface waters. These materials are objectionable primarily from an aesthetics viewpoint, although water fowl can be affected by plastics. New construction techniques may reduce emissions to receiving waters. Erosion can be decreased by seeding, sodding, or matting excavated areas as quickly as practicable. Construction in certain critical areas can be limited to the dry season. Stockpiling of excavated material can be regulated to minimize erosion. Control of chlorinated hydrocarbon pesticide usage would reduce the amounts found on urban land surfaces and thus reduce the amounts washed to natural waters.

VIII.B.2. STREET CLEANING

The second approach to reducing pollution from urban runoff involves improving street cleaning techniques. Generally, street cleaning as presently practiced is intended to remove large pieces of litter which are aesthetically objectionable. The removal of fine material which may account for most of the important contaminants is minimal. It may be possible to design mechanical sweepers to remove a greater fraction of the fine material. Alternatively, vacuum-type street cleaners could produce better results.

In addition to streets, sidewalks and roofs contribute large amounts of runoff. Controlling contaminants present on these surfaces would be more difficult and would be up to individuals. Advertising campaigns would probably be unproductive and legislation would be unworkable except perhaps in specific, localized situations. Therefore, contaminant removal will probably be limited to street surfaces.

In many areas, streets are cleaned by flushing with water from a tank truck. If catch basins are present, this material may be trapped in them. If catch basins do not exist, the material will be simply washed to the storm sewers where subsequent rainfall will carry them to surface waters. Where catch basins are regularly cleaned out, they can be effective in removing materials during runoff. Where they are allowed to fill up with material, they add to the pollution loading during a storm by discharging septic material. In any case, catch basins usually exist in older urban areas and have a rather low efficiency in removing contaminants from storm water.

VIII.B.3. TREATMENT

The third approach to reducing the effects of urban runoff on receiving water quality involves collecting and treating the runoff. Physical or physical-chemical treatment would be required; the intermittent nature of storm flows precludes biological treatment. Examples of possible treatment processes are simple sedimentation, sedimentation with chemical clarification, and dissolved air flotation. In addition to cost, a principal problem with this approach is collection. Present storm sewerage systems generally drain to open creeks and rivers or directly to tidal waters. Even if treatment facilities were located at

various sites in the Basin, a massive collection system would have to be built.

The economic question of "treatment vs. transport" would have to be studied with specific regard to storm water runoff. Local sewage treatment plants abandoned in favor of regional facilities could possibly be utilized in such a program. One method of cutting down the peak flow capacity required is to provide storage volume in the collection system.

Solutions to the problem of preventing water quality degradation by urban runoff are only in the earliest stages of development and consist mostly of plausible hypothesis on how to deal with the problem. Therefore, it is not possible at this time to present a definite plan with regard to this subject. It is probable that research and study which up to now has emphasized defining and characterizing the problem, will turn to developing methods of control. The federal Water Pollution Control Act Amendments of 1972 state specifically that the EPA is authorized to conduct and assist studies "which will demonstrate a new or improved method of preventing, reducing, and eliminating the discharge into any waters of pollutants from sewers which carry storm water..." Considerable progress will be made during the next few years.

Information should be collected and studied so that a workable plan can be implemented in the future.

VIII.B.4. CONTROL OF URBANIZATION

A fourth approach is to encourage controls on urbanization which will either reduce the volume of runoff or at least not cause runoff to increase as a result of urban growth. The usual pattern is that increased urbanization leads to higher runoff coefficients, reflecting the many impervious surfaces associated with development. Roof drains to storm sewers, paved parking lots and streets, installation of storm sewers, filling of natural recharge areas, and increased efficiency in realigned and resurfaced stream channels all are characteristics of urban growth. Development near streams and on steep slopes is deleterious to water resources; it is less disruptive to develop the lower portions of a watershed than the headwater areas, both from the standpoint of the length of channel affected and the extent of channel enlargement necessary to

convey storm water. Use of porous pavements and less reliance on roof connections to storm drains and more emphasis on local recharge would reduce the peak volume of runoff from storms. Areal mass emissions of urban drainage constituents should be quantified. Urban planning should be more cognizant of land constraints to permit greater natural recharge where possible and feasible and to discourage intensive development of steep land particularly in headwater areas.

VIII.C. AGRICULTURAL WATER AND WASTEWATER MANAGEMENT

Agricultural wastewaters and the effect of agricultural operations are a result of land use practices; controls should ultimately be developed from land use plans. Controls are required to minimize adverse effects from agricultural practices. The following discussion is confined to recommended improvements in practices and to the scope of federal-state permit programs which will regulate certain agricultural activities. The discussion of practices is limited here to animal confinement and irrigation practices. Although Public Law 92-500 defines a confined animal operation as a point source, this plan presents it in the traditional manner of dispersed nonpoint sources. Pesticide use and limits on fertilizer applications are not specifically considered; these materials are covered by appropriate water quality objectives.

VIII.C.1. FEDERAL-STATE PERMITS GOVERNING AGRICULTURAL OPERATIONS

Dischargers of wastes are managed in part by the NPDES permit program. Any person proposing to discharge waste that could affect the quality of the waters of the State must file a report of waste discharge with the appropriate regional board. The Regional Board will prescribe discharge requirements. The requirements implement water quality control plans and take into consideration beneficial uses to be protected.

Public Law 92-500 directed the Environmental Protection Agency to set up a permit system for all dischargers. Agriculture is specifically considered and permits are required for:

1. Feed lots with 1,000 or more slaughter steers and heifers.
2. Dairies with 700 head or more, including milkers, pregnant heifers, and dry mature cows, but not calves.
3. Swine facilities with 2,500 or more swine weighing 55 pounds or more.
4. Sheep feedlots with 10,000 head or more.
5. Turkey lots with 55,000 birds, unless the facilities are covered and dry.
6. Laying hens and broilers, with continuous flow watering, and 100,000 or more birds.
7. Laying hens and broilers, with liquid manure handling systems, and 30,000 or more birds.
8. Irrigation return flow from 3,000 or more continuous acres of land when conveyed to navigable waters from one or more point sources.

The law also provides that the State may administer its own permit program if EPA determines such program is adequate to carry out the objective of the Law. On March 26, 1973, this authority was transferred from the EPA to the State of California for waters within the State. Thus, the Regional Board issues discharge requirements to the agricultural operations covered under the aforementioned guidelines. The State may require discharge permits from any discharger, regardless of size.

VIII.C.2. ANIMAL CONFINEMENT OPERATIONS

Animal confinements such as feedlots and dairy corrals present a surface runoff problem during wet winter flows. Runoff water passes through hillside operations to sometimes contribute manure loads to the surface streams. Stockpiled manure may also add to the

problem. Disposing of washwater and manures from dairies in such a manner that ground waters are not degraded can be a problem. Most dairies have some associated land for waste disposal. The land is devoted to crops and pasture and its assimilative capacity will depend upon the size, crop, crop yield, and the season. During intensive growth periods, crops can utilize more nutrients than in slow growth period. Small dairies with adequate crop land in close proximity may be able to use washwaters year round as a source of nutrients. Large dairies with smaller acreage will view the slurry wastes as a disposal problem, not a resource. Thus, there theoretically exists a threshold size for waste disposal. Regulations to achieve this size would be impractical and unenforceable. Crop land is expensive in the basin and would be difficult to acquire. However, a combination of crop patterns and pasture land best suited for each size operation should be determined and the dairymen should be encouraged to follow such a pattern. Where acreage is not available, mutually advantageous agreements between the dairymen and a neighbor cultivator could be formed for disposal of dairy wastes.

Sumps, holding ponds, and reservoirs holding manure wastes should be protected from flood flows. No pipes, drains or ditches from the milk barn should be allowed to drain in or near a stream channel.

Specific Regional Board policies pertaining to animal confinement operations can be found under "Control Actions" in Chapter Five.

VIII.C.3. IRRIGATION OPERATIONS - NEED FOR SALT MANAGEMENT

Salts originate by dissolution of the more soluble portions of rocks and soil particles in rain water (weathering). Such salts are transported in solution, but are concentrated in soils, waters, and so-called salt sinks due to evaporation from soil and water surfaces and transpiration (use) by crops (plants). This removal of water by evaporation or transpiration leaves salts behind. Salts are concentrated by each successive evaporative loss of water. In time, accumulations of salt can go from no- problem to extreme-problem levels unless some controls are applied.

For irrigated agriculture to continue production into the foreseeable future, this problem of gradual accumulation of salts in soils and waters must be faced and kept under control at acceptable levels. Otherwise, production will decline even under the best management, and no added amount of good management will be able to continue production of the quantities of food crops needed. In most of California's water basins, the rate of export or removal of salts from the basin will need to be increased to more closely match or exceed the rate of salt accumulation. For each basin, not only do the rates of import and export of salts need to be in reasonably close balance, but the balance must also be maintained at a sufficiently low level of salinity to meet the quality demands of the various designated beneficial uses. This is often referred to as maintenance of a "favorable salt balance."

The rate of water quality degradation within a basin which results from inadequate salt exports is slow. It may be so slow that the need for control of salts is believed to be far into the future and of no concern to present planning. However, just as degradation may be a slow process, correction of a critical basin-wide salinity problem is also an extremely slow process. Good planning, now, to control this long-term, slow degradation of our soil and water resources seems the better course of action, rather than to wait until the problem becomes critical. Decisions made, or not made, now can be critical to control in the future.

Agriculture's need for salt management is both for on-farm management and for off-farm (basin-wide) management. The absolute need for discharge of salts by agriculture will create conflicts with other water users - even other agricultural water users.

Compromises and trade-offs will be necessary to reconcile these conflicts; however, necessary motivation for change in management at the farm level will need to be tied to dollars and the economic consequences of "no- change." If required agricultural management changes for essential pollution control result in added costs to the farmer, he has the same hard choices of any other businessman:

1. Absorb the cost with reduced profit
2. Pass on the cost in increased prices to consumers
3. Accept some form of public subsidy to off-set cost

4. Go out of business
5. Change crops grown

In coastal higher rainfall areas, irrigated agriculture could probably continue almost indefinitely, since irrigation would be used primarily during dry summer periods to supplement winter rainfall. Rainfall would be sufficient to flush salts through soils and provide adequate recharge and outflow from the underground water basin toward the ocean for salt control. There is more cause for concern in the drier inland areas such as the Salinas River Sub-basin and in the naturally mineralized ground water areas such as the Santa Maria Valley.

VIII.C.4. IMPROVED SALT MANAGEMENT TECHNIQUES

A concept of minimal degradation should be considered in some areas, but this will need to be coupled with management of the surface and ground water supplies to minimize and correct the effects of degradation that may occur. If complete correction is not possible, improved management will delay the time when salts reach critical levels. Several options available to correct degradation through improved salt management follow.

Improved irrigation efficiency would reduce both potential and actual pollutants in the water moving from surface to ground. Improved efficiency would also reduce total quantities of salts leaching to the water table and cut down on withdrawals or diversions from the limited water supply. Present statewide efficiency of water use may average 50 to 60 percent, but individual uses will vary from an estimated low of 30 percent where water is plentiful and inexpensive to a high of 95 percent where water quantity is limited and/or the price is high.

Implementation of the Leaching Requirement reported by U.S. Salinity Laboratory, Riverside, will help improve efficiency of irrigation. Other research data by this same laboratory has been reported on the effects of low leaching fractions in reduction of salt loads leaching to water tables. The new data offers real incentives to agriculture to improve irrigation efficiency in the form of real dollars saved by the farmer. Real water saved by agriculture can then be used for dilution,

recharge, or nonagricultural uses. True, the salts moving to the water table under these low leaching fractions will be more concentrated, but due to low solubilities of certain salts, a progressive precipitation and removal from solution occurs as the salt concentration in the percolating soil solution rises. As the concentration rises, considerable portions of the low solubility salts come out of solution, e.g., the relatively insoluble lime, dolomite, and slightly soluble gypsum. With these low leaching fractions, salt load to the underground may be reduced as much as 50 percent in some cases. Sodium salts (sodium chloride, and sulfate) are not affected, so in relation to calcium and magnesium salts these sodium salts in the percolating waters increase. The compounds which precipitate are deposited in the lower root zone or below and cause no problem to agriculture except for a few specialized situations which are correctable (lime induced chlorosis). The increased proportions of sodium salts (higher SAR) will not reduce permeabilities of subsoils since salinity remains high enough to continue normal permeabilities of subsoils. The higher sodium (SAR) reaching water tables may reduce hardness slightly, but is not expected to be a problem to users of the underground waters.

Crop production can continue into the foreseeable future in the low rainfall areas if the minimal degradation that almost inevitably will occur is offset (a) by recharge and replenishment of the underground which will furnish dilution water for the added salts and (b) by drainage or removal of degraded waters at a sufficient rate to maintain low salt levels and achieve a satisfactory balance between salts coming into the basin and salts leaving the basin.

To help in recharge and dilution, additional winter runoff can be stored in surface reservoirs for later use for either surface stream or underground water quantity/quality enhancement or maintenance, e.g., Nacimiento and Twitchell reservoirs. Possible future reservoirs may be located on the Arroyo Seco and Carmel rivers. Or winter runoff could be used directly for ground water recharge to enhance flushing and flow-through dilution of salts and pollutants.

Drainage wells which discharge to drains leading to salt sinks are a possibility in removing salty waters, but these have had only limited success in draining high water table areas. However, they might be well adapted to ground water quality maintenance. Such wells could be drilled and operated to recover the salty top layers of water tables where salts are believed to accumulate as a

layer of poorer quality water over the better quality deeper layers. Since most of the movement within water tables is thought to be horizontal and down slope, and vertical mixing is relatively slow, the possibility of recovering polluted upper layers of water tables should be explored as a quality maintenance tool or rejuvenation procedure for degraded water supplies.

Underdrains (tile systems) can aid in both water and salt management. Perched water tables intercept percolating salts, nutrients, and other pollutants and offer real possibilities as an aid in management and protection of the overall water quality of a basin. A "perched" water table is held up and separated from deeper aquifers by a relatively impermeable barrier (soil, rock, hardpan). This barrier often protects the deeper waters from pollution by preventing leakage of polluted waters from above. Perched water tables exist in portions of several basins. Salts and nutrients collected in these perched water tables may be tapped by underdrains (tile systems) and transported through the basin drainage system to disposal sites.

Basin-wide or area-wide drainage systems will be needed in order to move unusable wastewaters to acceptable temporary or permanent disposal sites (salt sinks). On- farm drainage problems will normally be solved at individual farmer expense because of the economics involved--the cost is not prohibitive and the costs of "not-solving" the problem (reduced yields, changing cropping patterns, or going out of business) are unacceptable. The off- farm part of drainage, however, is too big for individual farmers to solve, and some form of collective, organized large scale action is needed. The off- farm problems include collection of discharges, rights-of-way for conveyance, building and maintenance of a drainage system, disposal site acquisition, and management for compliance with discharge requirements.

Acceptable temporary or permanent salt disposal sites (salt sinks) must be designated and used. The Pacific Ocean is the only acceptable sink for most of the Central Coastal Basin; however, Soda Lake and certain highly mineralized ground water basins may be acceptable. To be able to remove salts as required to maintain a low salinity level in any one basin, there must be some other basin or site that will accept the salts. These acceptor areas are known as salt sinks. Without acceptable salt sinks, salt management becomes a long-term losing battle and a frustrating exercise in futility.

Other salt inputs to a basin can be reduced by improved management of other salt sources such as fertilizer, animal wastes, and soil amendments. Regulation may be required but an appreciable improvement can be expected by education of farmers to better understand and better utilize existing information and guidelines. A salt routing approach could be used in areas such as Pancho Rico Creek to permit discharge of highly mineralized wastewater during periods of high flow.

VIII.C.5. MUSHROOM FARM OPERATIONS

Mushroom farm operations present surface or ground water problems if not properly managed.

VIII.C.5.a. TYPICAL MUSHROOM FARM OPERATION

Compost is needed as a growing base medium to produce mushrooms. Typically compost is produced on-site from straw, horse manure, cottonseed meal, or other organic matter. During composting, the organic material breaks down into a useable protein source for mushrooms. Water, added to assist the composting process, is constantly leaching through compost piles. Once compost is ready for use, it is placed in mushroom growing trays. After mushroom harvesting, steaming and fumigation sterilize the growing house and spent compost. Spent compost is then removed to "spent compost storage areas" and marketed as a soil additive or disposed of in some other manner.

VIII.C.5.b. TYPES OF WASTES DISCHARGED

Composting operations are typically carried out on concrete composting slabs. Compost is frequently sprayed with water. Excess water typically drains into a sump. Normally, excess water is recycled by pumping it back to spray the pile. In summer very little runoff or leachate is produced from composting. During the rainy season the sump collects more runoff from the compost slab than is recycled. Discharge to drainage ways or containment sumps may result.

When mushroom beds are irrigated, excess water drains from concrete floors to drainage ways or disposal sumps. This water contains peat moss, soluble substances from beds, salt from salt pans (used to "sanitize" the footwear of persons entering the cultivating room), and whatever is on the floor, such as pesticide residues and mushroom stems, at the time the floor is washed.

Steam is used for tray sterilization and to heat and sterilize growing houses. Prior to entering boilers, water is softened and treated with an organic or inorganic corrosion and scale inhibitors. Salt is used as a water softener regenerant. Discharge of water softener regenerant and boiler blowdown to drainage ways or disposal sumps may occur.

Solid wastes consisting of pesticide bags, mushroom roots and stumps, cardboard boxes, spent compost, and general debris are generated by mushroom farms.

Some of the disinfectants, fungicides, and pesticides being sprayed on the floor, walls, and mushrooms are occasionally washed off during washdown of the facility. Generally, pesticides used in this business have a relatively short life.

Disinfectants, fungicides, and pesticides do not appear to present water quality problems based on inspections and limited sampling. These biocides can be a problem if handled improperly. Surface water runoff entering mushroom farm operations can become contaminated if runoff contacts any of the sources described above.

VIII.C.5.c. POSSIBLE WATER QUALITY PROBLEMS

Compost leachate and irrigation/ washwater is high in biochemical oxygen demand (BOD). BOD is generally considered high if the concentration exceeds 30 mg/l, but this can vary from situation to situation. If discharged to surface waters, these wastes may depress dissolved oxygen to a critical level, and provide a nutrient source for undesirable aquatic growth. Improper disposal may also cause impacts on ground water. Nitrates are a particular concern.

Discharges of water softener regenerant and boiler blowdown may degrade surface and ground waters if improperly disposed. These wastes are high in Total Dissolved Solids, Sodium, and Chloride concentrations. Boiler blow-down may also contain organic or inorganic corrosion and scale inhibitors which could present toxicity problems if improperly disposed. Solid wastes can be a problem if improperly disposed.

VIII.C.5.d. ADDITIONAL CONCERNS

Wastes can create a nuisance. Public health can be jeopardized if vectors develop among solid wastes. Further, odors resulting from storage of wastes can become offensive and may obstruct the free use of neighboring property.

VIII.C.5.e. RECOMMENDATIONS

1. Spent irrigation/washwater and compost leachate may be reused to spray compost piles.
2. Spent irrigation/washwater, compost leachate, and contaminated surface water runoff should be collected for treatment, storage, and disposal in lined ponds, unless shown by geohydrologic analysis that ground water will not be affected. If needed, aeration should be provided to stabilize organic substances and prevent odor problems. Dissolved oxygen of 1.0 mg/l or more is recommended for storage ponds.
3. Mushroom farm wastes, excluding water softener regenerant, may be used to irrigate farm crops during dry weather months. When salt is properly handled, the sodium and chloride content of these waters should be suitable for this purpose. The discharger must demonstrate to the Regional Board that irrigation water will not degrade beneficial water uses.
4. When irrigation is utilized, application rates and irrigation practices should be suitable to the crops irrigated.
5. Water softener regenerant and boiler blowdown should be disposed of separately from spent irrigation/washwater. Since its volume is small and concentration of pollutants is high, it is best to evaporate the liquid on a lined drying bed, or provide a documented test by a registered Engineer or laboratory that the soils permeability in the disposal area is 10^{-6} cm/sec or less. Two drying beds should be used for the purpose of holding salt/regenerant liquid and boiler blowdown waste. Discharges to beds are alternated to allow sufficient drying time.

6. Drying bed residue from any disposal pond should be disposed at a suitable solid waste disposal site.
7. As an alternative, water softener regenerant and boiler blowdown can be hauled in liquid form to a suitable disposal site, or discharged to the ocean through a suitable outfall.
8. Chemical alternatives for sanitizing footwear to replace salt pans should be investigated by farm operators.
9. If used, salt sanitation pans should be at least 4 inches deep and elevated to prevent contact between salt and water. Salt solution should remain in pans until disposed. Spent salt should be dumped into a sealed container and disposed at a suitable site.
10. Solid waste should be routinely collected and disposed at a suitable site.

VIII.C.5.f. PROHIBITIONS

The following activities are prohibited at mushroom farms:

1. Discharge of inadequately treated waste, including leachate, high BOD, high nutrient waste, and contaminated surface water runoff to drainage ways, surface waters, and ground waters.
2. Discharge of untreated water softener regenerant and boiler blowdown waste in a manner that pollutes any non-saline surface or ground water.
3. Discharge and/or storage of waste, including spent compost, in a manner promoting nuisance and vector development.
4. Disposal of sludges, salt residues, pesticide residues, and solid waste in a manner not accepted by the Regional Board.

VIII.C.6. RANGE MANAGEMENT

Rangeland is the most extensive land use type in California, accounting for more than 40 million acres of the State's 101 million acres. As most of the rangelands are located between forested areas and major river systems, nearly all surface waters in the State flow through rangelands. Thus, rangeland activities can greatly impact water quality. In this section, grazing activities are discussed.

VIII.C.6.a. GRAZING

Grazing activities (particularly overgrazing), by contributing excessive sediment, nutrients, and pathogens, can adversely impact water quality and impair beneficial uses. Soil erosion and sedimentation are the primary causes of lowered water quality from rangelands. When grazing removes most of the vegetative cover from pastures and rangelands, the soil surface is exposed to erosion from wind and water. With runoff, eroded soil becomes sediment which can impair stream uses and alter stream channel morphology and results in decreased recharge capacity through clogging of channel bottoms. With steep slopes, highly erodible soils and interim storm events, the sediment delivery ratio (a measure of the amount of eroded soil delivery to a waterbody) on rangeland can be very high. Streambank erosion and lakeshore erosion are other sources of sediment on rangelands. Lakeshores, streambanks, and associated riparian zones are often subjected to heavy livestock use. Trampling and grazing of vegetation contribute to lakeshore and streamside instability as well as accelerated erosion.

Sediments can contribute large amounts of nutrients to surface water. Nutrients, mainly nitrogen and phosphorous, from manure and decaying vegetation also enter surface waters, particularly during runoff periods. Very critical nutrient problems can develop where livestock congregate for water, feed, salt, and shade. Pasture fertilization can also be a source of nutrients to surface waters, as well as a source of pesticides, particularly if flood irrigation techniques are used on rangelands.

Stream zone and lakeshore areas are important for water quality protection in that they can "buffer" (intercept and store nutrients which have entered surface and ground waters from upgradient areas). These "buffer zones" are more sensitive to processes which can increase nutrient discharges such as soil compaction, soil erosion, and vegetation damage than other areas of the rangeland.

Localized contamination by pathogens that could impact human health in surface water, ground water, and soils can result from livestock in pastures and rangelands. Rangeland streams can show increased coliform bacterial levels with fecal coliform levels tending to increase as intensity of livestock use increases. Fecal coliform serve as indicators that pathogens could exist and flourish. The extent of contamination is usually determined by livestock density, sizing, and frequency of grazing, and access to the surface waters.

GRAZING CONTROL MEASURES

Grazing activities occur on both public and private lands in the Central Coast Region. Regulation of grazing on federal lands differs from that on private lands.

Federal lands -- Grazing activities on federal lands are regulated by the responsible land management agency, such as the U. S. Bureau of Land Management or the U.S. Forest Service. Through Memorandum of Understandings and Management Agency Agreements, the Regional Board recognizes the water quality authority of the U.S. Forest Service and U.S. Bureau of Land Management in range management activities on federal lands. Both these agencies require allotment management plans to be prepared for a specific area and for an individual permittee. The Regional Board relies on the water quality expertise of these agencies to include appropriate water quality measures in the allotment management plans. Most allotment management plans include specific Best Management Practices to protect water quality and existing and potential beneficial uses.

Non-federal (private) lands -- The Range Management Advisory Committee is a statutory committee which advises the California Board of Forestry on rangeland resources. The Committee has identified water quality protection as a major rangeland issue and has assumed a lead role in developing a Water Quality Management

Plan for private rangelands in California. Regional Board staff is participating in the Plan's development. Sections proposed for inclusion in the Plan are status of water quality and soil stability on State rangelands, authority, mandates, and programs for water quality and watershed protection, local water quality planning guidelines, sources of assistance, development of management measures (Best Management Practices), State agency water quality responsibilities, and monitoring guidelines. Upon its completion, the Plan will be submitted to the State Board. On private lands whose owners request assistance, the U.S. Soil Conservation Service, in cooperation with the local Resource Conservation Districts, can provide technical and financial assistance for range and water quality improvement projects. A Memorandum of Understanding is in place between the U.S. Soil Conservation Service and the State Board for planning and technical assistance related to water quality actions and activities undertaken to resolve nonpoint source problems on private lands.

On both public and private lands, the Regional Board encourages grazing strategies that maintain adequate vegetative cover to reduce erosion and sedimentation. The Regional Board promotes dispersal of livestock away from surface waters as an effective means of reducing nutrient and pathogen loading. The Regional Board encourages use of Best Management Practices to improve water quality, protect beneficial uses, protect stream zone and lakeshore areas, and improve range and watershed conditions including:

- Implementing rest-rotation grazing strategies,
- Changing the season of use (on/off dates),
- Limiting the number of animals,
- Increasing the use of range riders to improve animal distribution and use of forage,
- Fencing to exclude grazing in sensitive areas,
- Developing non-lakeshore and non-stream zone watering sites,
- Constructing physical improvement projects such as check dams, and
- Restoring riparian habitat.

These same Best Management Practices may result in improved range and increased forage production, resulting in increased economic benefit to the rancher and land owner. The Regional Board also encourages land owners to develop appropriate site-specific Best Management Practices using the technical assistance of the U.S. Soil Conservation Service and the U.S. EPA.

In addition to relying on the grazing management expertise of agencies such as the U.S. Forest Service, U.S. Bureau of Land Management, or Range Management Advisory Committee, the Regional Board can directly regulate grazing activities to protect water quality. Actions available to the Regional Board include:

1. Require that a Report of Waste Discharge be filed, that allotment management plans for specific federal lands be prepared, or that a Coordinated Resource Management Plan be adopted within one year of problem documentation. Such problems indicate impairment of beneficial uses or violation or threatened violation of water quality objectives.
2. Require that all allotment management plans (utilized for federal lands) and Coastal Resource Management Plans contain Best Management Practices necessary to correct existing water quality problems or to protect water quality so as to meet all applicable beneficial uses and water quality objectives contained in Chapters Two and Three, respectively, of this Basin Plan. Corrective measures would have to be implemented within one year of submittal of the allotment management plan or Coastal Resource Management Plan, except where staged Best Management Practices are appropriate. Implementation of a staged Best Management Practice must commence within one year of submittal of the allotment management plan or Coastal Resource Management Plan.
3. Require that each allotment management plan (utilized for federal lands) or Coastal Resource Management Plan include specific objectives, actions, and monitoring and evaluation procedures. The discussion of actions must establish the seasons of use, number of livestock permitted, grazing system(s) to be used, a schedule for rehabilitation of ranges in unsatisfactory condition, a schedule for initiating range improvements, and a schedule for

maintenance of range improvements must include priorities and planned completion dates. The discussion of monitoring and evaluation must propose a method and timetable for reporting of livestock forage conditions, watershed condition, and surface and ground water quality.

4. Require that all allotment management plans and Coastal Resource Management Plans be circulated to interested parties, organizations, and public agencies.
5. Consider adoption of waste discharge requirements if an allotment management plan or Coastal Resource Management Plan is not prepared or if the Executive Officer and the landowner do not agree on Best Management Practices proposed in an allotment management plan or Coastal Resource Management Plan.
6. Decide that allotment management plans and Coastal Resource Management Plans prepared to address a documented watershed or water quality problem may be accepted by the Regional Board's Executive Officer in lieu of adoption of Waste Discharge Requirements.
7. Oversee monitoring of water quality variables and beneficial uses. Provide data interpretation.
8. Encourage the U.S. Bureau of Land Management, U.S. Forest Service, Resource Conservation District, and private landowners to develop watering sites for livestock away from Lake shores, stream zones, and riparian areas.
9. Encourage private landowners to request technical and financial assistance from U.S. Soil Conservation Service, in cooperation with the local Resource Conservation Districts, in the preparation of allotment management plans and the implementation or construction of grazing and water quality improvements.
10. Continue to coordinate with the Range Management Advisory Committee in the development of a water quality management plan for private rangelands.

VIII.D. INDIVIDUAL, ALTERNATIVE, AND COMMUNITY DISPOSAL SYSTEMS

On-site sewage disposal systems and other similar methods for liquid waste disposal are sometimes viewed as interim solutions in urbanizing areas, yet may be required to function for many years. On-site systems can be a viable long-term waste disposal method with proper siting, design, construction, and management. In establishing on-site system regulations, agencies must consider such systems as permanent, not interim systems to be replaced by public sewers. The reliability of these systems is highly dependent on land and soil constraints, proper design, proper construction, and proper operation and maintenance.

If on-site sewage treatment facilities are not carefully managed, problems can occur, including:

- odors or nuisance;
- surfacing effluent;
- disease transmission; and,
- pollution of surface and ground waters.

Odors and nuisance can be objectionable and annoying and may obstruct free use of property. Surfacing effluent (effluent which fails to percolate and rises to the ground surface) can be an annoyance, or health hazard to the resident and neighbors. In some cases, nearby surface waters may be polluted.

On-site sewage disposal systems are a potential mechanism for disease transmission. Sewage is capable of transmitting diseases from organisms which are discharged by an infected individual. These include dysentery, hepatitis, typhoid, cholera, and gastro-intestinal disorders.

Pollution of surface or ground waters can result from the discharge of on-site system wastes. Typical problem waste constituents are total dissolved solids, phosphates, nitrates, heavy metals, bacteria, and viruses. Discharge

of these wastes will, in some cases, destroy beneficial surface and ground water uses.

Subsurface disposal systems may be used to dispose of wastewater from: (1) individual residences; (2) multi-unit residences; (3) institutions or places of commerce; (4) industrial sanitary sources; and, (5) small communities. All individual and multi-unit residential developments are subject to criteria in this section of the Basin Plan. Commercial, institutional, and industrial developments with a discharge flow rate less than 2500 gallons per day generally are not regulated by waste discharge requirements; therefore, they must comply with these criteria. Community systems must also comply with criteria relating to this subject within the Basin Plan. Community systems are defined for the purposes of this Basin Plan as: (1) residential wastewater treatment systems for more than 5 units or more than 5 parcels; or, (2) commercial, institutional or industrial systems to treat sanitary wastewater equal to or greater than 2500 gallons per day (average daily flow). Systems of this type and size may be subject to waste discharge requirements.

Alternatives to conventional on-site system designs have been used when site constraints prevent the use of conventional systems. Examples of alternative systems include mound and evapotranspiration systems. Remote subdivisions, commercial centers, or industries may utilize conventional collection systems with community treatment systems and subsurface disposal fields for sanitary wastes. Alternative and community systems can pose serious water quality problems if improperly managed. Failures have been common in the past and are usually attributed to the following:

- Systems are inadequately or improperly sited, designed, or constructed.
- Long-term use is not considered.
- Inadequate operation and maintenance.

VIII.D.1. CORRECTIVE ACTIONS FOR EXISTING SYSTEMS

Individual disposal systems can be regulated with relative ease when they are proposed for a particular site. For new systems, regulations generally provide for

good design and construction practices. A more troublesome problem is presented by older septic tank systems where design and construction may have been less strictly controlled or where land development has intensified to an extent that percolation systems are too close together and there is no room left for replacement leaching areas. Where this situation develops to an extent that public health hazards and nuisance conditions develop, the most effective remedy is usually a sewer system. Where soil percolation rates are particularly fast, ground water degradation is possible, particularly increases in nitrate concentrations.

Sewer system planning should be emphasized in urbanizing areas served by septic tanks. A first step would be a monitoring system involving surface and ground waters to determine whether problems are developing. Where septic tank systems in urbanized areas are not scheduled for replacement by sewers and where public health hazards are not documented, septic tank maintenance procedures are encouraged to lessen the probability that a few major failures might force sewerage of an area which otherwise could be retained on individual systems without compromising water quality. Often a few systems will fail in an area where more frequent septic tank pumping, corrections to plumbing or leach fields, or in-home water conservation measures could help prevent failure. Improvements of this kind should be enforced by a local septic tank maintenance district or local governing jurisdiction.

A septic tank subjected to greater hydraulic load can fail due to washout of solids into percolation areas and plugging of the infiltrative surface. In some cases, excess wash water could be diverted to separate percolation areas by in-home plumbing changes. Dishwashers, garbage grinders, and washing machines could be eliminated. Water saving toilets, faucets, and shower heads are available to encourage low water use. Water use costs may also be structured to encourage more frugal use of water.

VIII.D.2. LOCAL GOVERNING JURISDICTION ACTIONS

VIII.D.2.a. DISCLOSURE AND COMPLIANCE OF EXISTING WASTEWATER DISPOSAL SYSTEM

Local governing jurisdictions should provide programs to assure conformance with this Basin Plan and local regulations. Inspection programs should assure site suitability tests are performed as necessary, and that tests are in accordance with standard procedures. Inspection should also assure proper system installation. Proper design and construction should be certified by the inspector. Concerned homeowners can be a tremendous asset in assuring proper construction. When a septic system permit is issued by the local agency, a handout specifying proper construction techniques should be made available to the general public. Systems must be inspected by the local agency before covering (backfilling).

Local agencies can use either staff inspectors or individuals under contract with the local government. Either way, a standard detailed checklist should be completed by the inspector to certify compliance.

Site suitability determinations should specify: (1) whether approval is for the entire lot or for specific locations of the lot; (2) if further tests are necessary; and, (3) if alternatives are necessary or available.

Where agency approval is necessary from various departments, final sign-offs should be on the same set of plans.

Home owners should be aware of the nature and requirements of their wastewater disposal system. Plans should be available in city or county offices showing placement of soil absorption systems. Since this is only feasible for new construction, local agencies should require septic system as-built plans as a condition of new construction final inspection. Plans would be kept on file for future use of property owners.

Prospective property buyers should be informed of any enforcement action affecting parcels or houses they wish to buy. For example, a parcel in a discharge prohibition area may be unbuildable for an indefinite period, or a developed parcel may be subject to significant user charges from a future sewer system. Local agencies should have prohibition area terms entered into the county record for each affected parcel. When a prospective buyer conducts a title search, terms of the prohibition would appear in the preliminary title report.

Dual leaching capabilities provide an immediate remedy in the event of system failure. For that reason, dual leachfields are considered appropriate for all systems. Furthermore, should wastewater flows increase, this area can be used until the system is expanded. But system expansion may not be possible if land is not set aside for this purpose. For these reasons, dedicated system expansion areas are also appropriate.

To protect this set-aside area from encroachment, the local agency should require restrictions on future use of the area as a condition of land division or building permit approval. For new subdivisions, Covenants, Conditions, and Restrictions (CC&R's) might provide an appropriate mechanism for protecting a set aside area. Future buyers of affected property would be notified of property use restrictions by reading CC&R's.

All on-site system owners need to be aware of proper operation and maintenance procedures. Local governing jurisdictions should mount a continuing public education program to provide home owners with on-site system operation and maintenance guidelines. Basin Plan information should be available at local agency health and building departments.

Local agencies should conduct an on-site system inspection program, particularly in areas where system failures are common or where systems with poor soils are approved. An agency inspector should periodically check each septic tank for pumping need and each system for proper operation. Homeowners should be alerted where evidence of system failure exists. Where nuisance or a potential public health hazard exists, a followup procedure should insure the situation is corrected. On-site systems should be constructed in a location that facilitates system inspection.

Another approach is periodically to mail homeowners a brochure reminding them how to maintain and inspect their on-site system. Homeowners should be notified that they should periodically check their septic tank for

pumping need. Homeowners should also be notified of other problems indicative of system failure. Some examples include wet spots in drainfield area, lush grass growths, slowly draining wastewater, and sewage odors.

Many existing systems do not comply with current or proposed standards. Repairs to failing systems should be done under permit from the local agency. To the extent practicable, the local agency should require failing systems to be brought into compliance with Basin Plan recommendations. This could be a condition of granting a permit for repairs.

Land use changes on properties used for commerce, small institutions, or industries should not be approved by the local agency until the existing on-site system meets criteria of this Basin Plan and local ordinances. A land use permit or business license could be used to alert the local agency of land use changes.

VIII.D.2.b. ON-SITE WASTEWATER MANAGEMENT PLANS

On-site wastewater management should be implemented in urbanizing areas to investigate long-term cumulative impacts resulting from continued use of individual, alternative, and community on-site disposal systems. A wastewater disposal study should be conducted to determine the best Wastewater Management Plan that would provide site or basin specific wastewater re-use. This study should identify basin specific criteria to prevent water quality degradation and public health hazards and provide an evaluation of the effects of existing and proposed developments and changes in land use. These plans should be a comprehensive planning tool to specify on-site disposal system limitations to prevent ground or surface water degradation. Wastewater management plans should:

- Contain a ground/surface water monitoring program.
- Identify sites suitable for conventional septic systems.
- Project on-site disposal system demand.
- Determine sites and methods to best meet demand.

- Project maximum population densities for each subdrainage basin to control degradation or contamination of ground or surface water.
- Recommend establishment of septic tank maintenance districts, as needed.
- Identify alternate means of disposing of sewage in the event of irreversible degradation from on-site disposal systems.

For areas where watershed-wide plans are not developed, conditions could be placed on new divisions of land or community systems to provide monitoring data or geologic information to contribute to the development of a Wastewater Management Plan.

Wastewater disposal alternatives should identify costs to each homeowner. A cost-effectiveness analysis, which considers socio-economic impacts of alternative plans, should be used to select the recommended plan.

On-site wastewater disposal zones, as discussed in Section 6950-6981 of the Health and Safety Code, may be an appropriate means of implementing on-site Wastewater Management Plans.

On-site Wastewater Management Plans shall be approved by the Regional Board.

VIII.D.2.c. SEPTIC TANK MAINTENANCE DISTRICTS

It may be appropriate for unsewered community on-site systems to be maintained by local sewage disposal maintenance districts. These special districts could be administered through existing local governments such as County Water Districts, a Community Services District, or a County Service Area.

Septic tank maintenance districts should be responsible for operation and maintenance in conformance with this Water Quality Control Plan. Administrators should insure proper construction, installation, operation, and maintenance of on-site disposal systems. Maintenance districts should establish septic tank surveillance, maintenance and pumping programs, where appropriate; provide repairs to plumbing or leachfields; and encourage water conservation measures.

VIII.D.3. CRITERIA FOR NEW SYSTEMS

On-site sewage disposal system problems can be minimized with proper site location, design, installation, operation, and maintenance. The following section recommends criteria for all new individual subsurface disposal systems and community sewage disposal systems. Local governing jurisdictions should incorporate these guidelines into their local ordinances. These recommendations will be used by the Regional Board for Regional Board regulated systems and exemptions.

Recommendations are arranged in sequence under the following categories: site suitability; system design; construction; individual system maintenance; community system design; and local agencies.

Mandatory criteria are listed in the "Individual, Alternative, and Community Systems Prohibitions" section.

VIII.D.3.a. SITE SUITABILITY

Prior to permit approval, site investigation should determine on-site system suitability:

1. At least one soil boring or excavation per on-site system should be performed to determine soil suitability, depth to ground water, and depth to bedrock or impervious layer. Soil borings are particularly important for seepage pits. Impervious material is defined as having a percolation rate slower than 120 minutes per inch or having a clay content 60 percent or greater. The soil boring or excavation should extend at least 10 feet below the drainfield¹ bottom at each proposed location.
2. An excavation should be made to detect mottling or presence of underground channels, fissures, or cracks. Soils should be excavated to a depth of 4-5 feet below drainfield bottom.

¹"Drainfield" refers to either a leachfield or seepage pit.

3. For leachfields, at least three percolation test locations should be used to determine system acceptability. Tests should be performed at proposed subsurface disposal system sites and depths.
4. If no restrictive layers intersect, and geologic conditions permit surfacing, the setback distance from a cut, embankment, or steep slope (greater than 30 percent) should be determined by projecting a line 20 percent down gradient from the sidewall at the highest perforation of the discharge pipe. The leachfields should be set-back far enough to prevent this projected line from intersecting the cut within 100 feet, measured horizontally, of the sidewall. If restrictive layers intersect cuts, embankments or steep slopes, and geologic conditions permit surfacing, the setback should be at least 100 feet measured from the top of the cut.
5. Natural ground slope of the disposal area should not exceed 20 percent.
6. For new land divisions, lot sizes less than one acre should not be permitted.

VIII.D.3.b. SYSTEM DESIGN

On-site systems should be designed according to the following recommendations:

1. Septic tanks should be designed to remove nearly 100 percent of settleable solids and should provide a high degree of anaerobic decomposition of colloidal and soluble organic solids.
2. Tank design must allow access for inspection and cleaning. The septic tank must be accessible for pumping.
3. If curtain drains discharge diverted ground water to subsurface soils, the upslope separation from a leachfield or pit should be 20 feet and the down slope separation should be 50 feet.

4. Leachfield application rate should not exceed the following:

Percolation Rate min./in	Loading Rate g.p.d./sq.ft.
1 - 20	0.8
21 - 30	0.6
31 - 60	0.25
61 - 120	0.10

5. Seepage pit application rate should not exceed 0.3 gpd/sq. ft.
6. Drainfield¹ design should be based only upon usable permeable soil layers.
7. The minimum design flow rate should be 375 gallons per day per dwelling unit.
8. In clayey soils, systems should be constructed to place infiltrative surfaces in more permeable horizons.
9. Distance between drainfield trenches should be at least two times the effective trench depth.²
10. Distance between seepage pits (nearest sidewall to sidewall) should be at least 20 feet.
11. Dual disposal fields (200 percent of original calculated disposal area) are recommended.
12. For commercial systems, small institutions, or sanitary industrial systems, design should be based on daily peak flow.
13. For commercial and institutional systems, pretreatment may be necessary if wastewater is significantly different from domestic wastewater.

¹“Drainfield” refers to either a leachfield or seepage pit.

²“Effective trench depth” means depth below the bottom of the trench pipe.

14. Commercial systems, institutional systems, or domestic industrial systems should reserve an expansion area (i.e. dual drainfields must be installed and area for replacement of drainfield must be provided) to be set aside and protected from all uses except future drainfield repair and replacement.

15. Nutrient and heavy metal removal should be facilitated by planting ground cover vegetation over shallow subsurface drainfields. The plants must have the following characteristics: (1) evergreen, (2) shallow root systems, (3) numerous leaves, (4) salt resistant, (5) ability to grow in soggy soils, and (6) low or no maintenance. Plants downstream of leaching area may also be effective in nutrient removal.

VIII.D.3.c. DESIGN FOR ENGINEERED SYSTEMS

1. Mound systems should be installed in accordance with criteria contained in Guidelines for Mound Systems by the State Water Resources Control Board.
2. Evapotranspiration systems should be installed in accordance with criteria contained in Guidelines for Evapotranspiration Systems by the State Water Resources Control Board. Exceptions are:
 - a. For evapotranspiration systems, each month of the highest precipitation year and lowest evaporation year within the previous ten years of record should be used for design.
 - b. Systems shall be designed by a registered civil engineer competent in sanitary engineering.

VIII.D.3.d. CONSTRUCTION

Water quality problems resulting from improper construction can be reduced by following these practices:

1. Subsurface disposal systems should have a slightly sloped finished grade to promote surface runoff.

2. Work should be scheduled only when infiltrative surfaces can be covered in one day to minimize windblown silt or rain clogging the soil.
 3. In clayey soils, work should be done only when soil moisture content is low to avoid smeared infiltrative surfaces.
 4. Bottom and sidewall areas should be left with a rough surface. Any smeared or compacted surfaces should be removed.
 5. Bottom of trenches or beds should be level throughout to prevent localized overloading.
 6. Two inches of coarse sand should be placed on the bottom of trenches to prevent compacting soil when leachrock is dumped into drainfields. Fine sand should not be used as it may lead to system failure.
 7. Surface runoff should be diverted around open trenches/ pits to limit siltation of bottom area.
 8. Prior to backfilling, the distribution system should be tested to check the hydraulic loading pattern.
 9. Properly constructed distribution boxes or junction fittings should be installed to maintain equal flow to each trench. Distribution boxes should be placed with extreme care outside the leaching area to insure settling does not occur.
 10. Risers to the ground surface and manholes should be installed over the septic tank inspection ports and access ports.
 11. Drainfield should include an inspection pipe to check water level.
1. Septic tanks should be inspected every two to five years to determine the need for pumping. If garbage

Additional construction precautions are discussed within the Environmental Protection Agency's Design Manual: On-Site Wastewater Treatment and Disposal Systems.

VIII.D.3.e. INDIVIDUAL SYSTEM MAINTENANCE

Individual septic tanks should be maintained as follows:

grinders or dishwashers discharge into the septic tank, inspection should occur at least every two years.

2. Septic tanks should be pumped whenever: (1) the scum layer is within three inches of the outlet device; or (2) the sludge level is within eight inches of the bottom of the outlet device.
3. Drainfields should be alternated when drainfield inspection pipes reveal a high water level.
4. Disposal of septage (solid residue pumped from septic tanks) should be accomplished in a manner acceptable to the Executive Officer. In some areas, disposal may be to either a Class I or Class II solid waste site; in others, septage may be discharged to a municipal wastewater treatment facility.

VIII.D.3.f. COMMUNITY SYSTEM DESIGN

Community systems should be designed and maintained to accommodate the following items:

1. Capacities should accommodate build-out population.
2. Design should be based upon peak daily flow estimates.
3. Design should consider contributions from infiltration throughout the collection system.
4. Septic tanks should be pumped when sludge and scum levels are greater than 1/3 of the depth of the first compartment.
5. Operation and maintenance should be in accordance with accepted sanitary practice.
6. Maintenance manuals should be provided to system users and maintenance personnel.
7. Discharge should not exceed 40 grams per day total nitrogen, on the average, per acre of total development overlying ground water recharge areas, unless local governing jurisdictions adopt Wastewater Management Plans subsequently approved by the Regional Board.

VIII.D.3.g. LOCAL AGENCIES

Recommendations for local governing jurisdictions:

1. Adopt a standard percolation test procedure.

The California State Water Resources Control Board Guidelines for Evapotranspiration Systems provides a percolation test method recommended for use to standardize test results. A twelve-inch diameter percolation test hole may be used.

2. Percolation tests should be continued until a stabilized rate is obtained.
3. Percolation test holes should be drilled with a hand auger. A hole could be hand augered or dug with hand tools at the bottom of a larger excavation made by a backhoe.
4. Percolation tests should be performed at a depth corresponding to the bottom of the subsurface disposal area.
5. Seepage pits should be utilized only after careful consideration of site suitability. Soil borings or excavations should be inspected either by permitting agency or individual under contract to the permitting agency.
6. Approve permit applications after checking plans for erosion control measures.
7. Inspect systems prior to covering to assure proper construction.
8. Require replacements or repairs to failing systems to be in conformance with Basin Plan recommendations, to the extent practicable.
9. For new land divisions, protect on-site disposal systems and expansion areas from encroachment by provisions in covenants, conditions, and restrictions.
10. Inform property buyers of the existence, location, operation, and maintenance of on-site disposal systems. Prospective home or property buyers should also be informed of any enforcement action (e.g. Basin Plan prohibitions) through the County Record.

11. Conduct public education programs to provide property owners with operation and maintenance guidelines.
12. Alternative system owners shall be provided an informational maintenance or replacement document by the appropriate governing jurisdiction. This document shall cite homeowner procedures to ensure maintenance, repair, or replacement of critical items within 48 hours following failure.
13. Where appropriate, septic tank systems should be maintained by local septic tank maintenance districts.
14. Wastewater Management Plans should be prepared and implemented for urbanizing and high density areas, including applicable portions of San Martin, San Lorenzo Valley, Carmel Valley, Carmel Highland, Prunedale, El Toro, Shandon, Templeton, Santa Margarita/Garden Farms, Los Osos/Baywood Park, Arroyo Grande, Nipomo, upper Santa Ynez Valley, and Los Olivos/Ballard.
15. Ordinances should be updated to reflect Basin Plan criteria.

VIII.D.3.h. ADDITIONAL CONSIDERATIONS

1. Water conservation and solids reduction practices are recommended. Garbage grinders should not be used in homes with septic tanks.
2. Metering and water use costs should be used to encourage water conservation.
3. Grease and oil should not be introduced into the system. Bleach, solvents, fungicides, and any other toxic material should not be poured into the system.
4. Reverse osmosis unit blow-down should not be discharged to on-site wastewater treatment systems overlying usable ground water. Off-site (factory regeneration) practices are recommended for water softeners.

5. If on-site water softener regeneration is necessary, minimum salt use in water softeners is recommended. This can be accomplished by minimizing regeneration time or limiting the number of regeneration cycles.

VIII.D.3.i. INDIVIDUAL, ALTERNATIVE AND COMMUNITY SYSTEMS PROHIBITIONS

Discharges from new soil absorption systems installed after September 16, 1983 in sites with any of the following conditions are prohibited:

1. Soils or formations contain continuous channels, cracks, or fractures.¹
2. For seepage pits, soils or formations containing 60 percent or greater clay (a soil particle less than two microns in size) unless parcel size is at least two acres.
3. Distances between trench bottom and usable ground water, including perched ground water, less than separation specified by appropriate percolation rate:

<u>Percolation Rate, min/in</u>	<u>Distance, ft</u>
<1	50 ¹
1-4	20 ¹
5-29	8
>30	5

¹ Unless a set-back distance of at least 250 feet to any domestic water supply well or surface water is assured.

4. For seepage pits, distances between pit bottom and usable ground water, including perched ground water, less than separation specified by appropriate soil type:

<u>Soil</u>	<u>Distance,ft.</u>
Gravels ²	50 ¹
Gravels with few fines ³	20 ¹
Other	10

5. Distances between trench/pit bottom and bedrock or other impervious layer less than ten feet.
6. For leachfields, where percolation rates are slower than 120 min/in, unless parcel size is at least two acres.
7. For leachfields, where soil percolation rates are slower than 60 min./in. unless the effluent application rate is 0.1 gpd/ft² or less.
8. Areas subject to inundation from a ten-year flood.
9. Natural ground slope of the disposal area exceeds 30 percent.

10. Setback distances less than:

	<u>Minimum Setback Distance, ft</u>
Domestic water supply wells in unconfined aquifer	100
Watercourse ⁴ where geologic conditions permit water migration	100
Reservoir ⁵ spillway elevation	200
Springs, natural or any part of man-made spring	100

11. While new septic tank systems should generally be limited to new divisions of land having a minimum parcel size of one acre, where soil and other physical constraints are particularly favorable, parcel size shall not be less than one-half acre.

12. Within a reservoir⁵ watershed where the density for each land division is less than 2.5 acres for areas without approved Wastewater Management Plans.

13. For individual systems on new land divisions, and commercial, institutional, and sanitary industrial systems without an area set aside for dual leachfields (100 percent replacement area).

14. Commercial, institutional, or sanitary industrial systems not basing design on daily peak flow estimate.

15. Any site unable to maintain subsurface disposal.

16. Any subdivision unless the subdivider clearly demonstrates the use of the system will be in the best public interest, that beneficial water uses will not be adversely affected, and compliance with all Basin Plan prohibitions is demonstrated.

17. Lot sizes, dwelling densities or site conditions causing detrimental impacts to water quality.

18. Any area where continued use of on-site systems constitutes a public health hazard, an existing or threatened condition of water pollution, or nuisance.

¹ Unless a set-back distance of at least 250 feet to any domestic water supply well or surface water is assured.

² Gravels - Soils with over 95 percent by weight coarser than a No. 200 sieve and over half of the coarse fraction larger than a No. 4 sieve.

³ Gravels with few fines - Soils with 90 percent to 94 percent coarse fraction larger than a No. 4 sieve.

⁴ Watercourse - (1) A natural or artificial channel for passage of water. (2) A running stream of water. (3) A natural stream fed from permanent or natural sources, including rivers, creeks, runs, and rivulets. There must be a stream, usually flowing in a particular direction (though it need not flow continuously) in a definite channel, having a bed or banks and usually discharging into some stream or body of water.

⁵ Reservoir-A pond, lake, tank, basin, or other space either natural or created in whole or in part by the building of engineering structures, which is used for storage, regulation, and control of water, recreation, power, flood control, or drinking.

Discharges from community subsurface disposal systems (serving more than five parcels or more than five dwelling units) are prohibited unless:

1. Seepage pits have at least 15 vertical feet between pit bottom and highest usable ground water, including perched ground water.
2. Sewerage facilities are operated by a public agency. (If a demonstration is made to the Regional Board that an existing public agency is unavailable and formation of a new public agency is unreasonable, a private entity with adequate financial, legal, and institutional resources to assume responsibility for waste discharges may be acceptable).
3. Dual disposal systems are installed (200 percent of total of original calculated disposal area).
4. An expansion area is included for replacement of the original system (300 percent total).
5. Community systems provide duplicate individual equipment components for components subject to failure.
6. Discharge does not exceed 40 grams per day of total nitrogen, on the average, per 1/2 acre of total development overlying ground water recharge areas excepting where a local governing jurisdiction has adopted a Wastewater Management Plan subsequently approved by the Regional Board.

In order to achieve water quality objectives, protect present and future beneficial water uses, protect public health, and prevent nuisance, discharges are prohibited in the following areas:

1. Discharges from individual sewage disposal systems are prohibited in portions of the community of Nipomo, San Luis Obispo County, which are particularly described in Appendix A-27.
2. Discharges from individual sewage disposal systems within the San Lorenzo River Watershed shall be managed as follows:
 - a. Discharges shall be allowed, providing the County of Santa Cruz, as lead agency, implements the "Wastewater Management Plan for the San Lorenzo River Watershed, County of Santa Cruz, Health Services Agency, Environmental Health Service", February 1995 and "San Lorenzo Nitrate Management

Plan, Phase II Final Report", February 1995, County of Santa Cruz, Health Services Agency, Environmental Health Service (Wastewater Management Plan) and assures the Regional Board that areas of the San Lorenzo River Watershed are serviced by wastewater disposal systems to protect and enhance water quality, to protect and restore beneficial uses of water, and to abate and prevent nuisance, pollution, and contamination.

In fulfilling the responsibilities identified above, the County of Santa Cruz shall submit annual reports beginning on January 15, 1996. The report shall state the status and progress of the Wastewater Management Plan in the San Lorenzo River Watershed. The County of Santa Cruz annual report shall document the results of:

- a. Existing disposal system performance evaluations,
- b. Disposal system improvements,
- c. Inspection and maintenance of on-site systems,
- d. Community disposal system improvements,
- e. New development and expansion of existing system protocol and standards,
- f. Water quality monitoring and evaluation,
- g. Program administration management, and
- h. Program information management.

The report shall also document progress on each element of the Nitrate Management Plan, including:

- a. Parcel size limit,
- b. Wastewater Management Plan implementation,
- c. Boulder Creek Country Club Wastewater Treatment Plant Upgrade,
- d. Shallow leachfield installation,
- e. Enhanced wastewater treatment for sandy soils,
- f. Enhanced wastewater treatment for large on-site disposal systems,
- g. Inclusion of nitrogen reduction in Waste Discharge Permits,
- h. Livestock and stable management,
- i. Protection of ground water recharge areas,
- j. Protection of riparian corridors and erosion control,
- k. Nitrate control for new uses,
- l. Scotts Valley nitrate discharge reduction, and
- m. Monitoring for nitrate in surface and ground water.

3. Discharges from individual and community sewage disposal systems are prohibited effective November 1, 1988, in the Los Osos/Baywood Park area depicted in the Prohibition Boundary Map included

as Attachment "A" of Resolution No. 83-13 which can be found in Appendix A-30.

VIII.D.3.j. SUBSURFACE DISPOSAL EXEMPTIONS

The Regional Board or Executive Officer may grant exemption to prohibitions for: (1) engineered new on-site disposal systems for sites unsuitable for standard systems; and (2) new or existing on-site systems within the specific prohibition areas cited above. Such exemptions may be granted only after presentation by the discharger of sufficient justification, including geologic and hydrologic evidence that the continued operation of such system(s) in a particular area will not individually or collectively, directly or indirectly, result in pollution or nuisance, or affect water quality adversely.

Individual, alternative, and community systems shall not be approved for any area where it appears that the total discharge of leachate to the geological system, under fully developed conditions, will cause: (1) damage to public or private property; (2) ground or surface water degradation; (3) nuisance condition; or, (4) a public health hazard. Interim use of septic tank systems may be permitted where alternate parcels are held in reserve until sewer systems are available.

Requests for exemptions will not be considered until the local entity has reviewed the system and submitted the proposal for Regional Board review. Dischargers requesting exemptions must submit a Report of Waste Discharge. Exemptions will be subject to filing fees as established by the State Water Code.

Engineered systems shall be designed only by registered engineers competent in sanitary engineering. Engineers should be responsible for proper system operation. Engineers should be responsible for educating system users of proper operation and maintenance. Maintenance schedules should be established. Engineered systems should be inspected by designer during installation to insure conformance with approved plans.

Some engineered systems may be considered experimental by the Regional Board. Experimental systems will be handled with caution. A trial period of at least one year should be established whereby proper

system operation must be demonstrated. Under such an approach, experimental systems are granted a one year conditional approval.

Further information concerning individual, alternative, or community on-site sewage disposal systems can be found in Chapter 5 in the Management Principles and Control Actions sections. State Water Resources Control Board Plans and Policies, Discharge Prohibitions, and Regional Board Policies may also apply depending on individual circumstances.

VIII.E. LAND DISTURBANCE ACTIVITIES

Construction, mining, and other soil disturbance activities which may disturb or expose soil or otherwise increase susceptibility of land areas to erosion are difficult to regulate effectively. Construction or timber harvesting may often begin and end with no obvious impairment of stream quality; however, erosion or land slides the following winter may be directly related to earlier land disturbance or tree cutting. Mining and quarrying activities are generally longer in duration.

Under contract with the Regional Board, the California Association of Resource Conservation Districts completed a study entitled, "Erosion and Sediment in California Central Coast Watersheds - A study of Best Management Practices" (Erosion Study), dated June, 1979. This Erosion Study, funded under Section 208 of the Clean Water Act, assesses impacts of erosion and sedimentation on water quality and beneficial uses in nondesignated planning areas (San Benito, San Luis Obispo, and Santa Barbara Counties) of the Central Coast Region. This Erosion Study and supporting documents have been used by the Regional Board in developing erosion and sedimentation control policy.

Nonpoint source pollution in the remainder of the Region is addressed by designated planning agencies through their respective Area wide Waste Treatment Management Plans. Designated agencies and the areas affected within this Region include: Association of Bay Area Governments (portions of San Mateo and Santa Clara Counties), Association of Monterey Bay Area Governments (Santa Cruz and Monterey Counties), and

Ventura County Board of Supervisors (portion of Ventura County). The policy herein described is compatible with those plans and is within the scope of the Regional Board authority.

The Erosion Study and Area wide Waste Treatment Management Plans identify examples of accelerated erosion resulting from insufficient land management of soil cultivation, grazing, silvaculture, construction, and off-road vehicle activities, as well as wildfires.

Adverse impacts of sediment are identified, in part, as: impairment of water supplies and ground water recharge, siltation of streams and reservoirs, impairment of navigable waters, loss of fish and wildlife habitat, degradation of recreational waters, transport of pathogens and toxic substances, increased flooding, increased soil loss, and increased costs associated with maintenance and operation of water storage and transport facilities. Recommendations based on conclusions of the Erosion Study and practices recommended in Area wide Waste Treatment Management Plans are a means to reduce unnecessary soil loss due to erosion and to minimize adverse water quality impacts resulting from sediment.

When a practice or combination of practices is found to be the most effective, practical (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals, it is designated a Best Management Practice (BMP). BMPs are determined only after problem assessment, examination of alternative practices, and appropriate public participation in the BMP development process.

General recommendations based on conclusions of the Erosion Study are discussed below. These recommendations are considered to be Best Management Practices (BMPs) by the Regional Board as are the Area wide approved water quality management plans.

1. Soil conservation control measures should be used to minimize impacts that would otherwise result from soil erosion. Control measures are identified according to systems, which are then broken down into subsystems of erosion control techniques or component measures.

For example, a system for control of erosion from construction sites would identify component

measures such as debris basins, access roads, hillside ditches, etc. Other conservation control systems include: conservation cropping, conservation irrigation, roadside erosion control, critical area treatment, diversions and ditches, grade stabilization, pasture and range management, runoff and sediment control ponds and basins, stream bank and channel protection, and watershed, wildlife, and recreation land improvement. These control measures are comparable to the USDA Soil Conservation Services' Resource Management Subsystem approach as referenced in AMBAG's "Water Quality Management Plan for the Monterey Bay Region," dated July 1978, and in ABAG's, "Handbook of Best Management Practices," dated October 1977.

Experience has shown that no one control measure best solves an existing, or prevents a potential, pollution problem - especially in the area of soil erosion and sedimentation. As land use, the land user, and various situations change, so does the need for control measures. Before application, an on-site investigation with the land user is necessary to determine which practice or set of practices will be most effective and acceptable.

2. Erosion control should be implemented in a reasonable manner with as much implementation responsibility remaining with existing local entities and programs as is possible and consistent with water quality goals.
3. The Regional Board and local units of government should establish a clear policy for control of erosion, including consideration of off-site and cumulative impacts and the imposition of performance standards according to the sensitivity of the area where land is to be disturbed.
4. Effective ordinances and regulatory programs should be adopted by local units of government. Effective programs would allow only land disturbance actions consistent with the waste load capacity of the watershed, require preparation of erosion and sediment control plans with specific contents and with attention to both offsite/on-site impacts, identify performance standards, be at least comparable to the model ordinance in the "Erosion and Sediment Control Handbook," dated May 1978, and have provisions for inspection follow-up, enforcement, and referral.

5. Watersheds with critical erosion and sediment problems should be identified by one or more concerned agencies such as the California Department of Fish and Game, the Regional Board, the local Environmental Health, Planning, or Engineering Departments, the local Flood Control District, or the local Resource Conservation District, and then referred to the remaining agencies by a designated local coordinating agency for determining the scope, nature, and significance of the identified problem. The designated local agency would evaluate the adequacy and appropriateness of the total assessment, including an assessment of the problem and causes, alternatives considered, recommended interim and permanent control measures, and the amount and sources of funding. The evaluation would then be submitted as an Impact Findings Report for consideration and decision by the local governing body.
6. Comprehensive and continuous training should be mandatory for building and grading inspectors, engineers, and planners involved in approving, designing, or inspecting erosion control plans and on-site control measures. The training program would preferably be conducted on an inter-county/agency basis and be administered through a USDA Soil Conservation Service cooperative training arrangement or through seminars conducted by the USDA Soil Conservation Service and the University of California Cooperative Extension seminars. The Soil Conservation Society of America should be requested to assist in establishing an effective training program, including public education to heighten awareness of the adverse affects of erosion and sediment on soil and water resources.
7. More intensive erosion controls should be considered within four watersheds (Lauro Reservoir and Devereaux Ranch Slough in Santa Barbara County and Pismo Lake and Morro Bay in San Luis Obispo County) with apparent critical erosion and sediment problems. Alternative practices that may be implemented to effect the necessary level of control are assigned a relative priority.

VIII.E.1. LAND DISTURBANCE PROHIBITIONS

The discharge or threatened discharge of soil, silt, bark, slash, sawdust, or other organic and earthen materials into any stream in the basin in violation of best management practices for timber harvesting, construction, and other soil disturbance activities and in quantities deleterious to fish, wildlife, and other beneficial uses is prohibited.

The placing or disposal of soil, silt, bark, slash, sawdust, or other organic and earthen materials from timber harvesting, construction, and other soil disturbance activities at locations above the anticipated high water line of any stream in The basin where they may be washed into said waters by rainfall or runoff in quantities deleterious to fish, wildlife, and other beneficial uses is prohibited.

Soil disturbance activities not exempted pursuant to Regional Board Management Principles contained in Chapter Five are prohibited:

1. In geologically unstable areas,
2. On slopes in excess of thirty percent (excluding agricultural activities), and
3. On soils rated a severe erosion hazard by soil specialists (as recognized by the Executive Officer) where water quality may be adversely impacted;

Unless,

- a. In the case of agriculture, operations comply with a Farm Conservation or Farm Management Plan approved by a Resource Conservation District or the USDA Soil Conservation Service;
- b. In the case of construction and land development, an erosion and sediment control plan or its equivalent (e.g., EIR, local ordinance) prescribes best management practices to minimize erosion during the activity, and the plan is certified or approved, and will be enforced by a local unit of government through persons trained in erosion control techniques; or,
- c. There is no threat to downstream beneficial uses of water, as certified by the Executive Officer of the Regional Board.

VIII.E.2. CONSTRUCTION ACTIVITIES

Road construction is often a cause of water quality impairment; all too often roads are located near streams, estuaries, or ocean waters where side fills may be eroded by flood waters. Construction within stream beds will inevitably cause turbidity; however, the timing of such activities should be established with reference to environmental sensitivity factors such as fish migrations, spawning or hatching, and minimum stream flow conditions. Sediment loads can be reduced by proper timing, bank and channel protection, and use of settling ponds to catch silt.

Construction debris should not be left in the flood plain; revegetation of cuts and fills should be encouraged. California Department of Transportation (CALTRANS) has prepared a document entitled "Best Management Practices for Control of Water Pollution (Transportation Activities)," that sets forth procedures used by CALTRANS to address transportation activities which might impact water quality. These procedures are summarized under "Control Actions" in the Plans and Policies chapter. Past and potential impacts from CALTRANS activities may result from the above problems and may include impacts resulting from questionable maintenance practices, chemical spills, and discharges of silt and cement.

Land development projects in sensitive areas should be scheduled so as to minimize the areal extent of land exposed to erosive forces. Where water quality impairment is likely, permits should be issued by the Regional Water Quality Control Board which will insure against water quality degradation. Cooperation of local approving agencies should be obtained in order that approvals of significant subdivisions in environmentally sensitive areas, particularly the upper reaches of watersheds and lands near riparian habitats, are appropriately conditioned. For example, proposed subdivisions of 50 lots or more in such areas should be (1) covered by environmental impact reports on the development and its impact on waste loads and water quality, (2) be in conformance with regional or county master plans, and (3) include provisions for establishment of a public agency responsible for environmental monitoring and maintenance where such subdivisions are outside other appropriate public jurisdictions.

VIII.E.3. MINING ACTIVITIES

Pollution control at the hundreds of inactive mine sites riddling the Coast Ranges is in its infancy. Accurate regional inventories are being compiled, isolated mine cases are addressed individually, and several polluting mines are under direct regulation. Regional Board assistance and consultation are aiding several proactive responsible parties and focused study of inactive mine effects on four Central Coast watersheds has been funded by the Clean Water Act, Water Quality Planning Program.

About a decade ago Toxic Substances Monitoring Program data revealed elevated mercury concentrations in Lake Nacimiento, a high priority municipal and agricultural water storage reservoir in San Luis Obispo County. The Lake is fed by the Las Tablas Creek system (among others), which receives discharge water from the Buena Vista Mine, a mercury mine inactive since 1970 or 1971. An academic study (conducted by respected Cal Poly scientists -- team leader, Dr. Thomas J. Rice) of lake Nacimiento mercury sources recently concluded up to 78% of the fluvial mercury transport to the Lake is contributed by the Las Tablas Creek system. Further, the inactive Buena Vista and Klau Mines were identified as the primary point sources of Las Tablas Creek mercury. Based on these conclusions and other independent supporting data, the Regional Board on May 14, 1993, adopted four orders requiring strict implementation of NPDES surface water discharge standards and California Code of Regulations Title 23 mine waste management and mine closure standards at the Buena Vista Mine and the adjacent Klau Mine.

The U. S. Bureau of Land Management and Forest Service are addressing several inactive mercury mines on their properties pursuant to the federal "Superfund" process. Sample analyses data generated by Regional Board staff have been instrumental in aiding these investigations.

Two sequential studies of inactive mines in four watersheds of northwest San Luis Obispo County are underway. Funded partially by the Clean Water Act Water Quality Planning Program, the studies address all inactive mines in the Las Tablas Creek, Santa Rosa Creek, San Simeon Creek (all primarily mercury

mines), and Chorro Creek (primarily chromium) watersheds.

The primary goals of the watershed studies are:

- identification of all inactive mines
- attribution of specific water quality problems to specific mines, and
- determinations of the best methods of abating contaminant sources and remediating already emplaced surface contamination, based on field and possibly lab experiments.

These are considered pilot studies and the Regional Board ultimately plans to conduct such studies for the complete Region and to implement the findings, resulting in abatement of inactive mines as surface and ground water contaminant sources and remediation of contaminated media.

VIII.E.4. TIMBER HARVESTING ACTIVITIES

The Regional Board has regulatory responsibility to prevent adverse water quality impacts from timber harvest activities. Impacts usually consist of temperature, turbidity, and siltation effects caused by logging and associated activities. These can have deleterious impacts on fish and water flow.

Sensitivity of all watercourses, lakes, estuaries, or ocean waters in the basin to timber harvesting operations should be identified following rigorous analysis of geological, pedological, hydrological, and biological data as confirmed by field inspections. Relative sensitivity could then be portrayed on a large map. The sensitivity would also reflect beneficial uses which are not directly associated with ecological systems.

Upon receiving a timber harvest plan, the Regional Board staff could locate the operation on the sensitivity map and determine the relative risk involved. This information could enable the board to better evaluate the proposed method of operation and the adequacy of proposed mitigation actions or other special considerations. The success of this process depends

upon the degree of cooperation provided by the Department of Forestry. Timber harvest plans must contain sufficient detail for evaluation, and the Regional Board must be allowed an ample amount of time for review before start of timber harvesting operations.

The timber yarding and road building methods used at each operation is a function of the terrain, soils, species and other timber considerations including economics. The aforementioned are usually compatible with water quality management, but in cases where water quality may be degraded, mitigating measures to preserve the character and quality of the water course must be taken. Since the Department of Forestry is familiar with the limitations and relative degradation potential of the various harvest methods, it has the lead role in incorporating necessary mitigation measures into the permits and seeing that they are enforced.

The Department of Forestry administers provisions of the Z'berg-Nejedly Forest Practice Act of 1973. The Act provides an opportunity for Regional Boards involved with timber harvesting activities to participate on the Timber Harvest Plan permit process review team. A 1987 Clean Water Act amendment requires States to implement Water Quality Management Plans to control nonpoint sources of pollution, including silviculture. As part of that directive, the State Board has executed a Management Agency Agreement (MAA) with the Board of Forestry and Department of Forestry. It provides a better opportunity for water quality concerns to be incorporated into timber harvesting practices and regulations.

Several possibilities exist to deal with negligent or incompetent operators. The Department of Forestry can revoke the Registered Professional Foresters or Licensed Timber Operator's License. The Regional Board can also implement enforcement action. While these actions can be necessary and effective, they are after-the-fact methods rather than for deterring roles. Thus, the major emphasis must be placed on control measures rather than enforcement actions.

VIII.E.5. AGENCY ACTIVITIES

To insure that impacts on water quality from nonpoint sources of pollution are held to a minimum and that goals and management principles of the Regional Board

are met, water quality management programs for implementation by land managing agencies have been developed through the Area wide planning process. For nonpoint sources of pollution, this required identification of Best Management Practices (BMP's).

Within the Central Coast Region, federal and State agencies control substantial portions of land. All retain their own land management programs, but are required by regulation to cooperate and give support to State planning agencies in formulating and implementing water quality management plans. Federal law also directs federal agencies to comply with requirements formulated to meet the objectives of the federal act.

Practices and procedures in the U. S. Forest Service's, U.S. Bureau of Land Management's (BLM's) and California Department of Transportation's (CALTRANS') 208 reports described below constitute proper management for water quality protection and are considered BMP's. Further, these agencies have expressed a willingness and capability to implement practices and to revise practices which are currently inadequate. Management agency agreements have been prepared between the State Board and each of these agencies which designates the Forest Service, the BLM, and CALTRANS as management agencies responsible for implementing BMPs for water quality protection on lands under the control of each of these respective agencies. The management agency agreement further provides for State/Regional Board working relationships with each agency and establishes a mechanism by which the State and Regional Boards will, on a continuing basis and in conjunction with each of these agencies, identify and address water quality management issues of concern to all parties.

The management agency agreements, as approved by the State Water Resources Control Board and each of the agencies, are a part of this Water Quality Control Plan by reference. Management agency agreements will be reviewed and updated periodically to reflect recent achievements, new information, and new concerns.

VIII.E.5.a. UNITED STATES FOREST SERVICE

The United States Forest Service has prepared a report entitled, "Water Quality Management Plan for the National Forest Systems Lands Within the

Non-designated Planning Areas of California," dated April, 1979. The report assesses water quality problems, evaluates current practices, and sets forth procedures used by the Forest Service to address activities that might affect water quality. About 72 percent of Los Padres National Forest (which encompasses 1,964,408 gross acres) is within the Central Coast Region. Water and watershed protection were the chief reasons the forest was established. Approximately 1.5 million acre feet of water per year are used by people living adjacent to the forest for domestic and agricultural purposes. Less than five percent of the area is commercial forest land and most wood production is fuel wood sales.

A qualitative assessment of water quality problems on National Forest lands within the Central Coast Region was conducted primarily from information gathered by Forest Service and Regional Board staff. Fire management and recreation are activities with the greatest influence on water quality. Other major activities with potential impact on water quality include road construction, road maintenance, and grazing. Fire management can cause degradation from sediments, nutrients, and bacteria, but the major cause might well be off-road vehicles and misuse of unimproved roads by all vehicles. Road construction has been a source of problems along the Cuyama River. No significant affects from overgrazing or silvacultural practices were noted.

During preparation of the Forest Service's "Water Quality Management Plan for the National Forest Systems Lands Within the Nondesignated Planning Area of California," adopted April, 1979, Forest Service manuals, guidelines, regulations, etc., were reviewed for identification of those practices which are directly or indirectly for the purpose of protecting water quality. The report identifies and discusses ninety-eight such practices in eight activity categories (i.e., timber harvesting, road and building site construction, mining, recreation, vegetative manipulation, fire supervision and prescribed burning, watershed management, and grazing). Ninety-four of the practices are presented as BMPs, while four practices need improvement, and four practices need development. A course of action for improving inadequacies of current practices and for development of new practices is identified.

The practices/procedures contained in the Forest Service 208 plan are at a level of detail appropriate for all Forest Service operations statewide. These practices must be flexible to account for varying geographic conditions.

The plan also includes a description of the "decision-making" process which leads to the actual selections of management solutions on a project-specific basis. There are several steps in this process at which Regional Boards can be involved and there is a public involvement program to identify and respond to concerns of interested public. The most critical point of involvement is Step 1, identification of issues, concerns, and opportunities. Once this step is completed, the need for and time of future involvement in subsequent steps can be identified.

VIII.E.5.b. UNITED STATES BUREAU OF LAND MANAGEMENT

The United States Department of the Interior, Bureau of Land Management (BLM), has management responsibility for approximately 320,000 acres within the Central Coast Region. Management activities occurring on this land have potential for significantly affecting water quality (e.g., mining, grazing, recreation, road construction, off-road vehicles, etc.). The BLM prepared and submitted to the State a report entitled, "BLM California 208 Report." The report includes: (a) a discussion of existing or potential water quality problems on BLM lands, (b) a discussion of current BLM practices and policies including a description of the BLM planning process, (c) a description of the "decision-making process" which leads to the actual selection of management solutions on a project-specific basis, and (d) general policies.

The problem assessment identifies nonpoint sources of water pollution originating on lands administered by the BLM. Problems were qualitatively assessed by BLM with information provided primarily by Regional Board staff. Most of the identified water quality problems on BLM lands within the Central Coast Region result from recreation.

There is improper grazing management on the Temblor range in east San Luis Obispo County (BLM's Bakersfield District) that is causing sedimentation of retention structures for beneficial uses.

The process for determining management practices on a site-specific basis applies to all BLM activities and is divided into three major phases; (1) consideration of site characteristics and water quality concerns, (2) definition and application of BMP's through contract clauses,

leases, stipulations, etc., and (3) evaluation of BMP effectiveness and practice modification, if necessary.

VIII.E.5.c. CALIFORNIA DEPARTMENT OF TRANSPORTATION

WATER QUALITY STUDIES

In developing control measures for CALTRANS projects, three basic types of studies are conducted for water quality protection:

1. Transportation System Planning - Emphasizes broad scale water quality problems. The focus is on regional factors such as variations in regional surface and ground water hydrology, existing water quality, and land use. Such studies are not site-specific.
2. Project Level Planning - Emphasis is on runoff associated problems (erosion and sedimentation). Detailed hydrologic and hydraulic analyses are made where warranted. Information is used in selecting project alternatives.
3. Construction - This type is usually associated with waste discharge requirements (issued by Regional Board). The intent is to monitor and control the contractor's operations.

CONSTRUCTION CONTROL

Standard specifications for water pollution control have been prepared by CALTRANS, are set forth in CALTRANS' BMP document, and are incorporated as part of project design. Where warranted, special specifications are prepared by CALTRANS on a project-by-project basis. For every project, contractors must submit a plan for water pollution control to the CALTRANS resident engineer. During the course of any construction project, operations may be temporarily halted if inadequate provision has been made for water quality protection. Remedial work may be required.

In addition to CALTRANS specifications, federal and State permits (including waste discharge requirements) are made a part of project requirements.

OPERATION AND MAINTENANCE

1. Accidental Chemical Spills - A procedural manual has been developed by each CALTRANS district to standardize cleanup procedures. CALTRANS maintenance personnel are equipped and trained to handle such situations.
2. Erosion Control - Where slopes show evidence of erosion, remedial stabilization measures must be taken. Debris is disposed of at approved disposal site.

VIII.E.5.d. OTHER AGENCIES PROGRAMS

Resource Conservation Districts (RCD's) and the U.S.D.A. Soil Conservation Service are organizations that assist property owners in applying effective conservation and land management practices. The program includes technical, educational, and planning services to property owners and local governments who request assistance. It has been relatively successful considering its voluntary nature and resource limitations. The Soil Conservation Service has a major role in the Rural Clean Water Program.

The U.S.D.A. Agricultural Stabilization and Conservation Service administers the cost-sharing aspects of the Agricultural Conservation Program, allocating available monies to farmers and ranchers for erosion and sedimentation control and water conservation projects.

Cities and Counties, as general purpose governments, have broad powers to adopt specific and general plans; to regulate land use, subdividing, grading, and private construction; and to construct and operate public works facilities. Local authority to regulate existing and potential discharges of sediment has been exercised to varying degrees throughout the region.

Many cities and counties within the coastal zone have developed Local Coastal Programs. These programs may include land use and grading restrictions designed to protect long-term productivity of soils and waters within the coastal zone. Regulation by the California

Coastal Commission provides this protection where Local Coastal Programs are inadequate.

The State Department of Fish and Game promotes the protection and improvement of streams, lakes, and natural habitat areas for fish and wildlife. It also regulates stream alteration and compels cleanup of fouled streams.