WATER QUALITY CONTROL PLAN
FOR THE
NORTH COAST REGION

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The need for comprehensive water quality planning is set forth in both California and federal law. California's Porter-Cologne Water Quality Control Act, which is contained in California Water Code, Division 7, Chapters 1 through 17, and the Federal Water Pollution Control Act as amended by the Clean Water Act of 1977 require water quality control plans for the waters of the State as well as public review of the plans. The basic purpose of the state's planning effort is to determine the future direction of water quality control for protection of California's waters.

The *Water Quality Control Plan for the North Coast Region* (Basin Plan) is comprehensive in scope. It contains a brief description of the North Coast Region, and describes its water quality and quantity problems and the present and potential beneficial uses of the surface and ground waters within the Region. The water quality objectives contained in the Basin Plan are prescribed for the purposes of protecting the beneficial uses. The implementation plans section describes the measures, which include specific prohibitions, action plans, and policies which form the basis for the control of water quality.

Statewide plans and policies are included as well as a description of Regional Water Board surveillance and monitoring activities. The plan contains provision for public participation, complies with the requirements of the California Environmental Quality Act, and establishes a setting and the framework for the development of discharger regulation.

Integral to the basin planning process is the provision for change. In that respect, the water quality control plans are reviewed triennially to determine the needed changes and to keep pace with technologies, policies, changes in the law, and physical changes within the Region. A prioritized list of issues which the Regional Water Board has determined necessary for further evaluation and potential development into a basin plan revision, is adopted at the conclusion of each Triennial Review.

1. INTRODUCTION

The primary responsibility for the protection and enhancement of water quality in California has been assigned by the California legislature to the State Water Resources Control Board (State Water Board) and the nine regional water quality control boards (regional water boards). The State Water Board provides state-level coordination of the water quality control program by establishing statewide policies and plans for the implementation of state and federal laws and regulations. The regional water boards adopt and implement water quality control plans (basin plans) which recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems.

HISTORY OF BASIN PLANNING IN THE NORTH COAST REGION

The nine regional water boards were established as "regional water pollution control boards" by the Dickey Act of 1949. The names of the regional water boards were changed, and their authority broadened, by the Porter-Cologne Water Quality Control Act of 1969. The development of comprehensive basin plans was initiated in response to both federal and state directives.

The North Coast Regional Water Quality Control Board (Regional Water Board) first adopted an interim Basin Plan in 1971. This was a brief, basic document which was used until comprehensive basin plans for its two natural hydrologic basins, the Klamath River Basin 1A and the North Coastal Basin 1B, were developed, adopted by the Regional Water Board, and approved by the State Water Board in 1975. Also in 1975, the comprehensive plans were condensed into two abstracts which were adopted by the Regional Water Board and approved by the State Water Board.

In the development of the 1975 comprehensive plans, the California Department of Water Resources was the major contractor for planning in Basin 1A. A three-member consortium (basin contractor) consisting of Brown and Caldwell, Water Resources Engineers, Inc. and Yoder-Trotter-Orlob and Associates conducted the planning for Basin 1B. The basin contractors were aided by several subcontractors for specialized studies outside the contractors' expertise. The State Water Board contracted with agencies to organize and supply their respective data for each subbasin. The Regional Water Board and staff participated throughout the planning process and were responsible for organizing and conducting the public meetings and workshops. An Office of Technical Coordination (OTC) was established by contract with the State Water Board to provide technical criteria, coordination and standardization to the Basin Planning Program. OTC reviewed the plans for technical content and coordination on a statewide level.

In 1975, the State Water Board's Office of Planning and Research in conjunction with the regional water boards organized and directed the statewide basin planning program. Planning areas were defined in accordance with natural hydrologic boundaries. At that time, a total of 16 study basins were defined within the nine administrative regional water boards and two of these basins, the Klamath River Basin 1A and the North Coastal Basin 1B comprised the boundaries of the North Coast Regional Water Quality Control Board.

In 1980, the State Water Board, the Department of Water Resources, and the U.S. Geological Survey entered into an agreement which redefined the hydrologic basin planning areas within the State of California. The North Coast Region is Hydrologic Unit Number 1. This hydrologic unit is divided into hydrologic areas and subareas as shown on Figure 1-1 (located in the map pocket). The names and areas shown on Figure 1-1 are the same as used by the Department of Water Resources in its Bulletin 94 series.

Since 1975, the Regional Water Board and Regional Water Board staff have had the primary responsibility for basin planning. The Regional Water Board observes the formal public hearing process while considering basin planning issues, and before submitting its decision to the State Water Board for approval. The Basin Planning Unit of the State Water Board's Division of Water Quality serves to coordinate planning efforts among the nine regional water boards as well as the Office of Administrative Law and the U.S. Environmental Protection Agency.

The comprehensive plans and abstracts have been amended several times to serve the needs of the Regional Water Board, its staff, and the public. On April 28, 1988, the Regional Water Board combined and updated the two comprehensive plans and their abstracts into a single Water Quality Control Plan for the North Coast Region (Basin Plan). The Appendix Section of this Plan contains a summary of Basin Plan amendments since 1975.

Planning Relationships

This Basin Plan is only one of a number of plans which deal directly or indirectly with the water resources of the North Coast Region.

At the federal level, overall guidance on the course of future development of water and related land resources is provided by the Comprehensive Framework Study, California Region. This study was completed in 1971 by the Water Resources Council, pursuant to the Water Resources Planning Act of 1965.

At the state level, the California Water Plan calls for the orderly and coordinated control, protection, conservation, development, and use of the state's water resources. Basin plans became part of the California Water Plan after the basin plans were adopted by the regional water boards and approved by the State Water Board.

In addition, several state agencies are involved in planning for resources whose protection and development are dependent on high water quality. Completed plans related to water quality include the California Fish and Wildlife Plan (1966), the California Comprehensive Ocean Area Plan (1967), the California Protected Waterways Plan (1971) and the California Coastal Plan (1975). Senate Bill 1285, an outgrowth of the Protected Waterways Plan, mandated that detailed waterway management plans be prepared for the major North Coast rivers. These plans were prepared by the Protected Waterways Program. Other related plans are the California Outdoor Recreation Resources Plan, the California Coastal Zone Conservation Plan, and the California Wild and Scenic Rivers Management Plan.

All of the counties in the North Coast Region have prepared general plans which include water and sewage disposal elements. These plans are used by the counties for establishing priorities for meeting current and future water and sewerage needs. The counties have prepared solid waste management plans in response to the Nejedly-Z'berg-Dills Solid Waste Management and Resource Recovery Act of 1972, and these are reviewed triennially. In addition, Assembly Bill 2948 of 1986 (the Tanner Bill), requires all counties to adopt plans for the management and disposal of the hazardous and toxic wastes generated within their boundaries.

The protection and orderly development of the Region's water resources make it essential that all planning efforts be coordinated.

FUNCTION AND OBJECTIVES OF THE BASIN PLAN

The basic purpose of the state's basin planning effort is to determine the future direction of water quality control for protection of California's waters.

The goal of this Basin Plan is to provide a definitive program of actions designed to preserve and enhance water quality and to protect beneficial uses of water in the North Coast Region. The plan is concerned with all factors and activities which might affect water quality. It emphasizes, however, actions to be taken by the State Water Board and the Regional Water Board since they have primary responsibility for maintenance of water quality in the North Coast Region.

This Basin Plan is comprehensive in scope. It contains a brief description of the North Coast Region, and describes its water quality and quantity problems and the present and potential beneficial uses of the surface and ground waters within the Region. The water quality objectives contained in the plan are prescribed for the purposes of protecting the beneficial uses. The Implementation Plans section describes the measures, which include specific prohibitions, action plans, and policies which form the basis for the control of water quality. Statewide plans and policies are included as well as a description of Regional Water Board surveillance and monitoring activities. The plan contains provisions for public participation, complies with the requirements of the California Environmental Quality Act, and establishes a setting and the framework for the development of discharger regulation.

Basin plans complement and may be more stringent than water quality control plans and policies adopted by the State Water Board, such as the "Water Quality Control Plan for Ocean Waters of California" and the "Water Quality Control Policy for the Enclosed Bays and Estuaries of California". Provisions of State Water Board plans supersede basin plans; however, the same state plans may allow for site-specific objectives and exceptions in order to meet localized needs and circumstances.

This Basin Plan is used as a regulatory tool by the

Regional Water Board's technical staff. Regional Water Board orders cite the Basin Plan's water quality standards and prohibitions applicable to a particular discharge. The Basin Plan also is used by other agencies in their permitting and resource management activities. It also serves as an educational and reference document for staff, dischargers and members of the public.

LEGAL BASIS AND AUTHORITY

Comprehensive water quality planning is mandated by California and federal law. The federal Clean Water Act contains the law protecting navigable waters, and the California Water Code is the state body of law protecting groundwaters and fresh and marine surface waters.

The federal Clean Water Act (Section 303, 33 U.S.C. § 1313) requires states to adopt water quality standards (water quality objectives and beneficial uses) for navigable waters of the United States and to review and update those standards on a triennial basis. Other provisions of the Clean Water Act related to basin planning include Section 208, which authorizes the preparation of areawide wastewater management plans, and Section 319 (added by 1987 amendments) which provides for more specific planning related to control of nonpoint source problems. The 1987 amendments to the federal Clean Water Act also mandated adoption by the states of numerical standards for 126 "priority pollutant" toxic chemicals.

The State Water Board and regional water boards implement the federal Clean Water Act in California under the oversight of the U.S. Environmental Protection Agency (EPA), Region IX. Direction for implementation of the Clean Water Act is provided by the Code of Federal Regulations (40 CFR) and by a variety of EPA guidance documents on specific subjects.

The Porter-Cologne Water Quality Control Act (Porter-Cologne) is codified in the California Water Code (CWC) and establishes the State Water Board and the nine regional water boards in their current form. It authorizes the State Water Board to adopt, review and revise state water policy, which may include water quality objectives, principles, and guidelines (CWC Sections 13142-13143). It directs the State Water Board to formulate, adopt and revise general procedures for the basin planning process by regional water boards (CWC Section 13164). Porter-Cologne also authorizes the State Water Board to adopt water quality control plans on its own initiative (CWC Section 13170); such plans supersede regional basin plans to the extent of any conflict.

Article 3 of Chapter 4 of Porter-Cologne directs regional water boards to adopt, review, and revise basin plans, and provides specific guidance on factors which must be considered in adoption of water quality objectives and implementation measures. The format for basin plans as described in Sections 13241-13247 of Porter-Cologne follows a logical progression towards water quality protection by:

1) describing the resources and beneficial uses to be protected;

2) stating water quality objectives for the protection of those uses;

3) providing implementation plans (which include specific prohibitions, action plans and policies) to achieve the water quality objectives;

4) describing the statewide plans and policies which apply to the waters of the region; and

5) describing the region's surveillance and monitoring activities.

TRIENNIAL REVIEW AND BASIN PLAN AMENDMENT PROCESS

Both Porter-Cologne (CWC Section 13240) and the Clean Water Act (Section 303(c)(1)) require review of basin plans at least once each three-year period to keep pace with changes in regulations, new technologies and policies, and physical changes within the Region. The Regional Water Board is responsible for this triennial review, and is required to: 1) identify those portions of the Basin Plan which are in need of modification or new additions; 2) adopt standards as appropriate; and 3) recognize the portions of the Basin Plan which are appropriate as written. The review includes a public hearing process, thus providing a forum for the public to raise issues for the Regional Water Board to consider for incorporation into its Basin Plan.

At the conclusion of the triennial review the Regional Water Board adopts a resolution by the Regional Water Board which: 1) summarizes those sections of the Basin Plan which the Regional Water Board has determined to be appropriate and up to date, and 2) sets forth a prioritized list of issues (priority list) which the Regional Water Board has determined are necessary for further evaluation and potential development into a basin plan revision.

The triennial review priority list directs the planning efforts of the Regional Water Board for a period of three years following its adoption. As staffing and budget allows, and starting at the top of the list, the Regional Water Board considers each of the issues identified on the priority list for potential basin plan revisions. The Regional Water Board may also initiate Basin Plan revisions apart from the triennial review process in response to urgent needs which arise after completion of the triennial review.

Once an issue has been evaluated, a proposed amendment is noticed for public hearing. The hearing considers testimony specific to each proposed amendment. This process allows the Regional Water Board to consider each potential amendment on its own merits, to thoroughly identify the problem, to consider alternatives for action, and to assess the expected environmental impact of the proposed action.

Following their adoption by the Regional Water Board, basin plan amendments and supporting documents are submitted to the State Water Board for review and approval. The State Water Board may approve the amendments or remand them to the Regional Water Board with directions for change. Certain basin plan amendments approved by the State Water Board after June 1, 1992, must be reviewed and approved by the Office of Administrative Law (OAL). For purposes of state law, all amendments take effect upon approval by the OAL. Adoption or revision of surface water standards are subject to the approval of the U.S. Environmental Protection Agency.

Public Participation

Public participation is a key element in both state and federal planning requirements. California Code of Regulations, Title 23, Division 3, Chapter 1.5, Section 647.2 describes the Notice and Agenda requirements for all meetings of the Regional Water Board. Water Code Section 13244 requires advance public notice of basin plan amendments and periodic reviews. Federal public participation requirements of 40 CFR Part 25 also apply.

The public participation requirements are intended to foster public awareness and the open processes of governmental decision-making. The Regional Water Board seeks to implement public participation requirements by requesting the public's input, assimilating its viewpoints and preferences, and demonstrating that those viewpoints have been considered.

In the basin planning process, a notice of the proposed action is published in area newspapers and distributed to a list of interested persons or organizations. All basin plan amendments must observe as a minimum the publication procedures which are described in Section 6061 of the Government Code. This requires notification in a newspaper of general circulation once, and three consecutive times when a prohibition of waste discharge is being considered.

All basin plan and statewide plan amendments are subject to the California Environmental Quality Act (CEQA); however, the basin planning process has been certified by the Secretary of Resources as being exempt from CEQA's requirement for preparation of declaration and initial study (California Code of Regulations (CCR) Title 14, Section 15251). Under the basin planning process, the plan amendment, as well as the staff report and backup materials, serve as a "functional equivalent" to an EIR or negative

declaration and initial study. A CEQA "notice of filing" as well as a hearing notice must be published. Under normal circumstances, these notices are published concurrently and at least 45 days prior to the hearing. The notice for noncontroversial matters may be reduced to 30 days. Additionally, under limited emergency situations, further reduction of the advance notice may be possible. The notice sets out dates for public meetings and requests comments from the public. The notice must describe the availability of related reports, include a discussion of possible alternative actions, and an environmental impact analysis of the proposed action(s). All materials related to the proposed action must be available at least thirty days in advance of the public hearing.

Input from interested persons may be either through written correspondence, through public workshop sessions, or at the hearing. At the hearing all interested persons are given the opportunity to speak and respond to the material being considered, within reasonable limitations as determined by the Regional Water Board.

California Code of Regulations, Title 23, Division 4, Chapter 1.5, Section 3781 requires that Regional Water Board approval of basin plan amendments be followed by a Notice of Decision which is filed with the Secretary of the Resources Agency. The Resources Agency is to post this notice for public inspection for at least 30 days.

REGIONAL SETTING OF THE NORTH COAST REGION

This section provides an overview of the environmental and socioeconomic setting of the North Coast Region.

The North Coast Region is defined in Section 13200(a) of Porter-Cologne as follows:

> North Coast region, which comprises all basins including Lower Klamath Lake and Lost River Basins draining into the Pacific Ocean from the California-Oregon state line southerly to the southerly boundary of the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties.

The North Coast Region is divided into two natural drainage basins, the Klamath River Basin and the North Coastal Basin. The North Coast Region covers all of Del Norte, Humboldt, Trinity, and Mendocino Counties, major portions of Siskiyou and Sonoma Counties, and small portions of Glenn, Lake, and Marin Counties.

The North Coast Region encompasses a total area of approximately 19,390 square miles, including 340 miles of scenic coastline and remote wilderness areas, as well as urbanized and agricultural areas.

The North Coast Region is characterized by distinct temperature zones. Along the coast, the climate is moderate and foggy and the temperature variation is not great. For example, at Eureka, the seasonal variation in temperature has not exceeded 63°F for the period of record. Inland, however, seasonal temperature ranges in excess of 100°F have been recorded.

Precipitation over the North Coast Region is greater than for any other part of California, and damaging floods are a fairly frequent hazard. Particularly devastating floods occurred in the North Coast area in December of 1955, in December of 1964, and in February of 1986.

Ample precipitation in combination with the mild climate found over most of the North Coast Region has provided a wealth of fish, wildlife, and scenic resources. The mountainous nature of the Region, with its dense coniferous forests interspersed with grassy or chaparral covered slopes, provides shelter and food for deer, elk, bear, mountain lion, furbearers and many upland bird and mammal species. The numerous streams and rivers of the Region contain anadromous fish, and the reservoirs, although few in number, support both coldwater and warmwater fish.

Tidelands, and marshes too, are extremely important to many species of waterfowl and shore birds, both for feeding and nesting. Cultivated land and pasture lands also provide supplemental food for many birds, including small pheasant populations. Tideland areas along the north coast provide important habitat for marine invertebrates and nursery areas for forage fish, game fish, and crustaceans. Offshore coastal rocks are used by many species of seabirds as nesting areas.

Major components of the economy are tourism and recreation, logging and timber milling, aggregate mining, commercial and sport fisheries, sheep, beef and dairy production, and vineyards and some wineries.

In all, the North Coast Region offers a beautiful natural environment with opportunities for scientific study and research, recreation, sport and commerce. To ensure their perpetuation, the resources must be used wisely.

The Klamath River Basin

The Klamath River Basin covers an area of approximately 10,830 square miles within northern California tributary to the Klamath, Smith, Applegate, Illinois, and Winchuck Rivers, as well as the closed Lost River and Butte Valley hydrologic drainage areas. The Basin is bounded by the Oregon state border on the north, the Pacific Ocean on the west, Redwood Creek and Mad River hydrologic units on the south, and by the Sacramento Valley to the east. The Basin covers all of Del Norte County, and major portions of Humboldt, Trinity, Siskiyou and Modoc counties.

The western portion of the Basin is within the Klamath Mountains and Coast Range provinces, characterized by steep, rugged peaks ranging to elevations of 6,000 to 8,000 feet with relatively little valley area. The mountain soils are shallow and often unstable. Precipitation ranges from 60 to 125 inches per year. The 45-mile coastline is dominated by a narrow coastal plain where heavy fog is common.

The eastern portion of the Basin receives low to moderate rainfall and includes predominantly high, broad valleys such as the Butte, Shasta, and Scott Valleys.

The Lost River and Butte Valley hydrologic areas are located in the Modoc-Oregon Lava Plateau. The area

is characterized by broad valleys ranging from 4,000 to 6,000 feet in elevation. Typical annual precipitation is 15 to 25 inches.

The Shasta Valley hydrologic area lies principally within the Cascade Range province. The valley floor elevation is about 2,500 to 3,000 feet, and surrounding mountains range up to 14,162 feet (Mt. Shasta). Annual precipitation ranges from below 15 inches in the valley to over 60 inches in the mountains.

The Scott River hydrologic area is in the Klamath Mountains province. The valley floor elevation is also about 2,500 to 3,000 feet, and surrounding mountains range up to approximately 8,500 feet. Annual precipitation ranges from below 20 inches in the valley to over 70 inches in the western mountains.

The North Coastal Basin

The North Coastal Basin covers an area of approximately 8,560 square miles located along the north-central California Coast. The Basin is bounded by the Pacific Ocean on the west, by the Klamath River and Trinity River Basins on the north, by the Sacramento Valley, Clear Lake, Putah and Cache Creeks and the Napa River Basin on the east, and by the Marin-Sonoma area on the south. The Basin covers all of Mendocino County, major portions of Humboldt and Sonoma counties, about one-fifth of Trinity County, and small portions of Glenn, Lake and Marin counties.

Most of the Basin consists of rugged, forested coastal mountains dissected by six major river systems: Eel, Russian, Mad, Navarro, Gualala, and Noyo rivers and numerous smaller river systems. Soils are generally unstable and erodible, and rainfall is high. The area along the eastern boundary of the Basin is mostly National Forest land administered by the United States Forest Service. Major population areas are centered around Humboldt Bay in the northern portion of the Basin and around Santa Rosa in the southern portion. The Santa Rosa area is on the northern fringe of the greater San Francisco Bay urban area and has experienced rapid population growth in the period following the Second World War. The economy of the remainder of the Basin has developed much more slowly than other areas in California.

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Population and Land Use

The planning process must consider past, existing, and future population and land uses. Recent population trends and projections are contained in the county general plans. In addition, the Department of Finance provides annual estimates of the population by county.

Approximately two percent of the total population of California reside in the North Coast Region. The largest urban centers continue to be located in the Eureka area of Humboldt County and in the Santa Rosa area of Sonoma County, which has experienced the highest population change of all the counties within the Region.

WATER RESOURCES AND WATER USE

There are 14 major surface water hydrologic units in the North Coast Region, as shown in Figure 1-1. Each of these hydrologic units is divided into smaller units called hydrologic areas and hydrologic subareas.

The North Coast Region is abundant in surface water and groundwater resources. Although the North Coast Region constitutes only about 12 percent of the area of California, it produces about 40 percent of the annual runoff. This runoff contributes to flow in surface water streams, storage in lakes and reservoirs, and replenishes groundwater.

Several groundwater basins have been identified by the Department of Water Resources (DWR). Additional unnamed groundwater basins exist throughout the North Coast Region. Groundwater exists even where groundwater basins have not been identified. Groundwater basins do not always follow the same boundaries as surface waters. Groundwater is used widely throughout the Region for domestic, agricultural, and industrial water supply.

The Klamath River Basin

The Klamath River Basin includes five hydrologic units: Winchuck River, Rogue River, Smith River, Klamath River and Trinity River.

The Winchuck River and Rogue River hydrologic units, located near the California-Oregon border, have had no significant surface water development. Consumptive water use in these units include domestic, agricultural, and industrial water supply. No significant groundwater basins have been identified by DWR in these units.

In the Smith River hydrologic unit no significant surface water development has occurred. Domestic, agricultural, and industrial water needs are supplied through surface water diversions and groundwater pumping. DWR has identified one groundwater basin, the Smith River Plain basin, in this hydrologic unit.

The Klamath River hydrologic unit is divided into seven hydrologic areas: Lost River, Butte Valley, Shasta Valley, Scott River, Middle Klamath, Salmon River and Lower Klamath River. Water resources and water use are described for each of these hydrologic areas in the following paragraphs.

Groundwater is the primary source of domestic water supply in the Lost River hydrologic area. Groundwater basins identified by DWR are the Klamath River Valley, Fairchild Swamp Valley, Modoc Plateau Recent Volcanic Area, and Modoc Plateau Pleistocene Volcanic Area.

The Bureau of Reclamation's Klamath Project located in the Lost River hydrologic area is the largest irrigation development in the Klamath River Basin. It serves irrigation water to 233,625 acres of irrigable land in Oregon and the Lost River area of California. The project's water supply is derived from the Klamath River in Oregon and the Lost River. The principal feature within the basin is the 527,000 acre-foot Clear Lake Reservoir on the Upper Lost River. Runoff and drainage reaching the 13,200 acre Tule Lake is pumped to the 9,000 acre Lower Klamath Lake Sump for irrigation and wildlife refuge use. Water not used for irrigation in Lower Klamath Lake Sump is pumped to the Oregon portion of the Klamath River via the Klamath Straits Drain to regulate the water table within the Tule Lake Irrigation District area. The Klamath Project serves a majority of the irrigable land in the Lost River subunit. The Tulelake Irrigation District, the basin's largest, serves 60,600 acres in California with Klamath Project water.

Water use in the Butte Valley hydrologic area comes mostly from groundwater pumping. Groundwater basins identified by DWR in the Butte Valley hydrologic area are the Butte Valley, Bray Town Area, and Red Rock Valley. Approximately 28,000 acres are irrigated in the Butte Valley. Water not used for irrigation is pumped from the 4,000 acre Meiss Lake to the Klamath River via drainage facilities operated by Meiss Lake Ranch in order to regulate the water table.

In the Shasta Valley hydrologic area, domestic and agricultural water supply needs have historically been met through surface water diversions and from springs. Groundwater is used increasingly for domestic and agricultural supply. DWR has identified one groundwater basin in the Butte Valley. The principal water service agency in the Shasta Valley hydrologic area is the Montague Water Conservation District, which serves over 14,000 of the 48,000 acres irrigated in the subunit. The District's main supply source is 50,000 acre-foot Lake Shastina on the Shasta River. Several smaller irrigation districts in Shasta Valley serve from 1,500 to 3,500 acres each.

Domestic and agricultural water supply needs in the Scott Valley hydrologic area are met through surface water diversions, groundwater pumping, and springs. Approximately 33,000 acres are irrigated in the Scott Valley area. Increases in groundwater pumping for irrigation have prompted adjudication of groundwater in Scott Valley. DWR has identified one groundwater basin in this hydrologic area.

Domestic and agricultural water supply needs in the Middle Klamath hydrologic area are met through surface water diversions, groundwater pumping, and springs. DWR has identified two groundwater basins in this hydrologic area: Happy Camp Town Area and Seiad Valley.

Domestic water use in the Salmon River hydrologic area is supplied by surface water diversions and springs. No groundwater basins have been identified by DWR in this hydrologic area.

In the Lower Klamath River hydrologic area, domestic and agricultural water supply is provided through surface water diversions and groundwater pumping. DWR has identified one groundwater basin in this hydrologic area.

Four Pacific Power and Light Company hydroelectric reservoirs regulate Klamath River flows in the Upper

and Middle Klamath River hydrologic areas. The uppermost is John Boyle Dam, located in Oregon about ten miles upstream from the border;its installed power plant capacity is 80,000 kilowatts (kw). Copco No. 1 (20,000 kw) is located just inside the California border; it is a 77,000 acre-foot reservoir impounded by a 132-foot high dam. Copco No. 2 is a 55 acre-foot diversion reservoir which serves a 27,000 kw power plant downstream. The lowermost power development is the 58,000 acre-foot Iron Gate Reservoir, located 17 miles downstream from the state line; it is formed by a l83 foot-high dam and supports an 18,000 kw power plant. The upper three plants are operated on a peaking basis, while Iron Gate is a baseload plant.

In the Trinity River hydrologic unit, domestic, agricultural, and industrial water is supplied through surface water diversions, groundwater pumping, and springs. Groundwater basins identified by DWR in this hydrologic unit are in the Hayfork Valley, Hoopa Valley, and Hyampon Valley.

The Trinity River Division of the Central Valley Project is the largest water development in the Klamath River Basin. The 538-foot-high Trinity Dam forms 2.5 million acre-foot Clair Engle Lake. Releases pass through the 105,556 kw Trinity power plant to Lewiston Reservoir (14,660 acre-feet), from which approximately one million acre-feet per year are diverted by tunnel to the Sacramento Valley. The diverted flows pass through two additional power plants with a combined capacity of 291,444 kw.

Further major developments on the Klamath and Trinity Rivers or on the Smith River and any of its tributaries are forbidden by the 1972 California Wild and Scenic Rivers Act. Only minor additional surface water development for local use is foreseen, primarily because of the high costs in relation to crops which can be grown in the area.

The North Coastal Basin

The North Coastal Basin is divided into nine hydrologic units: Redwood Creek, Trinidad, Mad River, Eureka Plain, Eel River, Cape Mendocino, Mendocino Coast, Russian River, and Bodega.

In the Redwood Creek and Trinidad hydrologic units, there are no significant surface water developments. Groundwater and surface water diversions supply most of the domestic and agricultural needs. Groundwater basins identified by DWR in these units are in the Prairie Creek Area, Redwood Creek Valley, and Big Lagoon Area.

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In the Mad River and Eureka Plain hydrologic units, water supply is adequate to meet currently projected requirements. The only major surface storage is provided by the 48,030 acre-foot capacity Ruth Reservoir on the Mad River which regulates municipal and industrial water supply for the Eureka/Arcata area by exporting Mad River subbasin water to the Eureka Plain subbasin. Groundwater basins have been identified by DWR in both of these hydrologic units. The main groundwater sources in the Eureka Plain are in the Elk River/Salmon Creek area and the Jacoby Creek/Freshwater Creek area.

The only major surface water development in the Eel River hydrologic unit is Lake Pillsbury, which is formed by Scott Dam, with a storage capacity of 80,700 acre-feet. This facility, in conjunction with Van Arsdale Dam and the Potter Valley Tunnel, provides for power and export of Eel River water to the Russian River unit. The City of Willits obtains its water supply from the 723 acre-feet capacity Morris Reservoir and the 635 acre-feet capacity Centennial Reservoir, both located on James Creek. Fifteen groundwater basins have been identified by DWR in this unit: Eel River Valley, Pepperwood Town Area, Larabee Valley, Hettenshaw Valley, Dinsmore Town Area, Laytonville Valley, Little Lake Valley, Weott Town Area, Garberville Town Area, Lower Laytonville Valley, Gravelly Valley, Sherwood Valley, Round Valley, Williams Valley, and Eden Valley. The Eel River hydrologic unit is an area of water surplus for currently projected requirements.

No significant surface water development has occurred in the Cape Mendocino hydrologic unit. Groundwater is used for domestic supply in this unit. DWR has identified two groundwater basins in this unit: Mattole River Valley and Honeydew Town Area.

There is no significant surface water storage within the Mendocino Coast hydrologic unit. Surface water diversions and groundwater pumping are used to supply agricultural needs. Groundwater is the principal source of domestic water supply. Eleven groundwater basins have been identified by DWR:

Ten Mile River, Cottoneva Creek Valley, Branscomb Town Area, Little Valley, Fort Bragg Terrace Area, Big River Valley, Navarro River Valley, Anderson Valley, Garcia River Valley, Gualala River Valley, and Annapolis Ohlson Ranch Formation Highlands. The Mendocino Coast hydrologic unit is reaching its existing capacity.

Surface water storage in the Russian River hydrologic unit includes Lake Mendocino, which stores imported Eel River water and East Fork Russian River water, and Lake Sonoma, which is located on Dry Creek, a tributary of the Russian River. Lake Mendocino is formed by Coyote Dam and has a maximum storage capacity of 122,500 acre-feet with 70,000 acre-feet allocated to water supply. Lake Sonoma is formed by Warm Springs Dam and has a maximum storage capacity of 381,000 acre-feet with 212,000 acre-feet allocated to water supply. DWR has identified a number of groundwater basins in this unit. These include: Potter Valley, Ukiah Valley, Sanel Valley, MacDowell Valley, Cloverdale Area, Alexander Area, Alexander Valley, Healdsburg Area, Santa Rosa Plain, Santa Rosa Valley, Kenwood/Rincon Valley, Lower Russian River Valley, and Sebastopol Merced Formation Highlands. Groundwaters are used for domestic supply by the cities of Ukiah, Windsor, Santa Rosa, Rohnert Park, and Sebastopol, as well as in unincorporated areas outside of the City of Santa Rosa. There is sufficient water supply within this hydrologic unit to meet currently projected demands for the foreseeable future. Russian River water also is exported to northern Marin County.

The Bodega hydrologic unit has no significant surface water storage. One groundwater basin has been identified in the unit.

Four hydroelectric power generation plants exist in the North Coastal Basin. Matthews Dam at Ruth Reservoir is equipped with a 2 megawatt facility. Van Arsdale Dam supports a 9 megawatt plant. Coyote Dam at Lake Mendocino supports two power generation units with a combined capacity of 3.5 megawatts. Warm Springs Dam at Lake Sonoma is equipped with a 2.6 megawatt facility.

WATER QUANTITY AND QUALITY PROBLEMS

The present water quality within the Region generally meets or exceeds the water quality objectives set forth

in Section 3 of this Plan. In most cases the water quality is sufficient to support, and in some cases, enhance the beneficial uses assigned to water bodies in Section 2 of this Plan. However, there are a number of present or potential water quality problems which may interfere with beneficial uses or create nuisances or health hazards.

Updated summaries of existing water quality throughout much of the Region are contained in bulletins published by the Department of Water Resources and the U.S. Geological Survey, as well as in special reports issued periodically by the Regional Water Board.

An opportunity to address and assess water quality problems is provided in the triennial review of the Basin Plan. It is at this time that the Regional Water Board utilizes the input of interested agencies and individuals to identify and prioritize the water quality issues within the Region. In addition, the Regional Water Board, in its budget review process, addresses its water quality problem areas on an annual basis to determine the time and effort expended on each identified issue.

2. BENEFICIAL USES

INTRODUCTION

The basis for the discussion of beneficial water uses, which follows, is Section 13050(f) of California's Porter-Cologne Water Quality Control Act, which states:

> "Beneficial uses" of the waters of the state that may be protected against water quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

An essential part of a water quality control plan is an assessment of the beneficial uses, which are to be designated and protected. Table 2-1 identifies beneficial uses for each hydrologic area in the Region, as well as for specific waterbodies and broad categories of waters (i.e., bays, estuaries, minor coastal streams, ocean waters, wetlands, and groundwaters). Protection will be afforded to the present and potential beneficial uses of waters of the North Coast Region as designated and presented in Table 2-1. The beneficial uses of any specifically identified water body generally apply to all its tributaries.

Water quality standards are adopted to protect public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act (as defined in Sections 101(a)(2), and 303(c) of the Act). Water quality standards consist of 1) designated beneficial uses; 2) the water quality objectives to protect those designated uses; 3) implementation of the Federal and State policies for antidegradation; and 4) general policies for application and implementation. Chapter 3 of the Basin Plan contains numeric and narrative water quality objectives, including Resolution 68–16, designed to ensure that all designated beneficial uses of water in the Region are maintained and protected. Chapter 4 contains the implementation plans and Policies intended to meet water quality objectives and protect beneficial uses. Chapter 5 describes the Region and statewide monitoring and surveillance methods to measure achievement of the water quality objectives. The objective of the State's Policy for Maintaining High Quality of Waters in California (Antidegradation Policy - Resolution 68-16) is explained in Chapter 3, on page 3-2.00. The entire text of this Policy is contained in Appendix 6 to the Basin Plan. The federal Antidegradation Policy also applies to the protection of beneficial uses. The federal Antidegradation Policy is contained in Appendix 6-B.

BENEFICIAL USE DEFINITIONS

In 1972, the State Water Board adopted a uniform list of beneficial uses, including descriptions, to be applied throughout all basins of the State. This list was updated in 1996. In addition to the beneficial uses identified on the statewide list, the following uses have been identified in this Region: Three wetland beneficial uses, recognizing the value of protecting these unique waterbodies: Wetland Habitat (WET); Water Quality Enhancement (WQE); and Flood Peak Attenuation/ Flood Water Storage (FLD). The Native American Cultural (CUL) use and Subsistence Fishing (FISH) use have been added, identifying the traditional and cultural uses of waters within the Region.

The following beneficial uses are designated within the North Coast Region.

Municipal and Domestic Supply (MUN) Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

Agricultural Supply (AGR) Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

Industrial Service Supply (IND) Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.

Industrial Process Supply (PRO) Uses of water for industrial activities that depend primarily on water quality.

Groundwater Recharge (GWR) Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water

quality, or halting of saltwater intrusion into freshwater aquifers.

Freshwater Replenishment (FRSH) Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

Navigation (NAV) Uses of water for shipping, travel, or other transportation by private, military or commercial vessels.

Hydropower Generation (POW) Uses of water for hydropower generation.

Water Contact Recreation (REC-1) Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white-water activities, fishing, or use of natural hot springs.

Non-Contact Water Recreation (REC-2) Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Commercial and Sport Fishing (COMM) Uses of water for commercial, recreational (sport) collection of fish, shellfish, or other aquatic organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Aquaculture (AQUA) Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

Warm Freshwater Habitat (WARM) Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Cold Freshwater Habitat (COLD) Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Inland Saline Water Habitat (SAL) Uses of water that support inland saline water ecosystems including, but not limited to, preservation or enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates.

Estuarine Habitat (EST) Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

Marine Habitat (MAR) Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

Wildlife Habitat (WILD) Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Preservation of Areas of Special Biological Significance (ASBS) Includes marine life refuges, ecological reserves and designated areas of special biological significance, such as areas where kelp propagation and maintenance are features of the marine environment requiring special protection.

Rare, Threatened, or Endangered Species (RARE) Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered.

Migration of Aquatic Organisms (MIGR) Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.

Spawning, Reproduction, and/or Early Development (SPWN) Uses of water that support high quality aquatic

habitats suitable for reproduction and early development of fish.

Shellfish Harvesting (SHELL) Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.

Water Quality Enhancement (WQE) Uses of waters, including wetlands and other waterbodies, that support natural enhancement or improvement of water quality in or downstream of a waterbody including, but not limited to, erosion control, filtration and purification of naturally occurring water pollutants, streambank stabilization, maintenance of channel integrity, and siltation control.

Flood Peak Attenuation/Flood Water Storage (FLD) Uses of riparian wetlands in flood plain areas and other wetlands that receive natural surface drainage and buffer its passage to receiving waters.

Wetland Habitat (WET) Uses of water that support natural and man-made wetland ecosystems, including, but not limited to, preservation or enhancement of unique wetland functions, vegetation, fish, shellfish, invertebrates, insects, and wildlife habitat.

Native American Culture (CUL) Uses of water that support the cultural and/or traditional rights of indigenous people such as subsistence fishing and shellfish gathering, basket weaving and jewelry material collection, navigation to traditional ceremonial locations, and ceremonial uses.

Subsistence Fishing (FISH) Uses of water that support subsistence fishing.

KEY TO TABLE 2-1

The list of beneficial uses in Table 2-1 reflects demands on the water resources of the North Coast Region. Water quality objectives (see Chapter 3) will adequately protect the quality of the waters of the Region for future generations.

Table 2-1 lists designated beneficial uses of inland surface waters by hydrologic unit, hydrologic area, hydrologic subarea, and in a few cases, by specific waterbody. General categories at the bottom of the table list the beneficial uses of bays/harbors, estuaries/lagoons, ocean waters, minor coastal streams, freshwater and saline wetlands, and groundwater.

Within Table 2-1, hydrologic unit, area, and sub-area numbers are shown as developed for the State's hydrologic basin planning system. For uniformity purposes, the Calwater system was developed by a State and Federal interagency committee in 1997. Calwater is a set of standardized watershed boundaries for California nested into larger previously standardized watersheds, which meet standardized delineation criteria.

"CALWATER (Rbuas) Number" This column contains a numeric identifier in a specified order representing specific subdivisions of drainage used by the Calwater classification system. The number follows the format below:
Hydrologic Region + Basin/ HU + HA + HSA

"Hydrologic Unit/Subunit/Drainage Feature" This column contains (in bold type) the names of watersheds and subwatersheds corresponding to the hydrologic unit (HU), hydrologic area (HA), or hydrologic subarea (HSA) number in the preceding column. The definitions of these area classifications are provided below.

HU: Hydrologic Unit Each hydrologic region is divided into hydrologic units, which are defined by surface drainage as well as topographic and geographic conditions. A hydrologic unit may encompass a major river watershed or a major groundwater basin, contiguous watersheds with similar hydrogeologic characteristics, or a closed drainage area, such as a desert basin or group of such basins.

HA: Hydrologic Area Major subdivisions of hydrologic units. Best described as major tributaries of a river, large valley groundwater basin, or a component of a stream or desert basin group.

HSA: Hydrologic Subarea Consist of a major segment of a hydrologic area having significant

geographical characteristics of hydrological homogeneity.

Drainage Feature/Waterbody An individual waterbody, which has been listed as a distinct feature of the hydrologic subunit in which it exists, based on unique designated beneficial uses.

Beneficial Uses The subheadings under this heading are abbreviations of beneficial uses, which are defined above. An “E” or a “P” in a column beneath one of these designates an existing or potential beneficial use for a given hydrologic area, sub-area or waterbody, respectively. The complete list of beneficial uses follows:

MUN	Municipal and Domestic Supply
AGR	Agricultural Supply
IND	Industrial Service Supply
PRO	Industrial Process Supply
GWR	Groundwater Recharge
FRSH	Freshwater Replenishment
NAV	Navigation
POW	Hydropower Generation
REC-1	Water Contact Recreation
REC-2	Non-Contact Water Recreation
COMM	Commercial and Sport Fishing
WARM	Warm Freshwater Habitat
COLD	Cold Freshwater Habitat
ASBS	Preservation of Areas of Special Biological Significance
SAL	Inland Saline Water Habitat
WILD	Wildlife Habitat
RARE	Rare, Threatened, or Endangered Species
MAR	Marine Habitat
MIGR	Migration of Aquatic Organisms
SPWN	Spawning, Reproduction, and/or Early Development
SHELL	Shellfish Harvesting
EST	Estuarine Habitat
AQUA	Aquaculture
CUL	Native American Culture
FLD	Flood Peak Attenuation/ Flood Water Storage
WET	Wetland Habitat
WQE	Water Quality Enhancement
FISH	Subsistence Fishing

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																										
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
101.00	**Winchuck River Hydrologic Unit**																											
	Winchuck River	E	E	E	P		E	E	P	E	E	E		E			E	E		E	E			P				
102.00	**Rogue River Hydrologic Unit**																											
102.20	Illinois River Hydrologic Area	E	E	E	P		E	E	E	E	E	E		E			E	E		E	E			E				
102.30	Applegate River Hydrologic Area	E	E	E	E		E	E	P	E	E	E		E			E	E		E	E			P				
103.00	**Smith River Hydrologic Unit**																											
103.10	Lower Smith River Hydrologic Area																											
103.11	Smith River Plain Hydrologic Subarea	E	E	E	P		E	E		E	E	E		E			E	E	E	E	E		E	P	E			
	Lake Talawa	P					E	E		E	E	E	E	E			E	E		E				P	E			
	Lake Earl	E	E	E			E	E		E	E	E	E	E			E	E		E				P	E			
	Crescent City Harbor						E	E		E	E	E	P	E			E	E	E	E		E		E				
103.12	Rowdy Creek Hydrologic Subarea	E	E	E	P		E	E	P	E	E	E		E			E	E		E	E			P				
103.13	Mill Creek Hydrologic Subarea	E	E	E	P		E	E	P	E	E	E		E			E	E		E	E			P				
103.20	South Fork Smith River Hydrologic Area	E	E	E	P		E	E	E	E	E	E		E			E	E		E	E			P	E			
103.30	Middle Fork Smith River Hydrologic Area	E	E	E	P		E	E	E	E	E	E		E			E	E		E	E			E	P			
103.40	North Fork Smith River Hydrologic Area	E	E	E	P		E	E	E	E	E	E		E			E	E		E	E			P				
103.50	Wilson Creek Hydrologic Area	E	E	E	P		E	E	E	E	E	E		E			E	E		E	E			P	E			
105.00	**Klamath River Hydrologic Unit**																											
105.10	Lower Klamath River Hydrologic Area																											
105.11	Klamath Glen Hydrologic Subarea	E	E	P	P	E	E	E	P	E	E	E	E	E			E	E	E	E	E	E	E	P	E			
105.12	Orleans Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E	P		P	E			
105.20	Salmon River Hydrologic Area																											
105.21	Lower Salmon Hydrologic Subarea	E	E	E	P		E	E	P	E	E	E		E			E	E		E	E	P		P	E			
105.22	Wooley Creek Hydrologic Subarea	E	P	E	P	E	E	E	P	E	E	E		E			E	E		E	E	P		P	E			
105.23	Sawyers Bar Hydrologic Subarea	E	E	E	P		E	E	P	E	E	E		E			E	E		E	E	P		P				
105.24	Cecilville Hydrologic Subarea	E	E	E	P		E	E	P	E	E	E		E			E	E		E	E	P		P				

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																										
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
105.30	Middle Klamath River Hydrologic Area																											
105.31	Ukonom Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P	E			
105.32	Happy Camp Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P	E			
105.33	Seiad Valley Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P	E			
105.35	Beaver Creek Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P				
105.36	Hornbrook Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P				
105.37	Iron Gate Hydrologic Subarea	P	P	P	P		E	E	E	E	E	E	E	E			E	E		E	E	E		E				
105.38	Copco Lake Hydrologic Subarea	E	E	E	P		E	E	E	E	E	E	E	E			E	E		E	E			E				
105.40	Scott River Hydrologic Area																											
105.41	Scott Bar Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E		E			E	E		E	E			P				
105.42	Scott Valley Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E		E			E	E		E	E			E				
105.50	Shasta Valley Hydrologic Area																											
	Shasta River & Tributaries	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E			E				
	Lake Shastina	P	E	P	P	E	E	E		E	E		E	E			E			P				P				
	Lake Shastina Tributaries	E	E	E	P	E	E	P	P	E	E	E	E	E			E			E	E			P				
105.80	Butte Valley Hydrologic Area																											
105.81	Macdoel-Dorris Hydrologic Subarea	E	E	P	P				E	E	E	E	E	E			E	E		E	E			P				
	Meiss Lake	E	E	P	P	E				P	E		E	E			E							P				
105.82	Bray Hydrologic Subarea	E	E						P	E	E	E	E				E	E		E	E			P				
105.83	Tennant Hydrologic Subarea	E	E	P	P	E	E		P	E	E	P	P	E			E	P		E	E			P				

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																										
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
105.90	Lost River Hydrologic Area																											
105.91	Mount Dome Hydrologic Subarea	P	E	P	P	E	E		P	P	E	P	E	E			E	E		E	E			P				
105.92	Tule Lake Hydrologic Subarea	P	E	P	P	E	E			P	E	E	E	P			E	E		E	E			P				
105.93	Clear Lake Hydrologic Subarea	P	E	P	P	E	E	P	P	E	E	E	E	E			E	E		E	E	P		P				
105.94	Boles Hydrologic Subarea	P	E	P	P	E	E		P	P	E	E	E	E			E	E		E	E	P		P				
	Trinity River Hydrologic Unit																											
106.10	Lower Trinity River Hydrologic Area																											
106.11	Hoopa Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E	P		P	E			
106.12	Willow Creek Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E		E			E	E		E	E	P		P				
106.13	Burnt Ranch Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E	P		E				
106.14	New River Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E	P		P				
106.15	Helena Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E	P		P				
106.20	South Fork Trinity River Hydrologic Area																											
106.21	Grouse Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E			P				
106.22	Hyampom Hydrologic Subarea	E	E	E	P	E	E	P	E	E	E	E		E			E	E		E	E			P				
106.23	Forest Glen Hydrologic Subarea	E	E	E	P	E	E	P	P	E	E	E		E			E	E		E	E			P				
106.24	Corral Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E			P				
106.25	Hayfork Valley Hydrologic Subarea	E	E	E	E	E	E		P	E	E	E		E			E	E		E	E			P				
	Ewing Reservoir	E		P	P			E		P	E	E	E	E			E	E						P				
106.30	**Middle Trinity Hydrologic Area**																											
106.31	Douglas City Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E			P				
106.32	Weaver Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E			E				

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																										
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
106.40	Upper Trinity River Hydrologic Area																											
	Trinity Lake (formerly Clair Engle Lake)	E	E	E	E	E	E	E	E	E	E	E	E	E			E	E		P	E			P				
	Lewiston Reservoir	E	E	P	P	E	E	E	E	E	E	E	P	E			E	E		P	E			E				
	Trinity River	E	E	P	P	E	E	E	P	E	E	E		E			E	E		E	E			E				
107.00	**Redwood Creek Hydrologic Unit**																											
107.10	Orick Hydrologic Area	E	E	E	P	E		E	P	E	E	E		E			E	E	E	E	E		E	P	E			
107.20	Beaver Hydrologic Area	E	E	E	P	E		E	P	E	E	E		E			E	E		E	E			P				
107.30	Lake Prairie Hydrologic Area	E	E	E	P	E		E	P	E	E	E		E			E	E		E	E			P				
108.00	**Trinidad Hydrologic Unit**																											
108.10	Big Lagoon Hydrologic Area	E	E	E	P	E	E	E		E	E	E		E	E		E	E	E	E	E		E	P	E			
108.20	Little River Hydrologic Area	P	E	E	P	E	E	E		P	E	E		E			E	E	E	E	E		E	P	E			
109.00	**Mad River Hydrologic Unit**																											
109.10	Blue Lake Hydrologic Area	E	E	E	E	E	E	E	P	E	E	E		E			E	E	P	E	E		E	E	E			
109.20	North Fork Mad River Hydrologic Area	E	E	E	E	E	E	E	P	E	E	E		E			E	E		E	E			P				
109.30	Butler Valley Hydrologic Area	E	E	E	E	E	E	E	P	E	E	E		E			E	E		E	E			P	E			
109.40	Ruth Hydrologic Area	E	E	E	E	E	E	E	E	E	E	E	E	E			E	E		E	E			P				
110.00	**Eureka Plain Hydrologic Unit**																											
	Jacoby Creek	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E*	P	E			
	Freshwater Creek	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E*	E	E			
	Elk River	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E*	P				
	Salmon Creek	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E*	P	E			
	Humboldt Bay	E	E	E	P		E	E	P	E	E	E		E			E	E	E	E	E	E	E*	E	E			

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																										
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
111.00	**Eel River Hydrologic Unit**																											
111.10	Lower Eel River Hydrologic Area																											
111.11	Ferndale Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E	P	E	E	E	E	P	E			
111.12	Scotia Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E			P				
111.13	Larabee Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E			P				
111.20	Van Duzen River Hydrologic Area																											
111.21	Hydesville Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E			P	E				
111.22	Bridgeville Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			P					
111.23	Yager Creek Hydrologic Subarea	E	E	E	P	E	E		P	E	E	E	E	E			E	E		E	E			E	E				
111.30	South Fork Eel River Hydrologic Area																											
111.31	Weott Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E			P					
111.32	Benbow Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E			P					
111.33	Laytonville Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E			P					
111.40	Middle Fork Eel River Hydrologic Area																											
111.41	Sequoia Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			P					
111.42	Spy Rock Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			P					
111.50	North Fork Eel River Hydrologic Area	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			P					
111.60	Upper Main Eel River Hydrologic Area																											
111.61	Outlet Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E			E	E		E	E			E					
111.62	Tomki Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E			E					
111.63	Lake Pillsbury Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			E					

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																										
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
111.70	Middle Fork Eel River Hydrologic Area																											
111.71	Eden Valley Hydrologic Subarea	E	E	E	P		E	E	P	E	E	E	E	E			E	E		E	E			E				
111.72	Round Valley Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	P	E			E	E		E	E			E				
111.73	Black Butte River Hydrologic Subarea	E	E	E	P		E	E	E	E	E	E	E	E			E	E		E	E			P				
111.74	Wilderness Hydrologic Subarea	E	E	E	P		E	E	E	E	E	E	E	E			E	E		E	E			P				
112.00	**Cape Mendocino Hydrologic Unit**																											
112.10	Oil Creek Hydrologic Area	P	E	E	P		E		P	E	E	E		E			E	E		E	E		E	E	E			
112.20	Capetown Hydrologic Area	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E			P	E			
112.30	Mattole River Hydrologic Area	E	E	E	P	E	E	E	P	E	E	E	P	E			E	E		E	E		E	E				
113.00	**Mendocino Coast Hydrologic Unit**																											
113.10	Rockport Hydrologic Area	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				
113.11	Usal Creek Hydrologic Subarea	E	P	P	P	E	E	E	P	E	E	E		E			E	E		E	E							
113.12	Wages Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E							
113.13	Ten Mile River Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				
113.20	Noyo River Hydrologic Area	E	E	E	P	E	E	E	E	E	E	E		E			E	E		E	E		E	E				
113.30	Big River Hydrologic Area	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				
113.40	Albion River Hydrologic Area	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				
113.50	Navarro River Hydrologic Area	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				
113.60	Pt Arena Hydrologic Area																											
113.61	Greenwood Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				
113.62	Elk Creek Hydrologic Subarea	P	P	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				
113.63	Alder Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				
113.64	Brush Creek Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E		E	P				

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																									
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
113.70	Garcia River Hydrologic Area	E	E	E	P		E	E	P	E	E	E		E			E	E		E	E		E	P				
113.80	Gualala River Hydrologic Area																											
113.81	North Fork Gualala Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E		E			E	E		E	E			E				
113.82	Rockpile Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E			E	E		E	E		E	P				
113.83	Buckeye Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E			E	E		E	E			P				
113.84	Wheatfield Fork Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E			E	E		E	E			P				
113.85	Gualala Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E			P				
113.90	Russian Gulch Hydrologic Area	E	E	E	P	E				E	E	P		E		E	E			E	E			E				
114.00	**Russian River Hydrologic Unit**																											
114.10	Lower Russian River Hydrologic Area																											
114.11	Guerneville Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E	P	E	P				
114.12	Austin Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E			E	E		E	E			P				
114.20	Middle Russian River Hydrologic Area																											
114.21	Laguna Hydrologic Subarea	P	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E	P		P				
114.22	Santa Rosa Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E			E	E		E	E	P		P				
114.23	Mark West Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E	P		P				
114.24	Warm Springs Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			E				
114.25	Geyserville Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E	P		P				
114.26	Sulphur Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E			E	E		E	E			P				

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																										
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
114.30	Upper Russian River Hydrologic Area																											
114.31	Ukiah Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E	P		P				
114.32	Coyote Valley Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			P				
114.33	Forsythe Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E			E	E		E	E			P				
115.00	**Bodega Hydrologic Unit**																											
115.10	Salmon Creek Hydrologic Area	E	E	E	P	E		E		E	E	E		E			E	E		E	E	P	E	P				
115.20	Bodega Harbor (or Bay) Hydrologic Area	E	E	E	P	E		E		E	E	E		E			E	E	E	E	E	E		E				
115.30	Estero Americano Hydrologic Area	E	E	E	P	E		E		E	E	E		E			E	E	E	E	E	P	E	P				
115.40	Estero de San Antonio Hydrologic Area	E	E	E	P	E		E		E	E	E		E			E	E	E	E	E	P	E	P				
	Minor Coastal Streams (not listed above**)	E	P	P	P	P	P	P		P	P	E	P	P			E	E	P	P	P		E	P	P			
	Ocean Waters			P	P			E		E	E	E			P		E	E	E	E	E	E		E				
	Bays			P	P			E		P	E	E	P	E			E	P	E	E	E	E	P	P	P			
	Saline Wetlands			P		P	P	P		P	P	P	P	P		P	P	P	P	P	P	P	P	P	P	P	E	P
	Freshwater Wetlands	P	P	P		P	P	P		P	P	P	P	P			P	P		P	P	P	P	P	P	P	E	P
	Estuaries	P	P	P	P		P	E	P	E	E	P	P	E			E	P	E	E	E	E	E	P	P			
	Groundwater	E	E	E	P																			P	E			

Waterbodies are grouped by hydrologic unit (HU) or hydrologic area (HA).
*EST use applies only to the estuarine portion of the waterbody as defined in Chapter 2. **Permanent and intermittent P = Potential E = Existing

IDENTIFYING PRESENT AND POTENTIAL BENEFICIAL USES

In the basin planning process, a number of beneficial uses are usually identified for a given body of water. At a minimum, States must designate uses that are attainable whether or not they are currently being attained. Attainable uses are uses that can be achieved when technologies are implemented to achieve effluent limits under Section 306 of the Clean Water Act and when cost-effective and reasonable Best Management Practices (BMPs) are imposed.

Water quality objectives are established (see Chapter 3) to be sufficiently stringent to protect the most sensitive use. The Regional Water Board reserves the right to resolve any conflicts among beneficial uses, based on the facts in a given case. It should be noted that the assimilation of wastes is not a beneficial use.

In the table of beneficial uses (Table 2-1), an "E" indicates an existing use and a "P" indicates a potential use. Biological data, human use statistics, and/or professional experience documents the existing uses. Existing uses are those uses, which were attained in a waterbody on or after November 28, 1975.[1] Existing uses cannot be removed or modified unless a use requiring more stringent criteria is added. However, a use requiring more stringent criteria can always be added because doing so reflects the goal of further improvement of water quality.

Waterbodies may have potential beneficial uses established for any of the following reasons: 1) the use existed prior to November 28, 1975, but is not currently being attained; 2) plans already exist to put the water to that use; 3) conditions make such future use likely; 4) the water has been identified as a potential source of drinking water based on the quality and quantity available (see *Sources of Drinking Water Policy*, in Appendix 7); 5) existing water quality does not support these uses, but remedial measures[2] may lead to attainment in the future; or 6) there is insufficient information to support the use as existing, however, the potential for the use exists and upon future review, the potential designation may be re-designated as existing. The establishment of a potential beneficial use can have different purposes such as establishing a water quality goal, which must be achieved through control actions in order to re-establish a beneficial use, or serving to protect the existing quality of a water source for eventual use.

Many communities in the Region depend on surface waterbodies for their municipal water supply. These waterbodies include the Smith, Mad, and Russian Rivers. Agricultural water use is distributed over more areas than domestic, municipal and industrial use, as it is present in all of the hydrologic units within the Region.

Recreational use occurs in all hydrologic units on both fresh and salt water. Water recreation areas in the North Coast Region attract over ten million people annually and the numbers are expected to keep growing. This area has rugged natural beauty and some of the most renowned fishing streams in North America. The North Coast Region has many unique characteristics: diverse topography including a scenic ocean shoreline, diverse forest environments including a large forested belt which has more than half of California's redwoods, and extensive inland mountains.

Coastal areas receiving the greatest recreational use have been the ocean beaches, the lower reaches of rivers flowing to the ocean, and Humboldt and Bodega Bays. Rivers receiving the largest levels of recreational use are the Russian, Eel, Mad, Smith, Trinity, Navarro Rivers, and Redwood Creek. Activities cover the spectrum of water-oriented recreation. Fishing, river rafting, kayaking, and canoeing being popular on the rivers, and fishing, clamming, beach combing, and surfing predominating at the ocean beaches and bays. Photography, painting, bird watching, and sightseeing are important recreational activities, which take place throughout the entire North Coast Region.

Virtually all surface waters are home to fish and wildlife in the North Coast Region. Coastal waters and streams

[1] Date of the first Water Quality Standards Regulation published by USEPA (November 28, 1975) 40 CFR 131.3 (e).

[2] Remedial measures include implementation of effluent limits required under Section 301(b) and 306 of the CWA, and implementation of cost-effective and reasonable best management practices for nonpoint source control. 40 CFR 131.10(d).

support anadromous fish, which are important for both sport and commercial fishing. Historically, coastal and inland streams in the Region provided thousands of miles of habitat suitable for salmon and steelhead. Recent focus has been placed on re-establishment of the once productive anadromous salmonid runs in the North Coast Region through habitat restoration and educational outreach. Humboldt and Bodega Bays support shellfish and fish populations, which are very important to the commercial fishing industry and to the recreationalist. Both bays also provide refuge for wildlife populations especially waterfowl, shorebirds, and other water-associated birds.

Many of the watersheds of the North Coast Region support plant and wildlife species that are considered rare, threatened, and endangered. A few examples include the Swainson's hawk (*Buteo swainsoni)*, Bald eagle (*Haliaeetus leucocephalus)*, American peregrine falcon (*Falco peregrinus tundrias)*, Coho Salmon (*Oncorhynchus kisutch)*, Chinook Salmon (*Oncorhynchus tshawytscha)*, Lost River sucker (*Deltistes luxatus)*, Shortnose sucker (*Chamistes brevirostris),* California freshwater shrimp (*Syncaris pacificaz)*, Baker's larkspur (*Delphinium hesperium* sp. *Cuyamacae)*, and Sebastopol meadowfoam (*Limnanthes vinculans),* all of which have been observed in watershed areas within the North Coast Region.

Navigation is vital to the economy of the Region. There are fishing ports at Crescent City, Eureka, Fort Bragg, and Bodega Bay. The principal commercial harbor between San Francisco and Coos Bay, Oregon, is the Port of Eureka located at Humboldt Bay.

The hydroelectric power generation projects in the Region are the Klamath River Project, located at Iron Gate Reservoir and Copco Lake on the Klamath River; Trinity Dam, located at Trinity Lake (formerly Clair Engle Lake); Matthews Dam located at Ruth Lake on the Mad River; the Potter Valley Project located at Van Arsdale Reservoir on the Eel River; Coyote Dam located at Lake Mendocino on the East Fork of the Russian River; and Warm Springs Dam on Dry Creek, a tributary to the Russian River.

DESIGNATION OF THE "RARE" BENEFICIAL USE

The Rare, Threatened, or Endangered Species (RARE) beneficial use designation was based, in part, on the information contained within the California Department of Fish and Game's Natural Diversity Data Base (CNDDB). The CNDDB tracks the location and condition of Federal and State listed rare, threatened, endangered, and sensitive plants, animals and natural communities. The CNDDB is the most complete single source of information on California's rare, endangered, threatened and sensitive species, and natural communities. However, the absence of a special animal, plant, or natural community from the CNDDB report does not necessarily mean that they are absent from the area in question, only that no occurrence data was entered in the CNDDB inventory as of January 2001. Supplemental information was collected by interviewing biologists with the California Department of Fish and Game and the U.S. Forest Service regarding the presence of rare, threatened and endangered species.

The RARE designation is added based on substantial evidence that the waterbody supports threatened or endangered species. By definition, waterbodies with a RARE designation support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered. The Regional Water Board can provide specific information about the sighting(s) used to designate the RARE beneficial use. However, it is the responsibility of the lead agency or project sponsor to provide adequate information as to whether a proposed project will affect fish and wildlife (including plants) and their habitats.

The RARE beneficial use is generally, but not always, present throughout the entire reach of a particular waterbody. In addition, the RARE beneficial use may not be present throughout the year. The RARE designation is placed on bodies of water where the protection of a threatened or endangered species depends on the water either directly, or to support its habitat. The purpose of the RARE designation for a particular hydrologic subarea or waterbody is to highlight the existence of the threatened or endangered species. This will ensure that, absent extraordinary circumstances, RARE species are not placed in jeopardy by the quality of the discharges to those waterbodies.

Recognition that a waterbody is used by threatened or endangered species (RARE) does not necessarily mean that any particular suite of water quality objectives will be applied to the water body. In the absence of RARE species, the Regional Water Board would rely on the aquatic habitat uses. These include Cold Freshwater Habitat (COLD), Warm Freshwater Habitat (WARM), Estuarine Habitat (EST), Marine Habitat (MAR), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), and Wildlife Habitat (WILD).

BENEFICIAL USES FOR SPECIFIC WATERBODIES

Beneficial uses are designated for all waters in the North Coast Region. The waterbodies are separated into various categories. Wetlands and groundwater are described outside of the Coastal and Inland Waters categories, as they are unique waterbodies that require more detailed descriptions. Freshwater and saline wetlands are combined for the purposes of discussion on wetlands, but separated in Table 2-1 for the purpose of designation of beneficial uses. Each waterbody category is defined below as follows.

COASTAL WATERS

Coastal waters discussed in this section may be defined as waters subject to tidal action and include ocean waters, enclosed bays, harbors, estuaries, and lagoons. Beneficial uses for these coastal waters generally include, but are not limited to: Water Contact and Non-contact Water Recreation (REC-1, REC-2), Estuarine Habitat (EST), Rare, Threatened or Endangered Species (RARE), Wildlife Habitat (WILD), Marine Habitat (MAR), Shell Fish Harvesting (SHELL), Saline Habitat (SAL), and Navigation (NAV). Coastal waters include the subcategories: ocean waters, enclosed bays, and estuaries as described below.

Ocean Waters

Ocean waters are territorial marine waters of the Region as defined by California law to the extent that these waters are outside of enclosed bays, estuaries, and coastal lagoons.

Enclosed Bays

Enclosed bays are indentations along the coast, which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest difference between the headlands or outermost harbor works is less than seventy-five percent of the greatest dimension of the enclosed portion of the bay. These areas are generally more sheltered from wave action than the open coast and are relatively shallow (less than 30m in depth).

Large shallow inlets and enclosed bays are complex systems interlinking the terrestrial and aquatic environments and composed of an interdependent mosaic of subtidal, intertidal, and surrounding terrestrial habitats. Enclosed bays do not include inland surface waters or ocean waters.

Estuaries

Estuaries are the tidal portions of rivers located at the mouths of streams, which are sometimes temporarily separated from the ocean by sandbars. Estuarine waters extend from a bay or the open ocean to a point upstream where the freshwater of the river mixes with the saline ocean water.

Estuarine coastal waters provide protective habitat for marine life (MAR), including shellfish, and support the migration (MIGR) of aquatic organisms including anadromous salmonids. These waters are also used extensively for Water Contact and Non-Contact Water Recreation (REC-1, REC-2), Navigation (NAV), and Commercial and Sport Fishing (COMM), among others.

All coastal lagoons of the North Coast Region are included in the estuaries category. The mouths of most of the rivers and creeks are continually affected by tidal action and present a relatively stable environment for wildlife and vegetation. Other coastal lagoons may be separated from tidal action by earthen deposits and thus present an environment with major seasonal variations. Such conditions result in the development of a unique biologic community highly specific to that area. Occasionally, the mouths of these coastal lagoons are opened subjecting the lagoons to tidal flushing which causes short-term changes to the habitat conditions and enhancement of the recreational uses. The action would not alter the

categories of beneficial uses of the coastal lagoons.

INLAND SURFACE WATERS

Inland surface waters consist of rivers, streams, lakes, reservoirs, and inland wetlands. Beneficial uses of these inland surface waters and their tributaries are designated on Table 2-1.

Rivers and Streams

Beneficial uses of inland surface waters generally include Water Contact Recreation (REC-1); Cold Freshwater Habitat (COLD); Warm Freshwater Habitat (WARM); Spawning, Reproduction, and Development (SPWN); Migration of Aquatic Organisms (MIGR); and Commercial and Sport Fishing (COMM), reflecting the goals of the federal Clean Water Act. Inland waters are also often designated with Agricultural Water Supply (AGR), Industrial Water Supply (IND), Industrial Process Supply (PRO), Non-contact Water Recreation (REC-2), and Wildlife Habitat (WILD) uses. In addition, inland waterbodies are sometimes designated with Rare, Threatened or Endangered Species (RARE) uses. Many Regional streams are primary sources of replenishment for major groundwater basins that supply water for drinking and other uses, and as such must be protected as Groundwater Recharge (GWR). Inland surface waters that meet the criteria mandated by the *Sources of Drinking Water Policy* (Resolution No. 88-63, Appendix 7) are designated Municipal and Domestic Supply (MUN) (This policy is reprinted in Appendix 7). Several waterbodies have been designated with the new Native American Cultural (CUL) beneficial use, which is applied when there is information available indicating that waters were historically used for cultural purposes meeting the new definition of CUL.

Lakes and Reservoirs

Lakes and reservoirs are depressions that are natural or artificial impoundments of water used for irrigation, municipal water supply, recreation, and hydroelectric power generation, among others. These water resources have the greatest diversity of beneficial uses and are located in several of the Region's hydrologic units. All lakes and reservoirs in the Region are designated with Water Contact Recreation (REC-1), reflecting the federal Clean Water Act goals. Water Contact Recreation (REC-1) uses can be restricted or prohibited by the entities that manage these waters.

The largest reservoirs in the Region (the Central Valley Project's Trinity Lake and the Army Corps of Engineer's Lake Sonoma) export to adjacent hydrologic regions, while Clear Lake Reservoir in Modoc County, supplies water to the United States Bureau of Reclamation (USBR) Klamath Project, which is mainly in Oregon.

Wetlands

Wetlands are waters of the state and are protected under state regulations by provisions of the California Water Code. In addition, wetlands are protected under the federal Clean Water Act, which was enacted with a goal to restore and maintain the physical, chemical, and biological integrity of the nation's waters, including wetlands. Federal regulations define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR § 116.3)." Although the definition of wetlands differs widely among federal agencies, both the USEPA and the U.S. Army Corps of Engineers use this definition in administrating the Clean Water Act Section 404 discharge permit program.

Federal administrative regulation (40 CFR § 122.2) defines wetlands as a subset of "Waters of the United States," for purposes of the federal Clean Water Act. Waters of the State are defined by the Porter-Cologne Act as "any water, surface or underground, including saline waters, within the boundaries of the State" (CWA § 13050[e]). The definition of Waters of the State is broader than the definition of Waters of the United States. Under State law, wetlands are waters of the State and wetland water quality control is within the jurisdiction of the State and Regional Boards independent of federal law, and need not meet federal jurisdictional requirements under the Clean Water Act to trigger regulatory controls.

A United States Supreme Court decision on January 9, 2001, *Solid Waste Agency of Northern Cook County (SWANCC) v. Army Corps of Engineers,* 69 U.S.L.W. 4048 (2001), limited the types of bodies of waters for which U.S. Army Corps of Engineers Section 404 discharge permits are required. The Court held that certain isolated, non-navigable, intrastate waters (a sub-category of wetlands) cannot be interpreted by U.S. Army Corps of Engineers to be navigable waters solely on the basis that they serve as habitat for migratory birds. Therefore, U.S. Army Corps of Engineers discharge permits are not required to discharge dredged or fill material into such bodies of water. The SWANCC decision does not affect the Porter-Cologne (California Water Code) authorities to regulate discharges to isolated, non-navigable waters of the State.

State and Federal Wetland Policies

The State of California and the federal government adopted separate wetland policies in August 1993 to protect these valuable waters. These policies represented a significant advance in wetland protection. The policies that were developed represent agreements that are sensitive to the needs of landowners and provide flexibility in the permit process. Both policies support the interim goal of no overall net loss and the long-term goal of increasing the quality and quantity of the remaining wetlands.

Wetland Identification, Delineation and Regulation

Regulating development to minimize its effects on existing wetlands is a primary function of several agencies in California. The Regional Water Board's role in this process is the protection of water quality and the beneficial uses of waters. There are many issues pertinent to wetland regulatory decisions that demonstrate the complexity and controversy that surround regulation and protection of this resource. These include defining what a wetland is, determining its allowable uses, and in some cases determining the appropriate compensatory mitigation, all of which are challenging issues.

The Coastal Act provides strong enforceable policies for protection of wetlands within California's coastal zone. These policies are described in the *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone* (California Coastal Commission, 1994) and the *Procedural Guidance for Evaluating Wetland Mitigation Projects in the California Coastal Zone* (California Coastal Commission, 1995). These documents also outline wetland identification and delineation processes, the permit and environmental review processes, project performance standards, monitoring programs, and the mitigation process, among others.

The Regional Water Board recognizes that wetlands are frequently referred to under the following names (or classifications): saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, sandflats, unvegetated seasonal ponded areas, vegetated shallows, sloughs, wet meadows, fens, playa lakes, natural ponds, vernal pools, diked baylands, seasonal wetlands, and riparian woodlands.

In this Region, the Regional Water Board, in general, relies on the federal *Wetlands Delineation Manual* (U.S. Army Corps of Engineers, 1987) for determining wetland areas subject to the federal Clean Water Act. In the rare cases where the USEPA and U.S. Army Corps guidelines disagree, the Regional Water Board relies on the wetlands delineation made by USEPA. Where the SWANCC decision leads to a federal determination that a specific wetland is not "jurisdictional" for federal purposes, the Regional Water Board will exercise its independent judgment in determining both the size and functions of the water at issue, and the necessary requirements to protect water quality as required by Porter-Cologne.

Regional Water Board staff will prepare and implement a plan to identify and delineate wetlands within the Region to be implemented when funding becomes available. However, because of the large number of small and contiguous wetlands, it may not be practical to delineate and specify beneficial uses for every wetland area. Therefore, wetlands and their beneficial uses may continue to be determined on a site-specific basis, as necessary.

Constructed Treatment Wetlands

Constructed wetlands are, in most cases, designed, built and managed to provide wastewater or storm water treatment in order to achieve protection or improvement in receiving water quality. These types of wetlands are not constructed to provide mitigation for projects that impact jurisdictional wetlands. These constructed treatment wetlands can also have other benefits including the support of waterfowl and other wildlife, as well as opportunities for education and recreation.

The Regional Water Board's approach toward regulation of the use of these constructed wetlands is to encourage protection of these affiliated uses while appropriate treatment uses are supported.

Beneficial Uses of Wetlands

The Lahontan and Los Angeles Regional Water Boards have defined three additional beneficial uses related to wetlands that have been adopted by the State Water Board. These beneficial uses: 1) Wetland Habitat (WET), 2) Flood Peak Attenuation/Flood Water Storage (FLD), and 3) Water Quality Enhancement (WQE) are now designated for freshwater and saline wetlands in the North Coast Region (see Table 2-1). The definitions of these beneficial uses can be found within the list of beneficial uses on page 2-4.00. Many beneficial uses for saline and freshwater wetlands have been designated as potential although some wetlands currently have these uses. When field reconnaissance is conducted as part of the wetland identification project described above, the specific beneficial uses of wetlands will be identified as existing or potential on an individual basis.

GROUNDWATER

Groundwater is defined as subsurface water in soils and geologic formations that are fully saturated all or part of the year.[3] It includes areas where saturation of the soils and geology fluctuate, including areas of capillary fringe. Groundwater bearing formations sufficiently permeable to transmit and yield significant quantities of water are called aquifers. A groundwater basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers.

Where an aquifer or a number of aquifers underlie a depression that is surrounded or nearly surrounded by hills or mountains, they make up a groundwater basin. Water-bearing geologic units that do not meet the exact definition of an aquifer occur throughout the Region within groundwater basins. For instance, there are shallow, low permeability zones throughout the Region that have extremely low water yields.

Therefore, for basin planning purposes, the term "groundwater" includes all subsurface waters, whether or not these waters meet the classic definition of an aquifer or occur within identified groundwater basins.

Existing and potential beneficial uses applicable to groundwater in the Region include Municipal and Domestic Water Supply (MUN), reflecting the importance of groundwater as a source of drinking water in the Region and as required by the State Board's *Sources of Drinking Water Policy* (See Appendix 7). Other beneficial uses for groundwater include: Industrial Water Supply (IND), Industrial Process Water Supply (PRO), Agricultural Water Supply (AGR), and Freshwater Replenishment to Surface Waters (FRSH), among others. Occasionally, groundwater is used for other purposes (e.g., groundwater pumped for use in aquaculture operations).

[3] Groundwater does not include subterranean streams, which have the beneficial uses of surface water.

3. WATER QUALITY OBJECTIVES

The California Water Code, Division 7, Chapter 4, Section 13241 specifies that each Regional Water Quality Control Board (Regional Water Board) shall establish water quality objectives which, in the Regional Water Board's judgment, are necessary for the reasonable protection of the beneficial uses and for the prevention of nuisance.

The federal Clean Water Act (33 U.S.C. § 303) requires the State to submit to the Administrator of the U.S. Environmental Protection Agency for approval all new or revised water quality standards which are established for surface and ocean waters. Under federal terminology, water quality standards consist of the beneficial uses enumerated in Table 2-1 and the water quality objectives contained in this section. The water quality objectives contained herein are designed to satisfy all state and federal requirements.

As new information becomes available, the Regional Water Board will review the appropriateness of the objectives contained herein. These objectives will be subject to public hearing at least once during each three-year period following adoption of this Basin Plan to determine the need for review and modification as appropriate.

The water quality objectives contained herein are a compilation of objectives adopted by the State Water Board, the Regional Water Board, and other state and federal agencies. Other water quality objectives and policies may apply that may be more stringent. Whenever several different objectives exist for the same water quality parameter, the strictest objective applies. In addition, the State Water Board "Policy With Respect to Maintaining High Quality Waters in California" also applies. The state policy incorporates the federal Antidegradation Policy, where the federal Antidegradation Policy is applicable.

Controllable water quality factors shall conform to the water quality objectives contained herein. When other factors result in the degradation of water quality beyond the levels or limits established herein as water quality objectives, then controllable factors shall not cause further degradation of water quality. Controllable water quality factors are those actions, conditions, or circumstances resulting from man's activities that may influence the quality of the waters of the State and that may be reasonably controlled.

Water quality objectives form the basis for establishment of waste discharge requirements, waste discharge prohibitions, or maximum acceptable cleanup standards for all individuals and dischargers.

These water quality objectives are considered to be necessary to protect those present and probable future beneficial uses enumerated in Table 2-1 and to protect existing high quality waters of the State. These objectives will be achieved primarily through the establishment of waste discharge requirements and through the implementation of this Basin Plan. The appropriate numeric water quality standards will be established in waste discharge orders.

The Regional Water Board, in setting waste discharge requirements, will consider, among other things, the potential impact on beneficial uses within the area of influence of the discharge, the existing quality of receiving waters, and the appropriate water quality objectives. The Regional Water Board will make a finding as to the beneficial uses to be protected within the area of influence of the discharge and establish waste discharge requirements to protect those uses and to meet water quality objectives. Resolution Nos. 87-113, 89-131, and 92-135 describe the policy of the Regional Water Board regarding the specific types of waste discharge for which it will waive issuance of waste discharge requirements. These resolutions are included in the Appendix Section of this Plan.

The water quality objectives for the Region refer to several classes of waters. Ocean waters are waters of the Pacific Ocean outside of enclosed bays, estuaries, and coastal lagoons, and within the territorial (3 mile) limit. Bays are indentations along the coast which include oceanic waters within distinct headlands or harbor works whose narrowest opening is less than 75 percent of the greatest dimension of the enclosed portion of the bay; this definition includes only Crescent City Harbor in the Klamath River Basin, and Humboldt Bay and Bodega Bay in the North Coastal Basin. Estuaries are waters at the mouths of streams which serve as mixing zones for freshwater and seawater; they generally extend from the upstream limit of tidal action to a bay or open ocean. The principal estuarine areas of the Region are at the mouths of the Smith and Klamath Rivers, Lakes Earl and Talawa, and at the mouths of the Eel, Noyo, and Russian Rivers. Inland waters include all surface waters and groundwaters of the basin not included in the definitions of ocean waters, enclosed bays, or estuaries. Interstate waters include all rivers, streams, and lakes which flow across or form part of a state boundary. Groundwaters are any subsurface bodies of water which are beneficially used or usable. They include perched water if such water is used or usable or is hydraulically continuous with used or usable water.

The water quality objectives which follow supersede and replace those contained in the 1971 "Interim Water Quality Control Plan for the Klamath River Basin," the 1967 "Water Quality Control Policy for the Klamath River in California," the 1967 "Water Quality Control Policy for the Smith River in California," the 1967

"Water Quality Control Policy for the Humboldt-Del Norte Coastal Waters," the 1969 "Water Quality Control Policy for the Lost River," the 1971 "Interim Water Quality Control Plan for the North Coastal Basin," the 1967 "Water Quality Control Policy for the Sonoma-Mendocino Coast," the 1975 "Water Quality Control Plan for the Klamath River Basin (1A)," the 1975 "Water Quality Control Plan for the North Coastal Basin (1B)," and the 1988 "Water Quality Control Plan for the North Coast Region".

GENERAL OBJECTIVE

The following objective shall apply to all waters of the Region.

Whenever the existing quality of water is better than the water quality objectives established herein, such existing quality shall be maintained unless otherwise provided by the provisions of the State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", including any revisions thereto. A copy of this policy is included verbatim in the Appendix Section of this Plan.

State Water Resources Control Board (State Board) Resolution No. 68-16 contains the state Antidegradation Policy. It is titled the “Statement of Policy with Respect to Maintaining High Quality Waters in California and is commonly known as “Resolution 68-16.” The State Water Board has interpreted Resolution No. 68-16 to incorporate the federal Antidegradation Policy where the federal policy applies. (State Board Order WQO 86-17). The federal policy is found at 40 CFR Section 131.12. The state and federal antidegradation policies are included as Appendices to the Basin Plan.

The state Antidegradation Policy applies more comprehensively to water quality changes than the federal policy. In particular, the state policy applies to both groundwater and surface waters whose quality meets or exceeds (is better than) water quality objectives. The state policy establishes two conditions that must be met before the quality of high quality waters may be lowered by waste discharges. First, the state must determine that lowering the quality of high quality waters:

1) Will be consistent with the maximum benefit to the people of the state,

2) Will not unreasonably affect present and anticipated beneficial uses of such water, and

3) Will not result in water quality less than that prescribed in state policies (e.g., water quality objectives in Water Quality Control Plans).

Second, any activities that result in discharges to high quality waters are required to a) meet waste discharge requirements that will result in the best practicable treatment or control of the discharge necessary to avoid pollution or nuisance and b) maintain the highest water quality consistent with the maximum benefit to the people of the state. If such treatment or control results in a discharge that maintains the existing high water quality, then a less stringent level of treatment or control would not be in compliance with 68-16.

Likewise, the discharge could not be allowed under Resolution 68-16 if a) the discharge, even after treatment, would unreasonably affect beneficial uses or b) would not comply with applicable provisions of water quality control plans.

The federal Antidegradation Policy applies to surface waters, regardless of the water quality. Where water quality is better than the minimum necessary to support instream uses, the federal policy requires that quality to be maintained and protected, unless the state finds, after ensuring public participation, that:

1) Such activity is necessary to accommodate important economic or social development in the area in which the waters are located,

2) Water quality is adequate to protect existing beneficial uses fully, and

3) The highest statutory and regulatory requirements for all new and existing point source discharges and all cost-effective and reasonable best management practices for non point source control are achieved.

Under this policy, an activity that results in discharge

would be prohibited if the discharge will lower the quality of surface waters that do not currently attain water quality standards.

Both the state and federal antidegradation policies acknowledge that an activity that results in a minor water quality lowering, even if incrementally small, can result in a violation of antidegradation policies through cumulative effects, especially, for example, when the waste is a cumulative, persistent, or bioaccumulative pollutant.

The state and federal antidegradation policies are enforceable independent of this Basin Plan provision. The above summary of the state and federal antidegradation policies is provided merely for the convenience of the reader.

OBJECTIVES FOR OCEAN WATERS

The provisions of the State Water Board's "Water Quality Control Plan for Ocean Waters of California" (Ocean Plan), and "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" (Thermal Plan), and any revisions thereto shall apply. Copies of these plans are included verbatim in the Appendix Section of this Plan.

OBJECTIVES FOR INLAND SURFACE WATERS, ENCLOSED BAYS, AND ESTUARIES

In addition to the General Objective, the specific objectives contained in Table 3-1 and the following objectives shall apply for inland surface waters, bays, and estuaries.

Color

Waters shall be free of coloration that causes nuisance or adversely affects beneficial uses.

Tastes and Odors

Waters shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance or adversely affect beneficial uses.

Numeric water quality objectives with regards to taste and odor thresholds have been developed by the State Department of Health Services and the U.S. EPA. These numeric objectives, as well as those available in the technical literature, are incorporated into waste discharge requirements and cleanup and abatement orders as appropriate.

Floating Material

Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

Suspended Material

Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

Settleable Material

Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.

Oil and Grease

Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect beneficial uses.

Biostimulatory Substances

Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

Sediment

The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

Turbidity

Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

pH

The pH shall conform to those limits listed in Table 3-1. For waters not listed in Table 3-1 and where pH objectives are not prescribed, the pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.2 units in waters with designated marine (MAR) or saline (SAL) beneficial uses nor 0.5 units within the range specified above in fresh waters with designated COLD or WARM beneficial uses.

Dissolved Oxygen

Dissolved oxygen concentrations shall conform to those limits listed in Table 3-1. For waters not listed in Table 3-1 and where dissolved oxygen objectives are not prescribed the dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time.

Waters designated WARM, MAR, or SAL	5.0 mg/l
Waters designated COLD	6.0 mg/l
Waters designated SPWN	7.0 mg/l
Waters designated SPWN during critical spawning and egg incubation periods	9.0 mg/l

Bacteria

The bacteriological quality of waters of the North Coast Region shall not be degraded beyond natural background levels. In no case shall coliform concentrations in waters of the North Coast Region exceed the following:

In waters designated for contact recreation (REC-1), the median fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed 50/100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400/100 ml (State Department of Health Services).

At all areas where shellfish may be harvested for human consumption (SHELL), the fecal coliform concentration throughout the water column shall not exceed 43/100 ml for a 5-tube decimal dilution test or 49/100 ml when a three-tube decimal dilution test is used (National Shellfish Sanitation Program, Manual of Operation).

Temperature

Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California" including any revisions thereto. A copy of this plan is included verbatim in the Appendix Section of this Plan. In addition, the following temperature objectives apply to surface waters:

The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses.

At no time or place shall the temperature of any COLD water be increased by more than 5°F above natural receiving water temperature.

At no time or place shall the temperature of WARM intrastate waters be increased more than 5°F above natural receiving water temperature.

Toxicity

All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Water Board.

The survival of aquatic life in surface waters subjected to a waste discharge, or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge, or when necessary for other control water that is consistent with the requirements for "experimental water" as described in "**Standard Methods for the Examination of Water and Wastewater"**, 18th Edition (1992). As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay.

In addition, effluent limits based upon acute bioassays of effluents will be prescribed. Where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances will be encouraged.

Pesticides

No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no bioaccumulation of pesticide concentrations found in bottom sediments or aquatic life.

Waters designated for use as domestic or municipal supply shall not contain concentrations of pesticides in excess of the limiting concentrations set forth in California Code of Regulations, Title 22, Division 4,

Chapter 15, Article 4, Section 64444.5 (Table 5), and listed in Table 3-2 of this Plan.

Chemical Constituents

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Chapter 15, Division 4, Article 4, Section 64435 (Tables 2 and 3), and Section 64444.5 (Table 5), and listed in Table 3-2 of this Plan.

Waters designated for use as agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts which adversely affect such beneficial use.

Numerical water quality objectives for individual waters are contained in Table 3-1.

Radioactivity

Radionuclides shall not be present in concentrations which are deleterious to human, plant, animal or aquatic life nor which result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or indigenous aquatic life.

Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64443, Table 4, and listed below:

MCL Radioactivity

Constituent	Maximum Contaminant Level, pCi/l
Combined Radium-226 and Radium-228	5
Gross Alpha particle activity (including Radium-226 but excluding Radon and Uranium)	15
Tritium	20,000
Strontium-90	8
Gross Beta particle activity	50
Uranium	20

TABLE 3-1

SPECIFIC WATER QUALITY OBJECTIVES FOR NORTH COAST REGION

Waterbody[1]	Specific Conductance (micromhos) @ 77°F		Total Dissolved Solids (mg/l)		Dissolved Oxygen (mg/l)			Hydrogen Ion (pH)		Hardness (mg/l)	Boron (mg/l)	
	90% Upper Limit[3]	50% Upper Limit[2]	90% Upper Limit[3]	50% Upper Limit[2]	Min	90% Lower Limit[3]	50% Lower Limit[2]	Max	Min	50% Upper Limit[2]	90% Upper Limit[3]	50% Upper Limit[2]
Lost River HA												
Clear Lake Reservoir & Upper Lost River	300	200			5.0		8.0	9.0	7.0	60	0.5	0.1
Lower Lost River	1000	700			5.0		-	9.0	7.0	-	0.5	0.1
Other Streams	250	150			7.0		8.0	8.4	7.0	50	0.2	0.1
Tule Lake	1300	900			5.0		-	9.0	7.0	400	-	-
Lower Klamath Lake	1150	850			5.0		-	9.0	7.0	400	-	-
Groundwaters [4]	1100	500			-		-	8.5	7.0	250	0.3	0.2
Butte Valley HA												
Streams	150	100			7.0		9.0	8.5	7.0	30	0.1	0.0
Meiss Lake	2000	1300			7.0		8.0	9.0	7.5	100	0.3	0.1
Groundwaters [4]	800	400			-		-	8.5	6.5	120	0.2	0.1
Shasta Valley HA												
Shasta River	800	600			7.0		9.0	8.5	7.0	220	1.0	0.5
Other Streams	700	400			7.0		9.0	8.5	7.0	200	0.5	0.1
Lake Shastina	300	250			6.0		9.0	8.5	7.0	120	0.4	0.2
Groundwaters [4]	800	500			-		-	8.5	7.0	180	1.0	0.3
Scott River HA												
Scott River	350	250			7.0		9.0	8.5	7.0	100	0.4	0.1
Other Streams	400	275			7.0		9.0	8.5	7.0	120	0.2	0.1
Groundwaters [4]	500	250			-		-	8.0	7.0	120	0.1	0.1
Salmon River HA												
All Streams	150	125			9.0		10.0	8.5	7.0	60	0.1	0.0
Middle Klamath River HA												
Klamath River above Iron Gate Dam including Iron Gate & Copco Reservoirs	425	275			7.0		10.0	8.5	7.0	60	0.3	0.2
Klamath River below Iron Gate Dam	350	275			8.0		10.0	8.5	7.0	80	0.5	0.2
Other Streams	300	150			7.0		9.0	8.5	7.0	60	0.1	0.0
Groundwaters [4]	750	600			-		-	8.5	7.5	200	0.3	0.1
Applegate River HA												
All Streams	250	175			7.0		9.0	8.5	7.0	60	-	-
Upper Trinity River HA												
Trinity River [5]	200	175			7.0		10.0	8.5	7.0	80	0.1	0.0
Other Streams	200	150			7.0		10.0	8.5	7.0	60	0.0	0.0
Clair Engle Lake and Lewiston Reservoir	200	150			7.0		10.0	8.5	7.0	60	0.0	0.0

TABLE 3-1 (CONTINUED)

SPECIFIC WATER QUALITY OBJECTIVES FOR NORTH COAST REGION

Waterbody[1]	Specific Conductance (micromhos) @ 77°F		Total Dissolved Solids (mg/l)		Dissolved Oxygen (mg/l)			Hydrogen Ion (pH)		Hardness (mg/l)	Boron (mg/l)	
	90% Upper Limit[3]	50% Upper Limit[2]	90% Upper Limit[3]	50% Upper Limit[2]	Min	90% Lower Limit[3]	50% Lower Limit[2]	Max	Min	50% Upper Limit[2]	90% Upper Limit[3]	50% Upper Limit[2]
Hayfork Creek												
Hayfork Creek	400	275			7.0		9.0	8.5	7.0	150	0.2	0.1
Other Streams	300	250			7.0		9.0	8.5	7.0	125	0.0	0.0
Ewing Reservoir	250	200			7.0		9.0	8.0	6.5	150	0.1	0.0
Groundwaters [4]	350	225			-		-	8.5	7.0	100	0.2	0.1
S.F. Trinity River HA												
S.F. Trinity River	275	200			7.0		10.0	8.5	7.0	100	0.2	0.0
Other Streams	250	175			7.0		9.0	8.5	7.0	100	0.0	0.0
Lower Trinity River HA												
Trinity River	275	200			8.0		10.0	8.5	7.0	100	0.2	0.0
Other Streams	250	200			9.0		10.0	8.5	7.0	100	0.1	0.0
Groundwaters [4]	200	150			-		-	8.5	7.0	75	0.1	0.1
Lower Klamath River HA												
Klamath River	300[6]	200[6]			8.0		10.0	8.5	7.0	75[6]	0.5[6]	0.2[6]
Other Streams	200[6]	125[6]			8.0		10.0	8.5	6.5	25[6]	0.1[6]	0.0[6]
Groundwaters [4]	300	225			-		-	8.5	6.5	100	0.1	0.0
Illinois River HA												
All Streams	200	125			8.0		10.0	8.5	7.0	75	0.1	0.0
Winchuck River HU												
All Streams	200[6]	125[6]			8.0		10.0	8.5	7.0	50[6]	0.0[6]	0.0[6]
Smith River HU												
Smith River-Main Forks	200	125			8.0		11.0	8.5	7.0	60	0.1	0.1
Other Streams	150[6]	125[6]			7.0		10.0	8.5	7.0	60[6]	0.1[6]	0.0[6]
Smith River Plain HSA												
Smith River	200[6]	150[6]			8.0		11.0	8.5	7.0	60[6]	0.1[6]	0.0[6]
Other Streams	150[6]	125[6]			7.0		10.0	8.5	6.5	60[6]	0.1[6]	0.0[6]
Lakes Earl & Talawa	-	-			7.0		9.0	8.5	6.5	-	-	-
Groundwaters [4]	350	100			-		-	8.5	6.5	75	1.0	0.0
Crescent City Harbor	-	-										
Redwood Creek HU												
Redwood Creek	220[6]	125[6]	115[6]	75[6]	7.0	7.5	10.0	8.5	6.5			
Mad River HU												
Mad River	300[6]	150[6]	160[6]	90[6]	7.0	7.5	10.0	8.5	6.5			
Eureka Plain HU												
Humboldt Bay	-	-	-	-	6.0	6.2	7.0	8.5	7			
Eel River HU												
Eel River	375[6]	225[6]	275[6]	140[6]	7.0	7.5	10.0	8.5	6.5			
Van Duzen River	375	175	200	100	7.0	7.5	10.0	8.5	6.5			

TABLE 3-1 (CONTINUED)

SPECIFIC WATER QUALITY OBJECTIVES FOR NORTH COAST REGION

Waterbody[1]	Specific Conductance (micromhos) @ 77°F		Total Dissolved Solids (mg/l)		Dissolved Oxygen (mg/l)			Hydrogen Ion (pH)		Hardness (mg/l)	Boron (mg/l)	
	90% Upper Limit[3]	50% Upper Limit[2]	90% Upper Limit[3]	50% Upper Limit[2]	Min	90% Lower Limit[3]	50% Lower Limit[2]	Max	Min	50% Upper Limit[2]	90% Upper Limit[3]	50% Upper Limit[2]
South Fork Eel River	350	200	200	120	7.0	7.5	0.0	8.5	6.5			
Middle Fork Eel River	450	200	230	130	7.0	7.5	10.0	8.5	6.5			
Outlet Creek	400	200	230	125	7.0	7.5	10.0	8.5	6.5			
Cape Mendocino HU												
Bear River	390[6]	255[6]	240[6]	150[6]	7.0	7.5	10.0	8.5	6.5			
Mattole River	300[6]	170[6]	170[6]	105[6]	7.0	7.5	10.0	8.5	6.5			
Mendocino Coast HU												
Ten Mile River	-	-	-	-	7.0	7.5	10.0	8.5	6.5			
Noyo River	185[6]	150[6]	120[6]	105[6]	7.0	7.5	10.0	8.5	6.5			
Jug Handle Creek	-	-	-	-	7.0	7.5	10.0	8.5	6.5			
Big River	300[6]	195[6]	190[6]	130[6]	7.0	7.5	10.0	8.5	6.5			
Albion River	-	-	-	-	7.0	7.5	10.0	8.5	6.5			
Navarro River	285[6]	250[6]	170[6]	150[6]	7.0	7.5	10.0	8.5	6.5			
Garcia River	-	-	-	-	7.0	7.5	10.0	8.5	6.5			
Gualala River	-	-	-	-	7.0	7.5	10.0	8.5	6.5			
Russian River HU												
(upstream)[8]	320	250	170	150	7.0	7.5	10.0	8.5	6.5			
(downstream)[9]	375[6]	285[6]	200[6]	170[6]	7.0	7.5	10.0	8.5	6.5			
Laguna de Santa Rosa	-	-	-	-	7.0	7.5	10.0	8.5	6.5			
Bodega Bay	-	-	-	-	6.0	6.2	7.0	8.5	7			
Coastal Waters[10]	-	-	-	-	11	11	11	12	12			

1 Water bodies are grouped by hydrologic unit (HU), hydrologic area (HA), or hydrologic subarea (HSA).

2 50% upper and lower limits represent the 50 percentile values of the monthly means for a calendar year. 50% or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit.

3 90% upper and lower limits represent the 90 percentile values for a calendar year. 90% or more of the values must be less than or equal to an upper limit and greater than or equal to a lower limit.

4 Value may vary depending on the aquifer being sampled. This value is the result of sampling over time, and as pumped, from more than one aquifer.

5

Daily Average Not to Exceed	Period	River Reach
60°F	July 1 - Sept. 14	Lewiston Dam to Douglas City Bridge
56°F	Sept. 15 - Oct. 1	Lewiston Dam to Douglas City Bridge
56°F	Oct. 1 - Dec. 31	Lewiston Dam to confluence of North Fork Trinity River

6 Does not apply to estuarine areas.

7 pH shall not be depressed below natural background levels.

8 Russian River (upstream) refers to the mainstem river upstream of its confluence with Laguna de Santa Rosa.

9 Russian River (downstream) refers to the mainstem river downstream of its confluence with Laguna de Santa Rosa.

10 The State's Ocean Plan applies to all North Coast Region coastal waters.

11 Dissolved oxygen concentrations shall not at any time be depressed more than 10 percent from that which occurs naturally.

12 pH shall not be changed at any time more than 0.2 units from that which occurs naturally.

- no water body specific objective available.

TABLE 3-2

INORGANIC, ORGANIC, AND FLUORIDE CONCENTRATIONS NOT TO BE EXCEEDED IN DOMESTIC OR MUNICIPAL SUPPLY [1, 2]

Constituent	LIMITING CONCENTRATION IN MILLIGRAMS PER LITER			
	Lower	Optimum	Upper	Maximum Contaminant Level, mg/L
Fluoride [3]				
53.7 and below	0.9	1.2	1.7	2.4
53.8 to 58.3	0.8	1.1	1.5	2.2
58.4 to 63.8	0.8	1.0	1.3	2.0
63.9 to 70.6	0.7	0.9	1.2	1.8
70.7 to 79.2	0.7	0.8	1.0	1.6
79.3 to 90.5	0.6	0.7	0.8	1.4
Inorganic Chemicals				
* Aluminum				1.0
Arsenic				0.05
Barium				1.0
Cadmium				0.01
Chromium				0.05
Lead				0.05
Mercury				0.002
Nitrate-N (as NO_3)				45.
Selenium				0.01
Silver				0.05
Organic Chemicals				
(a) Chlorinated Hydrocarbons				
Endrin				0.0002
Lindane				0.004
Methoxychlor				0.1
Toxaphene				0.005
(b) Chlorophenoxys				
2,4-D				0.1
2,4,5-TP (Silvex)				0.01
(c) Synthetics				
Atrazine				0.003
Bentazon				0.018
Benzene				0.001
Carbon Tetrachloride				0.0005
Carbofuran				0.018
Chlordane				0.0001

TABLE 3-2 (CONTINUED)

INORGANIC, ORGANIC, AND FLUORIDE CONCENTRATIONS NOT TO BE EXCEEDED IN DOMESTIC OR MUNICIPAL SUPPLY [1, 2]

Constituent	LIMITING CONCENTRATION IN MILLIGRAMS PER LITER Maximum Contaminant Level, mg/L
(c) Synthetics (cont'd.)	
1,2-Dibromo-3-chloropropane	0.0002
1,4-Dichlorobenzene	0.005
1,1-Dichloroethane	0.005
1,2-Dichloroethane	0.0005
cis-1,2-Dichloroethylene	0.006
trans-1,2-Dichloroethylene	0.01
1,1-Dichloroethylene	0.006
1,2-Dichloropropane	0.005
1,3-Dichloropropene	0.0005
Di(2-ethylhexyl)phthalate	0.004
* Ethylbenzene	0.680
Ethylene Dibromide	0.00002
Glyphosate	0.7
Heptachlor	0.00001
Heptachlor epoxide	0.00001
Molinate	0.02
Monochlorobenzene	0.030
Simazine	0.010
1,1,2,2-Tetrachloroethane	0.001
Tetrachloroethylene	0.005
* Thiobencarb	0.07
1,1,1-Trichloroethane	0.200
1,1,2-Trichloroethane	0.032
Trichloroethylene	0.005
Trichlorofluoromethane	0.15
1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2
Vinyl Chloride	0.0005
* Xylenes [4]	1.750

[1] Values included in this table have been summarized from California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Sections 64435 (Tables 2 and 3) and 64444.5 (Table 5).

[2] The values included in this table are maximum contaminant levels for the purposes of groundwater and surface water discharges and cleanup. Other water quality objectives (e.g., taste and odor thresholds or other secondary MCLs) and policies (e.g., State Water Board "Policy With Respect to Maintaining High Quality Waters in California") that are more stringent may apply.

[3] Annual Average of Maximum Daily Air Temperature, °F Based on temperature data obtained for a minimum of five years. The average concentration of fluoride during any month, if added, shall not exceed the upper concentration. Naturally occurring fluoride concentration shall not exceed the maximum contaminant level.

[4] Maximum Contaminant Level is for either a single isomer or the sum of the isomers.

* Constituents marked with an * also have taste and odor thresholds that are more stringent than the MCL listed. Taste and odor thresholds have also been developed for other constituents not listed in this table.

WATER QUALITY OBJECTIVES FOR GROUNDWATERS

General Objectives

Tastes and Odors

Groundwaters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

Numeric water quality objectives have been developed by the State Department of Health Services and U.S. EPA. These numeric objectives, as well as those available in the technical literature, are incorporated into waste discharge requirements and cleanup and abatement orders as appropriate.

Bacteria

In groundwaters used for domestic or municipal supply (MUN), the median of the most probable number of coliform organisms over any 7-day period shall be less than 1.1 MPN/100 ml, less than 1 colony/100 ml, or absent (State Department of Health Services).

Radioactivity

Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the limits specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 5, Section 64443, Table 4 and listed in Table 3-2 of this Plan.

Chemical Constituents

Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22, Division 4, Chapter 15, Article 4, Section 64435 Tables 2 and 3, and Section 64444.5 (Table 5) and listed in Table 3-2 of this Plan.

Groundwaters used for agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use.

Numerical objectives for certain constituents for individual groundwaters are contained in Table 3-1.
As part of the state's continuing planning process, data will be collected and numerical water quality objectives will be developed for those mineral and nutrient constituents where sufficient information is presently not available for the establishment of such objectives.

COMPLIANCE WITH WATER QUALITY OBJECTIVES

The Regional Water Board recognizes that immediate compliance with new effluent and/or receiving water NPDES permit limitations based on new, revised or newly interpreted water quality objectives or prohibitions adopted by the Regional Water Board or the State Water Resources Control Board, or with new, revised or newly interpreted water quality criteria promulgated by the U.S. Environmental Protection Agency (USEPA),[1] may not be technically and/or economically feasible[2] in all circumstances.

Where the Regional Water Board determines that it is infeasible for an existing discharger[3] to immediately comply with NPDES permit effluent limitations or where appropriate, receiving water limitations, specified to implement new, revised or newly interpreted water quality objectives, criteria or prohibitions; issuance of a schedule of compliance[4] may be appropriate.

Similarly, immediate compliance may not be technically and/or economically feasible for existing non-NPDES dischargers that, under new interpretation of law, are newly required to comply with new NPDES permitting requirements. Issuance of a schedule of compliance

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[1] New, revised, or newly interpreted water quality objectives, criteria, or prohibitions means: 1) objectives as defined in Section 13050(h) of Porter-Cologne; 2) criteria as promulgated by the USEPA; or 3) prohibitions as defined in the Water Quality Control Plan for the North Coast Region that are adopted, revised, or newly interpreted after November 29, 2006. Objectives and criteria may be narrative or numeric.

[2] Technical and economic feasibility shall be determined consistent with State Board Resolution No. 92-49.

[3] Existing discharger as defined in the State "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California," (CTR-SIP) means: any discharger (non-NPDES or NPDES) that is not a new discharger. An existing discharger includes an increasing discharger (i.e., an existing facility, with treatment systems in place for its current discharge that is or will be expanding, upgrading, or modifying its existing permitted discharge after November 29, 2006). A new discharger includes any building, structure, facility, or installation from which there is, or may be, a discharge of pollutants, the construction of which commenced after November 29, 2006.

[4] Schedule of compliance: as defined in Section 502 (17) of the Clean Water Act, means: a schedule of remedial measures including an enforceable sequence of actions or operations leading to compliance with an effluent limitation, other limitation, prohibition, or standard.

may be appropriate in these circumstances as well, to comply with effluent and/or receiving water limitations specified to implement objectives, criteria, or prohibitions that are adopted, revised, or reinterpreted after July 1, 1977, and that were not included in the non-NPDES permit.

Any schedule of compliance shall require achievement of the effluent limitations and/or receiving water limitations within the shortest feasible period of time, taking into account the factors identified in Chapter 4 for the implementation of schedules of compliance. All schedules of compliance will be limited to the time frames set out in Chapter 4**.**

4. IMPLEMENTATION PLANS

This section presents the actions intended to meet water quality objectives and protect beneficial uses of the Klamath River Basin and North Coastal Basin. The following measures shall be taken with respect to actual and potential point and nonpoint sources of water quality degradation.

POINT SOURCE MEASURES

WASTE DISCHARGE PROHIBITIONS

Section 13243 of the Porter-Cologne Water Quality Control Act authorizes the Regional Water Board - in a water quality control plan or in waste discharge requirements - to specify certain conditions or areas where the discharge of waste, or certain types of waste, will not be permitted.

Under this authority and in order to achieve water quality objectives, protect present and future beneficial water uses, protect public health, and prevent nuisance, the Regional Water Board declares that point source waste discharges, except as stipulated by the Thermal Plan, the Ocean Plan, and the action plans and policies contained in the Point Source Measures section of this Water Quality Control Plan, are prohibited in the following locations in the Region:

Klamath River Basin

1. All surface, freshwater impoundments and their tributaries, with the exception of the lower Lost River system.

2. Crescent City Harbor and all estuaries in accordance with the provisions of the State Water Board's "Water Quality Control Policy for the Enclosed Bays and Estuaries of California."

3. Smith River and its tributaries.

4. Klamath River and its tributaries, including but not limited to the Trinity, Salmon, Scott, and Shasta rivers and their tributaries.

5. The Applegate, Illinois, and Winchuck rivers and their tributaries.

6. On all coastal streams and natural drainage ways that flow directly to the ocean, all new discharges will be prohibited. Existing discharges to these waters will be eliminated at the earliest practicable date.

7. All intertidal reaches of the coast.

8. Areas of Special Biological Significance.

9. All other tidal waters unless it is demonstrated on the basis of waste characteristics, degree and reliability of treatment, rate of mixing and dilution, and other technical factors that water quality objectives will be met and all beneficial uses will be protected.

North Coastal Basin

1. All surface fresh water impoundments and their tributaries.

2. All bays and estuaries in accordance with the provisions of the State Water Resources Control Board's "Water Quality Control Policy for the Enclosed Bays and Estuaries of California".

3. The Mad and the Eel rivers and their tributaries during the period May 15 through September 30 and during all other periods when the waste discharge flow is greater than one percent of the receiving stream's flow as set forth in NPDES permits.[1]

4. The Russian River and its tributaries during the period of May 15 through September 30 and during all other periods when the waste discharge flow is greater than one percent of the receiving stream's flow as set forth in NPDES permits. In addition, the discharge of municipal waste during October 1 through May 14 shall be of advanced treated wastewater in accordance with effluent limitations contained in NPDES permits for each affected discharger, and shall meet a median coliform level of 2.2 mpn/100 ml.[2]

5. The Regional Water Board will consider exceptions for cause to the waste discharge rate limitations set forth in Prohibitions 3. and 4. (above). Exceptions shall be defined in NPDES permits for each discharger, on a case by case

[1] For dischargers not in compliance with the seasonal prohibition and waste discharge rate limitation, time schedules shall be set forth in National Pollutant Discharge Elimination System (NPDES) permit updates for each discharger. In addition, each discharger not in compliance shall report to the Regional Water Board on progress towards compliance on an annual basis.

[2] For dischargers not in compliance with the waste discharge rate limitation and/or advanced wastewater treatment, time schedules shall be set forth in NPDES permit updates for each discharger. In addition, each discharger not in compliance shall report to the Regional Water Board on progress towards compliance on an annual basis.

basis, and in accordance with the following:

A. The wastewater treatment facility shall be reliable.

   Reliability shall be demonstrated through analysis of the features of the facility including, but not limited to, system redundancy, proper operation and maintenance, and backup storage capacity to prevent the threat of pollution or nuisance.

B. The discharge of waste shall be limited to rates and constituent levels which protect the beneficial uses of the receiving waters.

   Protection shall be demonstrated through analysis of all the beneficial uses of the receiving waters. For receiving waters which support domestic water supply (MUN) and water contact recreation (REC1), analysis shall include expected normal and extreme weather conditions within the discharge period, including estimates of instantaneous and long-term minimum, average, and maximum discharge flows and percent dilution in receiving waters. The analysis shall evaluate and address cumulative effects of all discharges, including point and nonpoint source contributions, both in existence and reasonably foreseeable. For receiving waters which support domestic water supply (MUN), the Regional Water Board shall consider the California Department of Health Services evaluation of compliance with the Surface Water Filtration and Disinfection Regulations contained in Section 64650 through 64666, Chapter 17, Title 22 of the California Code of Regulations. Demonstration of protection of beneficial uses shall include consultation with the California Department of Fish and Game regarding compliance with the California Endangered Species Act.

C. The exception shall be limited to that increment of wastewater which remains after reasonable alternatives for reclamation have been addressed.

D. The exception shall comply with State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California," and the federal regulations covering antidegradation (40 CFR §131.12).

E. There shall be no discharge of waste during the period May 15 through September 30.

6. On all other coastal streams and natural drainageways that flow directly to the ocean all new discharges will be prohibited. Existing discharges to these waters will be eliminated at the earliest practicable date.

7. All intertidal reaches of the coast.

8. Areas of Special Biological Significance.

9. All other tidal waters unless it is demonstrated on the basis of waste characteristics, degree and reliability of treatment, location of discharge, rate of mixing and dilution, and other technical factors that water quality objectives will be met and all beneficial uses will be protected.

SCHEDULES OF COMPLIANCE

The Regional Water Board may establish a Schedule of Compliance in an National Pollution Discharge Elimination System (NPDES) permit under the following circumstances:[3,4]

1) Where an existing discharger[5] has demonstrated, to the Regional Water Board's satisfaction, that it is infeasible to achieve immediate compliance with effluent and/or receiving water limitations specified to implement new, revised, or newly interpreted water quality objectives, criteria, or prohibitions.[6]

[3] Schedules of compliance for CTR criteria are independently authorized and governed by 40 CFR 122.47 and 131.38, and the State "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California" (CTR-SIP). This amendment is intended to supplement, not supercede, these provisions required by the CTR-SIP. All CTR limits must be consistent with the CTR-SIP and applicable federal rules.

[4] Schedules of compliance for Non-NPDES Waste Discharge Requirements (WDRs) are also independently authorized by Porter Cologne, and will continue to be adopted on a case-by-case basis.

[5] Existing discharger is defined in the State "Policy for Implementation of Toxic Substance Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California," (CTR-SIP) as any discharger (non-NPDES or NPDES) that is not a new discharger. An existing discharger includes an increasing discharger (i.e., an existing facility with treatment systems in place for its current discharge that is or will be expanding, upgrading, or modifying its existing permitted discharge after November 29, 2006). A new discharger includes any building, structure, facility, or installation from which there is, or may be, a discharge of pollutants, the construction of which commenced after November 29, 2006.

[6] New, revised, or newly interpreted water quality objectives,

2) Where a discharger is required to comply with Total Maximum Daily Loads (TMDLs) adopted as a single permitting action,[7] and demonstrates that it is infeasible to achieve immediate compliance with effluent and/or receiving water limits that are specified to implement new, revised or newly interpreted objectives, criteria, or prohibitions.

The schedule of compliance shall include a time schedule for completing specific actions (including interim effluent limits) that demonstrate reasonable progress toward attaining the effluent and/or receiving water limitations, water quality objectives, criteria, or prohibitions. The schedule of compliance shall contain interim limits and a final compliance date based on the shortest feasible time required to achieve compliance (determined by the Regional Water Board at a public hearing after considering the factors identified below).

Schedules of compliance in NPDES permits for existing NPDES permittees shall be as short as feasible, but in no case exceed the following:

> Up to five years from the date of permit issuance, re-issuance, or modification that establishes effluent and/or receiving water limitations specified to implement new, revised, or newly interpreted objectives, criteria, or prohibitions. A permittee can apply for up to a five-year extension, but only where the conditions of the schedule of compliance have been fully met, and sufficient progress toward achieving the objectives, criteria, or prohibitions has been documented.
>
> In no case shall a schedule of compliance for these dischargers exceed ten years from the effective date of the initial permit that established effluent and/or receiving water limitations specified to implement new, revised, or newly interpreted objectives, criteria, or prohibitions.

TMDL-derived effluent and/or receiving water limitations that are specified to implement new, revised, or newly interpreted water quality objectives, criteria, or prohibitions that are adopted as a single permitting action:

> In this scenario, schedules of compliance shall require compliance in the shortest feasible period of time, but may extend beyond ten years from the date of the permit issuance.

To document the need for and justify the duration of any such schedule of compliance, a discharger must submit the following information, at a minimum. The Regional Water Board will review the information submitted to determine if a schedule of compliance is appropriate.

For all applicants:

- A written request, and demonstration, with supporting data and analysis, that it is technically and/or economically infeasible[8] to achieve immediate compliance with newly adopted, revised or newly interpreted water quality objectives, criteria or prohibitions.
- Results of diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream.
- Documentation of source control efforts currently underway or completed, including compliance with any pollution prevention programs that have been established.
- A proposed schedule for additional source control measures or waste treatment.
- The highest discharge quality that is technically and economically feasible to achieve until final compliance is attained.
- A demonstration that the proposed schedule of compliance is as short as technically and economically feasible.
- Data demonstrating current treatment facility performance to compare against existing permit effluent limits, as necessary to determine which is the more stringent interim limit to apply if a schedule of compliance is granted.
- Additional information and analyses, to be determined by the Regional Water Board on a case-by-case basis.

criteria, or prohibitions means: 1) objectives as defined in Section 13050(h) of Porter-Cologne; 2) criteria as promulgated by the United States Environmental Protection Agency (USEPA); or 3) prohibitions as defined in the *Water Quality Control Plan for the North Coast Region* that are adopted, revised, or newly interpreted after November 29, 2006. Objectives and criteria may be narrative or numeric.

[7] "Single permitting actions" means those where the Regional Board incorporates the requirements to implement a TMDL through one NPDES permit. These actions would not require a Basin Plan amendment, but would require a technical staff report to support the permit requirements and any permit specified compliance schedule. Furthermore, the USEPA would still be required to approve the TMDL under the federal CWA Section 303(d).

[8] Technical and economic feasibility shall be determined consistent with State Board Order 92-49.

ACTION PLAN FOR HUMBOLDT BAY AREA

The purposes of this Action Plan for the Humboldt Bay Area are to:

1) Acknowledge progress which has been made in the protection and enhancement of Humboldt Bay since the original (1975) Basin Plan and the 1980 and 1988 updates;

2) Describe the current status of programs in the watershed; and

3) Describe the surveillance, monitoring and assessment activities necessary to provide ongoing protection and enhancement of the water quality of the Humboldt Bay watershed.

Progress

The original (1975) action plan for the Humboldt Bay Area was intended to guide publicly-funded cleanup of the Bay. It envisioned full implementation of the State Water Board's 1974 "Water Quality Control Policy for Enclosed Bays and Estuaries" (SWRCB Resolution 74-43) and called for elimination of discharge of municipal wastewaters and industrial process waters (exclusive of cooling water discharges) to Humboldt Bay. That action plan allowed the Regional Water Board to permit continued discharges based on findings that the wastewater in question would be consistently treated and discharged in a manner that would enhance the quality of receiving waters or beneficial uses above that which would occur in the absence of the discharge. NPDES permits were granted to the City of Eureka, the City of Arcata, and College of the Redwoods, in accordance with the State Water Board's 1974 "Water Quality Control Policy for Enclosed Bays and Estuaries". Six publicly-owned treatment works (POTW) discharges and numerous overflow-prone pumping stations have been eliminated. Hundreds of failure-prone on-site sewage disposal systems have been eliminated through the sewering of those areas.

Since the 1970s, numerous other measures to protect and enhance the water quality and beneficial uses of Humboldt Bay have been successfully implemented through application of Basin Plan action plans, policies and programs administered by the Regional Water Board and other state and local agencies.

While these accomplishments and assessments are important, water quality problems and concerns still exist in the Humboldt Bay area. As illustrated in the statewide Water Quality Assessment program, the Bay has been affected by point and nonpoint sources of water pollution and the potential for polluting episodes remains.

Bacterial Quality Concerns

The bacterial quality of Humboldt Bay is of particular concern due to the location of several of California's most important commercial oyster "farms" in the northern lobe of the estuary known as Arcata Bay. The shellfish harvest areas are classified by the California Department of Health Services according to several criteria, including their proximity to pollutant sources and the Department's knowledge that such areas are (or are not) of suitable sanitary quality. The Department is assisted in its classification process by close coordination with the Regional Water Board, sewage-management agencies, and the shellfish growers.

In Arcata Bay, shellfish harvest is permitted only in "Conditionally Approved" areas where water bacteriological quality meets the prescribed numerical standards described in Section 3 of this Plan, except during certain predictable periods. In this estuary, the exception occurs any time that a storm produces rainfall in excess of one-half inch within 24 hours. A harvest closure begins with each such storm and lasts for several days, depending on the storm pattern and intensity and the documented time required for "clearance" after the storm. This restriction recognizes that the bacterial quality of runoff into the Bay from all tributary watersheds causes the Bay waters to exceed the harvest-allowance standard.

In a federally-funded (Clean Water Act Section 208) study of the Bay in 1981-82, the Regional Water Board assessed the relative contributions of bacteria-laden runoff from different representative land-use areas including agricultural (pasture), rural residential, and urban areas. All were shown to produce significant bacterial concentrations in stormwater runoff. The major contribution was from pasture and rangelands. The assessment estimated that, should this land-use source be managed to preclude high-level bacterial discharges, there might be fewer days of shellfish harvest closure after each storm. The Department of Health Services, in its Humboldt Bay Management Plan, recognizes that such management has not been implemented.

Other Water Quality Concerns

Agricultural uses in the Humboldt Bay watershed include permanent pasture, confined animal facilities,

commercial-scale flower and bulb farms, and grazing. These activities may result in erosion and runoff, producing discharges of sediment, nutrients, bacteria, and pesticides. Bacteria-laden runoff has been identified as the primary agriculturally-related discharge in the Humboldt Bay watershed. Continued Regional Water Board review and monitoring of agricultural activities is necessary.

Forestry activities in the watershed include timber harvesting, road construction, site preparation, and herbicide application. Timberland owners located in the upper watershed areas will continue to file timber harvest plans on lands zoned for timber harvest production. Road construction and reconstruction within streamside management zones and concentration of logging operations in a watershed will be given special scrutiny to avoid individual and cumulative impacts on the streams.

Urban runoff is affected by past and current land uses which range from thousands of individual households and small businesses to several wood-product factories, each with actual or potential discharges of pollutants via stormwater runoff. The recent stormwater NPDES regulations and possible small-municipality regulations must be implemented to advance the management of runoff-borne pollutants. In addition, the Regional Water Board has an active program to secure cleanup of contaminated soils, runoff and groundwater from such sites.

In addition, there are several sites around the bay where past spills and leaks have contaminated groundwater which discharges to the bay. The Regional Water Board, local agencies, and responsible parties must utilize appropriate cleanup and abatement practices to address these problems.

Regional Water Board and local agency programs to assist small business owners in preventing discharges of polluting chemicals must also be implemented.

Continued surveillance, monitoring, and assessment of water quality and land use activities around Humboldt Bay, and implementation of the Bays and Estuaries Policy are necessary to assure protection and enhancement of Humboldt Bay and its beneficial uses.

Accordingly, the Action Plan for Humboldt Bay includes the following elements:

1) Discharger surveillance and monitoring;

2) Review and assessment of land use activities; and

3) Continued coordination with other state and local agencies with various responsibilities with regards to Humboldt Bay.

ACTION PLAN FOR THE SANTA ROSA AREA Interim Action Plan (1986 - 1990)[9] for the Santa Rosa Area:

On or before July 1, 1990, the Regional Water Board will formally review this Interim action plan and may revoke authority to discharge under the provisions of the plan or may extend the interim compliance date providing the City of Santa Rosa demonstrates to the Regional Water Board reasonable progress on the City's stated goal to eliminate direct disposal of treated waste in the Russian River.

1. There shall be no discharge of waste to the Russian River from the Laguna Regional Sewage Treatment Facility during the period of May 15 through September 30 each year. There shall be no discharge from the Laguna Regional Sewage Treatment Facility for all other periods except as follows:

   A. To the extent possible, only advanced treated wastewater as defined in effluent limitations contained in an NDPES permit shall be discharged during October 1 to May 14. However, discharges of secondary treated wastewater as defined in effluent limitations contained in an NDPES permit meeting a median total coliform level of 23 MPN/100 ml from the Laguna Regional Sewage Treatment and Disposal Facilities may be discharged during October 1 to May 14 at rates not exceeding one percent of the flow of the Russian River. In any year, there shall be no discharge of secondary treated wastewater to the Russian River when the flow of the River as measured at Guerneville

[9] On September 21, 1989, the Regional Water Board adopted Resolution No. 89-111 which recognized the City of Santa Rosa's progress in complying with the Long-Range Plan for the Russian River and provides for continued application of the Interim Action Plan standards to the Santa Rosa area through July 1, 1995. Cease and Desist Order No. 92-147 adopted by the Regional Water Board on December 10, 1992 extends the Interim Action Plan standards through September 30, 1997 and Cease and Desist Order No. 93-103 adopted by the Regional Water Board on October 27, 1993 further extends the Interim Action Plan standards through September 30, 1999. This action plan will be amended at a future date.

(USGS Gage No. 11-4670.00) is less than 1,000 cfs. In instances when secondary treated wastewater is discharged, the discharger shall submit a report documenting the reasons for such discharges. In no case when secondary treated wastewater is discharged in combination with advanced treated wastewater shall the total discharge exceed one percent of the flow of the Russian River.

B. Discharge of advanced treated wastewater in accordance with an NDPES permit from the Laguna Regional Treatment and Disposal Facilities to the Russian River may be permitted during October 1 through May 14 when all the following conditions are met:

1. The discharger shall meet a total coliform level of 2.2 MPN/100 ml;

2. In any year, discharge shall not commence until after the flow of the Russian River initially reaches 1,000 cfs as measured at Guerneville (USGS Gage No. 11-46700.00) or until authorized by the Regional Water Board or its Executive Officer. Such authorization shall be based on evidence that justifies the necessity for the discharge and that shows that all beneficial uses of the Russian River and tributaries will continue to be protected. The discharger shall document that system inflow has not exceeded the 1985 dry weather average plus incremental inflows not exceeding any irrigation and/or storage capacity added since 1985. Under wintertime (October 1 - May 14) drought conditions when the flow of the Russian River is less than 1,000 cfs, the Regional Water Board or its Executive Officer may suspend authorization to discharge waste, if necessary, to protect the beneficial uses of the Russian River or its tributaries.

3. Such discharge shall be limited to one percent of the flow of the Russian River except under the following conditions:

   a. Discharges exceeding one percent of the flow of the Russian River shall be made in accordance with operating procedures to be incorporated into the NPDES permit for the Laguna Regional Wastewater Treatment Facilities. These operating procedures shall be designed to minimize the rate of discharge to the lowest percentage practicable, and to minimize the total volume of effluent discharged.

   b. In such instances, the discharger shall provide a report to the Executive Officer documenting the reasons for increased waste discharges. The report shall include the dates, rates, and volumes of waste discharges and the circumstances necessitating such discharges and documentation that all beneficial uses of the Russian River and tributaries will be protected and that system inflow has not exceeded the 1985 dry weather average plus incremental inflow not exceeding any irrigation and/or storage capacity added since 1985.

4. In no case shall any discharge of advanced treated wastewater exceed five percent of the flow of the Russian River.

INTERIM ACTION PLAN FOR THE TRINITY RIVER

The purposes of this action plan are to describe those activities in the Trinity River watershed which implement the objectives listed below and to ensure a multi-agency collaborative approach to attainment of the objectives.

The Trinity River Division of the Central Valley Project, constructed in 1963 and operated by the United States Bureau of Reclamation, is a major water development project providing the transfer of water from the Trinity River to the Sacramento River Basin of California. Key features of the Trinity River Division are Lewiston Dam, Trinity Dam, and facilities which provide the diversion of runoff from the Trinity River watershed into the Sacramento River Basin. The construction of the dams and the diversion of approximately 80% of the natural flows of the Trinity River resulted in significant changes in the river.

The reduced flows resulted in changes to the river's temperature regime and disrupted physical cues for migration and spawning of salmon. To mitigate for the loss of fisheries habitat resulting from the project construction, the Trinity River Fish Hatchery was

constructed at the base of Lewiston Dam. The fish populations have not been sustained, however, and both salmon and steelhead trout populations have declined since 1964, some stocks to as little as 10% of former levels. Efforts are currently underway to expand and improve the operations of the fish hatchery.

To the extent that factors are controllable as stated in Section 3 of this plan, the following temperature objectives shall apply to the activities in the Trinity River.

Daily Average Not to Exceed	**Period**	
60°F	July 1 - Sept. 14	Lewiston Dam to Douglas City Bridge
56°F	Sept. 15 - Oct. 1	Lewiston Dam to Douglas City Bridge
56°F	Oct. 1 - Dec. 31	Lewiston Dam to confluence of North Fork Trinity River

The Regional Water Board recognizes that the controllability of temperatures in the Trinity River downstream of Trinity and Lewiston Reservoirs is dependent on both climatic conditions and the operation of diversions to the Sacramento River.

The following ongoing efforts shall implement the temperature objective for the Trinity River:

The Trinity River Restoration Act (P.L. 98-541) authorized the Secretary of the Interior to formulate and implement a management program to restore fish and wildlife populations in the Trinity River Basin. To that end, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game formed the Trinity River Task Force in 1971 to study the fish and wildlife problems of the basin and to prepare a plan for identification and mitigation of the problems. Membership in the Trinity River Fishery Restoration Task Force now also includes the U.S. Bureau of Indian Affairs, the California Department of Water Resources, Trinity County, Humboldt County, the Hoopa Valley Tribe, the Yurok Tribe, the U.S. Forest Service, the Bureau of Land Management, the U.S. Soil Conservation Service, the National Marine Fisheries Service, the California Department of Forestry and Fire Protection, and the State Water Resources Control Board.

The Trinity River Task Force shall seek to achieve the temperature objectives listed above through its individual and collective authorities. In addition, the authorities shall strive to optimize Trinity River restoration efforts through the efficient and balanced use of cold water reserves from Trinity and Lewiston reservoirs.

In 1981, the U.S. Fish and Wildlife Service and the Water and Power Resources Service of the Central Valley Project entered into an agreement, signed by the Secretary of the Interior, to work cooperatively to halt further fishery declines and to begin an effective restoration program in the Trinity River. In recognizing the problem of balancing the needs to sustain the fishery resources in the Trinity River and the uses outside of the basin for water and power, the agreement established flow allocations for normal, dry, and critically dry years for a period of twelve years. At the end of the twelve-year evaluation period, the agreement calls for the U.S. Fish and Wildlife Service to submit a report to the Secretary of the Interior which summarizes the effectiveness of restoration of flows and recommends an appropriate course of action for future management of Trinity River flows. The twelve-year evaluation period began in 1985 and is scheduled for completion in 1996. The agreement also recognizes the need for the completion of a Fish and Wildlife Management Plan by the Trinity River Task Force, and its implementation to successfully restore the anadromous resources of the Trinity River Basin.

Because of the successive dry-weather conditions since 1985 and the subsequent release of reduced flows to the Trinity River, the Secretary of the Interior amended the 1981 agreement to provide increased flows to the Trinity River in 1991 and in successive years until the U.S. Fish and Wildlife Service completes its study of the Trinity River flows.

As information from the twelve-year study becomes available, the Regional Water Board shall review the effectiveness of this action plan in attaining the water temperature objectives.

In 1985 the Bureau of Reclamation entered into a cooperative agreement with the California Department of Fish and Game, U.S. Fish and Wildlife Service, and the National Marine Fisheries Service to coordinate the operations of the Trinity River Division which impact the fishery resources. To that end, the agencies together attempt to establish the timing and the proportion of releases from Trinity Dam and Lewiston Dam which would most efficiently utilize the cold water reserves available for use by the anadromous fishery.

The above agencies shall collaborate to implement the objectives set forth in this plan, and shall apprise the Regional Water Board of the progress of this effort on an annual basis.

The State Water Board issued Orders WR 90-5 and 91-01 on May 5, 1990 and January 10, 1991, which set terms and conditions for fishery protection and set a schedule for completion of tasks for the thirty-two water rights permits, licenses, permitted applications and licensed applications for the Bureau of Reclamation's Central Valley Project. The orders included seven pending permitted applications for the diversion of cold water reserves from the Trinity River. The Orders recognized that protection of the upper Sacramento River fishery by means of water diversions from the Trinity River may adversely affect the Trinity River if not properly controlled, and chose to prevent and avoid any adverse effects to the Trinity River fishery as a result of the Order. The State Water Board will consider the comprehensive protection for the Trinity River fishery in a separate water rights proceeding in the near future. The State Water Board will consider the objectives set forth in this action plan in its future water rights proceedings for the Trinity River.

This action plan forms the basis for a collaborative approach to the management of fishery resources in the Trinity River and attainment of the water quality objectives.

The Regional Water Board will periodically review this action plan and information resulting from temperature and fishery studies in the drainage and other areas to determine the need for modification.

INTERIM POLICY ON THE REGULATION OF WASTE DISCHARGES FROM UNDERGROUND PETROLEUM TANK SYSTEMS

At present, the Regional Water Board is using the following laws, policies, regulations and guidelines as the basis for investigations and cleanup of discharges from underground petroleum tank systems:

- The Porter-Cologne Water Quality Control Act
- The Water Quality Control Plan for the North Coast Region
- Chapters 15 and 16, Division 3, Title 23, California Code of Regulations
- State Water Resources Control Board Resolution No. 68-16
- The Health and Safety Code

It shall be the policy of the Regional Water Board to implement a program to investigate and cleanup groundwater pollution caused by unauthorized releases of petroleum from underground tanks that protects water quality while at the same time minimizes the cost to responsible parties and the public in general. The following principles shall constitute the Regional Water Board's interim policy:

1. With respect to all underground petroleum tank cases in this Region, the Regional Water Board's highest priority will be to eliminate pollutant sources through tank removal, free product removal, and removal of contaminated soil to the extent practicable. If required, the need for further remedial action will be based on impacts on the beneficial uses of affected waters as determined by reasonable monitoring or other investigation.

2. The Regional Water Board will then assign the highest priority to the resolution of underground petroleum tank cases where drinking water sources are being adversely impacted or are imminently threatened to be adversely impacted.

3. Where practicable, the Regional Water Board will schedule the investigation and cleanup of petroleum pollution by responsible parties to coincide with the availability of funds.

4. Where practicable, the Regional Water Board will recognize the use of alternative cleanup techniques such as in-situ bioremediation and passive remediation.

5. The Regional Water Board will assist the State Water Resources Control Board and claimants to the State Underground Storage Tank Cleanup Fund to further reduce investigative and cleanup costs while continuing to protect water quality:

    a. through technology transfer;

    b. through appropriate regulatory policy and legislative recommendations; and

    c. through continuing coordination to implement regulatory policy and law.

INTERIM ACTION PLAN FOR CLEANUP OF GROUNDWATERS POLLUTED WITH PETROLEUM PRODUCTS AND HALOGENATED VOLATILE HYDROCARBONS

Discharges of waste from treatment facilities designed to remove pollutants from groundwaters polluted with petroleum products and halogenated volatile hydrocarbons shall be permitted to surface waters of the North Coast Region year-round with no discharge flow limitations based on the flow of the receiving water provided that the following conditions are met:

1. The discharge from the treatment facility shall be pollutant-free.[10]

2. The discharge shall not adversely affect the beneficial uses of the receiving water.

3. The discharge is necessary because a polluted groundwater cleanup operation is required by an action of the Regional Water Board.

4. The discharge is necessary because no feasible alternative to the discharge (reinjection, reclamation, evaporation, discharge to a community wastewater treatment and disposal system, etc.) is available.

5. The discharge is regulated by NPDES Permit/Waste Discharge Requirements.

6. The discharger has demonstrated consistent compliance with Provision 1, above.

7. The discharge is in the public interest.

ACTION PLAN FOR STORM WATER DISCHARGES

Although storm water runoff is part of the natural hydrologic cycle, human activities, particularly industrialization and urbanization, can result in significant and problematic changes to the natural hydrology of an area. As a result, when rain falls, pollutants may become dissolved in or eroded into, and carried by runoff, without treatment, into surface waters. These pollutants, unless controlled, may degrade the beneficial uses of surface waters. To address the recognized storm water problems, the U.S. Congress added Section 402(p) to the federal Clean Water Act in 1987. This section, and the federal regulations which implement it (40 CFR 122, 123, 124, November 1990), require NPDES permits for storm water discharges from municipalities and industries, including construction. The 1987 Clean Water Act amendments require municipalities to reduce pollutant discharges to the maximum extent practicable, and industries, including construction, to implement Best Available Technology and Best Conventional Pollutant Control Technology to reduce pollutants.

As a result of Section 402(p), the State of California developed a program for the implementation of four types of storm water permits; areawide municipal, site-specific industrial or construction, and general construction. Within that framework, the regional water boards issue the municipal areawide permits and site-specific industrial – construction site permits, and the State Water Resources Control Board (State Water Board) issues statewide general permits for the regulation of storm water resulting from industrial and construction activities. Enforcement of all categories of storm water permits is the responsibility of the Regional Water Board.

The Regional Water Board will implement Section 402(p) of the Clean Water Act by permitting discharges of storm water from municipalities which own and operate storm water sewer systems, and discharges associated with industrial and construction activity (as defined in 40 CFR Part 122), to surface waters of the North Coast Region provided the following conditions are met:

1. The discharge and the activities which affect the discharge are described in a Notice of Intent or Application for NPDES Permit filed with the State or Regional Water Board; and/or

2. The discharge and the activities which affect the discharge are managed in conformance with the provisions of the applicable NPDES permit.

The following policy shall be implemented with respect to discharges from individual waste treatment and disposal systems.

POLICY ON THE CONTROL OF WATER QUALITY

[10] For the purposes of this Interim Action Plan, pollutants are defined as those constituents and their breakdown products that were discharged to soils and/or groundwaters that necessitated a groundwater cleanup. Pollutant-free is defined as discharges that contain no detectable levels of pollutants as analyzed in currently approved EPA or State of California methodology. The Regional Water Board will define detectable levels in terms of numerical limits and shall specify such limits in individual NPDES permits or waste discharge requirements.

WITH RESPECT TO ON-SITE WASTE TREATMENT AND DISPOSAL PRACTICES

I. Objective

The North Coast Region is one of the fastest growing areas of California, with widespread and increasing dependence on on-site systems for sewage treatment and disposal. Due to ever-increasing costs, the ultimate construction of sewerage systems in developing areas can no longer be relied upon as a future solution to sewage disposal needs. More and more, on-site systems must be viewed as permanent means for waste treatment and disposal, capable of functioning properly for the life of the structure(s) served. The preponderance of adverse physical conditions throughout the North Coast Region necessitates careful evaluation of site suitability and design parameters for every on-site wastewater disposal system. This policy sets forth region-wide criteria and guidelines to protect water quality and to preclude health hazards and nuisance conditions arising from the subsurface discharge of waste from on-site waste treatment and disposal systems.

II. Findings

1. On-site waste treatment and disposal can be acceptable and successful. The success of the on-site system is dependent on suitable site location, adequate design, proper construction, and regular maintenance. Failure of the on-site system can result in water pollution and the creation of health hazards and nuisance conditions.

2. Waste from on-site systems must be disposed and disbursed below ground surface and away from high groundwater. There are existing parcels of land which, due to limitations in size, unsuitable soils, and/or high groundwater, cannot accommodate on-site waste disposal.

3. Division 7 of the California Water Code grants to the Regional Water Board jurisdiction over all discharges of waste, including those from individual waste treatment and disposal systems or from community collection and disposal systems which utilize subsurface disposal. Local regulatory agencies, however, can most effectively control individual waste treatment and disposal systems, provided they strictly enforce ordinances and regulations designed to provide protection of water quality and the public health. Regulation of on-site systems on federal lands is beyond the jurisdiction of local agencies and must remain with the Regional Water Board.

4. The many variations in physical conditions, population densities, and parcel sizes throughout the Region may affect the propriety of use of on-site water treatment and disposal systems. Adherence to the guidelines, criteria, and water conservation practices contained herein ordinarily will protect public health and water quality. Local regulatory agencies and the Regional Water Board are encouraged to adopt more stringent regulations when warranted by local conditions.

5. Factors may arise which will justify less stringent requirements than set forth in the guidelines and siting and design criteria contained herein. Provision for waiver is included in this policy to address such situations.

6. On-site waste treatment and disposal systems can be an excellent sanitation device in rural and rural-urban areas. However, in areas where population densities are generally high and the availability of land is limited, on-site systems are not desirable. On-site waste treatment and disposal systems should not be permitted if adequate community sewerage systems are available or feasible.

7. Water conservation practices may protect present and future beneficial uses and public health, and may prevent nuisance and prolong the effective life of on-site wastewater treatment and disposal systems. However, water conservation practices do not reduce the need to size on-site systems as set forth in this policy.

8. The life of on-site wastewater treatment and disposal systems may be severely limited if improperly maintained. A means must be available to assure adequate maintenance of individual waste treatment and disposal systems. Management by public entities is encouraged wherever practicable.

9. Soil characteristics play a dominant role in the suitability of a site for subsurface sewage disposal. Increased emphasis on determining and utilizing soils information will improve site suitability evaluations.

10. The installation of many on-site disposal systems within a given area may result in hydraulic interference between systems and adverse cumulative impacts on the quality of ground and surface waters. Physical solutions or limitations

on waste load densities for land developments and other facilities may be necessary to avert such eventualities.

11. New technologies for on-site waste treatment and disposal continue to evolve. Means should be promoted to allow for timely and orderly consideration of promising alternative methods of waste treatment and disposal. Where alternative methods demonstrate enhanced performance, consideration may be given for utilization of different site criteria.

12. All aspects of on-site waste treatment and disposal would benefit from improved professional training and public education programs. Such training and education programs should be promoted by the Regional Water Board in cooperation with local regulatory agencies and public and private sector professional associations.

III. Site Evaluation Criteria and Methods

A. Criteria

The following site criteria are considered necessary for the protection of water quality and the prevention of health hazards and nuisance conditions arising from the on-site discharge of wastes from residential and small commercial establishments. They shall be treated as region-wide standards for assessing site suitability for such systems. Waiver of individual criterion may be made in accordance with the "Provision for Waiver" contained in this policy. Systems resulting in large wastewater loads may require additional criteria which are not covered in this policy, and which will require review by the Regional Water Board on a case by case basis.

1. Subsurface Disposal

   On-site waste treatment and disposal systems shall be located, designed, constructed, and operated in a manner to ensure that effluent does not surface at any time, and that percolation of effluent will not adversely affect beneficial uses of waters of the State.

2. Ground Slope and Stability

   Natural ground slope in all areas to be used for effluent disposal shall not be greater than 30 percent.

   All soils to be utilized for effluent disposal shall be stable.

3. Soil Depth

   Soil depth is measured vertically to the point where bedrock, hardpan, impermeable soils or saturated soils are encountered.

   The minimum soil depth immediately below the leaching trench shall be three feet.

   Lesser soil depths may be granted only as a waiver or for alternative systems.

4. Depth to Groundwater

   Minimum depth to the anticipated highest level of groundwater below the bottom of the leaching trench shall be determined from Figure 4-1.

5. Percolation Rates

   Percolation test results in the effluent disposal area shall not be less than one inch per 60 minutes (60 MPI) for conventional leaching trenches. Percolation rates of less than one inch per 60 minutes (60 MPI) may be granted as a waiver or for alternative systems.

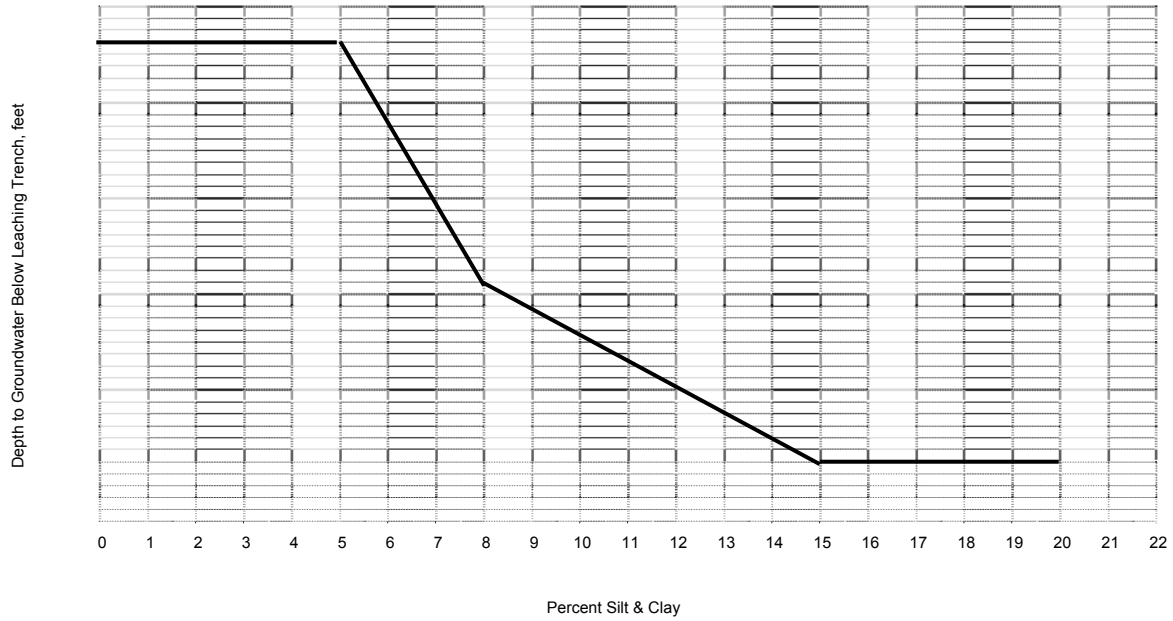
6. Setback Distances

   Minimum setback distances for various features of individual waste treatment and disposal systems shall be as shown below in Table 4-1.

7. Replacement Area

   An adequate replacement area equivalent to and separate from the initial effluent disposal area shall be reserved at the time of site approval. The replacement system area shall not be disturbed to the extent that it is no long suitable for wastewater disposal. The replacement system area shall not be used for the following: construction of buildings, parking lots or parking areas, driveways, swimming pools, or any other use that may adversely affect the replacement area.

FIGURE 4-1 MINIMUM DEPTH TO GROUNDWATER BELOW LEACHING TRENCH



Notes:

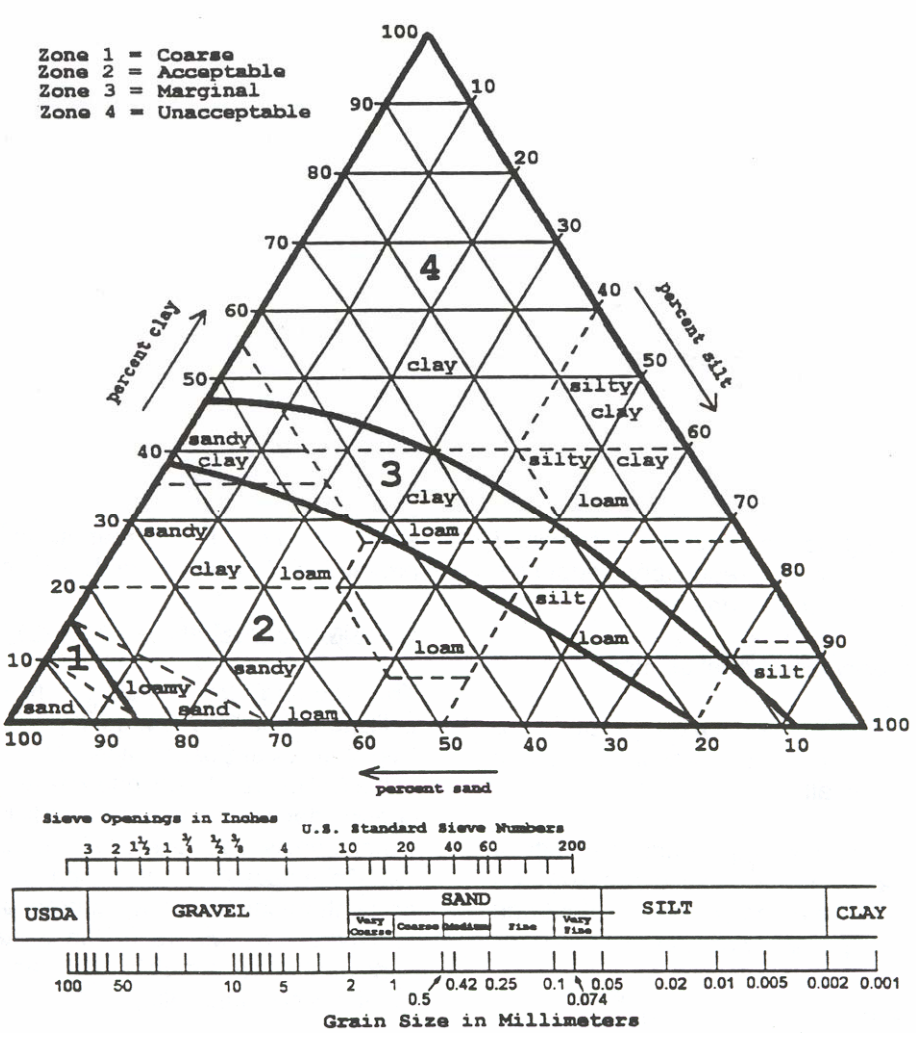
1. The Silt & Clay content shall be determined after adjustment for coarse fragments as indicated in the method set forth in Figure 4-2, and must exist for a minimum of three feet between the bottom of the leaching trench and groundwater.
2. For percolation rates slower than 5 mpi, a minimum depth to groundwater below the leaching trench shall be five feet.
3. For soils having greater than 15% Silt & Clay, lesser depths to groundwater, to a minimum depth of two feet below the leaching trench, may be granted only as a waiver or for alternative systems.

Table 4-1
Minimum Setback Distances (Feet)

Facility	Well	Perennially Flowing Stream [1]	Ephemeral Stream [2]	Ocean Lake or Reservoir [3]	Cut Banks, Natural Bluffs and Sharp Changes in Slope	Unstable Land Forms
Septic Tank/Sump	100	50	25	50	25	50
Leaching Field	100	100	50	100	25 [4]	50

[1] As measured from the line which defines the limit of 10 year frequency flood.
[2] As measured from the edge of the water course.
[3] As measured from the high-water line.
[4] Where soil depth or depth to groundwater below the leaching trench are less than five feet, a minimum set back distance of 50 feet shall be required.

Figure 4-2 SOIL PERCOLATION SUITABILITY CHART FOR ONSITE WASTE TREATMENT SYSTEMS



Instructions:

1. Plot texture on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.

2. Adjust for coarse fragments by moving the plotted point in the 100 percent sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.

3. Adjust for compactness of soil by moving the plotted point in the 100 percent clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc.

Note: For soils falling in sand, loamy sand, or sandy loam classification bulk density analysis will generally not affect suitability, and analysis is not necessary.

B. Methods of Site Evaluation

Site evaluations are required in all instances to allow proper system design and to determine compliance with the proceeding site suitability criteria prior to approving the use of on-site waste treatment and disposal systems. The responsible regulatory agency or Regional Water Board should be notified prior to the conduct of site evaluations since verification by agency personnel maybe required. Site evaluation shall be conducted by individuals qualified as described in Section X.6 of this policy, and evaluation methods shall be in accordance with the following guidelines.

1. General Site Features

   Site features to be determined by inspection shall include:

   a. Land area available for primary disposal system and replacement area.

   b. Ground slope in the effluent disposal and replacement area.

   c. Location of cut banks, fills, or evidence of past grading activities, natural bluffs, sharp changes in slope, soil landscape formations, and unstable land forms within 50 feet of the disposal and replacement area

   d. Location of wells, intercept drains, streams, and other bodies of water on the property in question and within 100 feet on adjacent properties.

2. Soil Profiles

   Soil characteristics shall be evaluated by soil profile observations. One backhoe excavation in the primary disposal field and one in the replacement area shall be required for this purpose. A third profile shall be required if the initial two profiles show conditions which are dissimilar enough so as to alter the ultimate design or location of the leachfield area.

   Augered test holes shall be an acceptable alternative, upon determination of the responsible regulatory agency: (a) where use of a backhoe is impractical because of access or because of the fragile nature of the soils, (b) when necessary only to very conditions expected on the basis of prior soils investigations, or (c) when done in connection with geologic investigations. Where this method is employed, three test holes in the primary disposal field and three in the replacement area shall be required.

   In the evaluation of new subdivisions, enough soil profile excavations shall be made to identify a suitable disposal and replacement area on each proposed parcel.

   The following factors shall be observed and reported from ground surface to a limiting condition or five feet below the proposed leachfield system:

   a. Thickness and coloring including Munsell Color Identification of soil layers, soil structure, and texture according to United States Department of Agriculture (USDA) classification.

   b. Depth to a limiting condition such as hardpan, rock strata, a large volume of rock fragments, or impermeable soil layer.

   c. Depth to observed groundwater.

   d. Depth to and description of soil mottling and gleying.

   e. Other prominent soil features which may affect site suitability, such as structure, stoniness, consistence, root zones and pores, dampness, massive and/or weak structured soils, etc.

3. Depth to Groundwater Determinations

   The anticipated highest level of groundwater shall be estimated:

   a. As the highest extent of soil mottling observed in the examination of soil profiles; or

   b. By direct observation of groundwater levels during wet weather conditions. Methods for groundwater determinations and monitoring well construction shall be set forth by the local regulatory agency.

   Where a conflict in the above methods of examination exists, the direct observation shall govern.

In those areas which, because of parent materials, soils lack the necessary iron compounds to exhibit mottling, direct observation during wet weather conditions shall be required. Guidance in defining such areas shall be provided by the Regional Water Board for each county within the Region.

4. Soil Percolation Suitability

Determination of a site's suitability for percolation of effluent shall be either of the following methods:

a. Percolation Testing

Stabilized percolation rates shall be established utilizing methods specified by the local regulatory agency.

Percolation testing of soils falling within Zone 1 and Zone 2 may be conducted in non-wet weather conditions provided presoaking of the test hole is accomplished with (a) a continuous 12 hour presoaking, or (b) a minimum of four complete refillings beginning during the day prior to that of the conduct of the test.

Percolation testing of soils within Zone 3 and Zone 4 shall be conducted during wet weather conditions. However, percolation testing of soils within Zones 3 and 4 may be conducted in non wet weather conditions provided the soils demonstrate a low shrink swell potential (Plasticity Index of less than 20, ASTM D 4318-84).

b. Soil Analysis

Soil samples representing the significant horizons within the excavated soil profile shall be obtained and analyzed for texture and bulk density according to methods prescribed by the Regional Water Board. The results shall be plotted on the soil textural triangle of Figure 4-2 as per indicated instructions.

(1) Soils within Zone 1 shall be considered to have minimal filtration capabilities, requiring increased depths to groundwater as per Figure 4-1.

(2) Soils within Zone 2 shall be considered suitable for effluent disposal without further testing.

(3) Soils within Zone 3 and 4 shall require percolation testing as per (a) above to verify suitability for effluent disposal.

5. Wet Weather Criteria

Wet weather testing periods shall be determined geographically by local regulatory agencies incorporating the following criteria as a minimum:

a. Between January 1 and April 30; and

b. Following 10 inches of rain in a 30-day period or after one-half of the seasonal normal precipitation has fallen.

Modification of wet weather testing beyond the limits of the above criteria may be made in accordance with a program of groundwater level monitoring instituted and conducted by the local regulatory agency.

C. Provision for Waiver

Waiver of site suitability criteria and evaluation methods specified herein may be granted by the Regional Water Board or county Health Officer when it can be satisfactorily demonstrated that water quality will not be impaired and public health will not be threatened as a result of such waivers.

Waivers may be granted for:
(1) Individual cases, or
(2) Defined geographical areas.

The local regulatory agency shall notify the Regional Water Board of the basis for each waiver. Prior to granting geographical area waivers, the local regulatory agency shall submit technical justification to the Regional Water Board for review and concurrence.

D. Waiver Prohibitions

Where surveys conducted by the local regulatory agencies and/or Regional Water Board staff indicate that discharges from on-site waste treatment and disposal systems in specific geographical areas are

resulting in or threatening to result in health hazards or water quality impairment, the Regional Water Board may prohibit the issuance of waivers in said areas. Identification of "waiver prohibition areas" is incorporated into Section VII of this policy.

Exemptions to such prohibitions shall be granted by the Regional Water Board only where an authorized public agency can provide satisfactory assurance that individual systems will be appropriately designed, located, sized, shaped, constructed, and maintained to provide adequate protection of beneficial uses of water and prevention of nuisance, pollution, and contamination.

E. Individual Systems Prohibitions

The discharge from existing or new individual systems utilizing subsurface disposal shall be prohibited by the Regional Water Board in accordance with Section 13280 of the California Water Code where substantial evidence shows that such discharges will result in violation of water quality objectives, will impair present or future beneficial uses of water, will cause pollution, nuisance, or contamination, or will unreasonably degrade the quality of any waters of the State. Identification of "individual systems prohibition areas" is incorporated into Section VIII of this policy.

IV. Design Criteria and Technical Guidelines

A. Estimates of Wastewater Flows for Design Purposes

Although actual wastewater flows may in fact be less, estimates of wastewater flows for the design of conventional on-site systems shall be based on 150 gallons per day per bedroom. Local regulatory agencies may incorporate reduced flows into the design of the on-site system upon approval by the Region Water Board or for alternative systems. Estimated glow rates for on-site systems receiving wastewater flows of greater than 1,500 gallons per day or from commercial establishments shall take into account peak loading rates and the chemical characteristics of the wastewater.

B. Septic Tank Capacity, Construction, Inspection, and Testing

At a minimum, septic tank capacity, construction, inspection, and testing requirements shall be based upon the current edition of the International Association of Plumbing and Mechanical Officials Uniform Plumbing Code (1988 Edition), or other local agency regulations approved by the Regional Water Board.

Individual treatment units other than septic tanks shall require certification by the National Sanitation Foundation (NSF) or the International Association of Plumbing and Mechanical Officials (IAPMO) prior to approval for use.

C. Leachfield System Design

The design of the leachfield shall be based on both the estimated flows set forth in Section IV.A. of this policy, and the organic loading of the on-site system. Table 4-2, or other local regulatory agency regulations approved by the Regional Water Board shall be acceptable for conventional on-site systems.

Utilization of the upper horizons for wastewater disposal shall be encouraged. Sidewall depth below the bottom of the leaching pipe shall be a minimum of 12 inches and shall not exceed 36 inches. The use of trenches deeper than 36 inches below the bottom of the leaching pipe shall be acceptable only where site investigations and plans by a qualified individual (per Section X.6. of this policy) demonstrate the suitability of the system to accept wastewater and protect quality.

Trench width shall not exceed 36 inches. Plastic leaching chambers are acceptable, provided the size is based on Table 4-2 of this policy.

D. Cesspools

The use of cesspools for on-site waste treatment and disposal shall be prohibited.

E. Holding Tanks

The use of holding tanks shall be prohibited except where the responsible regulatory agency determines that:

1. It is necessary to abate an existing nuisance or health hazard; or

2. The proposed use is within a sewer service area, sewers are under construction or contracts have been awarded and completion is expected within two years, there is capacity at the wastewater treatment plant and the sewering agency will assume responsibility for maintenance of the tanks; or

Table 4-2 Rates of Wastewater Application for Absorption Areas

Soil Texture	Percolation Rate Minutes per Inch	Application Rate Gallons per Day per Square Foot
Gravel, coarse sand	<1	Not Suitable
Coarse to medium sand	1 – 5	1.2
Fine sand, loamy sand	6 – 15	1.1 – 0.8
Sandy loam, loam	16 – 30	0.7 – 0.6
Loam, porous silt loam	31 – 60	0.5 – 0.4
Silty clay loam, clay loam –a,b	61 – 120	0.4 – 0.2

Note: Application rates may be interpolated based on percolation rates, within the ranges listed above.

a. Soils without expandable clays.
b. These soils may be easily damaged during construction.

3. It is for use at a campground or similar temporary public facility where a permanent sewage disposal system is not necessary or feasible and maintenance is performed by a public agency.

F. Intercept Drains

The use of intercept drains to lower the level of perched groundwater in the immediate leachfield area shall be acceptable under the following conditions:

1. Natural ground slope is greater than 5 percent;

2. Site investigations show groundwater to be perched on bedrock, hardpan, or an impermeable soil layer;

3. The intercept drain extends from ground surface into bedrock, hardpan, or the impermeable soil layer.

In no case shall the pervious section of an intercept drain be located less than 15 feet upgradient or 50 feet laterally from any leachfield.

Where all of the above conditions cannot be met, actual performance of the intercept drain shall be demonstrated prior to approval.

G. Fills

The use of fills to create a leachfield cover shall be acceptable under the following conditions:

1. Where the natural soils and the fill material meet the evaluation criteria as described in Section III of this policy;

2. Where the quantity and method of fill application is described;

3. Where the natural slope does not exceed 20 percent;

4. Where placement of fill will not aggravate slope stability or significantly alter drainage patterns or natural water courses.

Leachlines for wastewater disposal shall be placed entirely within natural soils. Fill material shall not be used to create a basal area for alternative systems or mounds.

Local agencies shall provide specific criteria for the use of fill material which are compatible with the provisions of this policy.

H. Water Saving Devices

The use of water-saving devices may be incorporated into the on-site system design where maintenance of such devices is provided by a responsible entity.

Regional Water Board waste discharge regulation of on-site disposal systems may specify the use of water conservation.

I. Alternative Systems

An alternative system may be appropriate where physical site constraints preclude the installation of a standard septic tank leachfield on-site wastewater disposal system. Alternative systems shall be subject to a program of monitoring provided by a legally

responsible entity.

1. Mound Systems

   Mound systems utilize reduced criteria for soil permeability and depth to groundwater on slopes up to 12%. Percolation rates of up to 120 minutes per inch are allowed. A minimum of 24 inches of separation between groundwater and native ground surface is required. The mound design shall be based on the Design and Construction Manual for Wisconsin Mounds, Small Scale Wastewater Management Project, University of Wisconsin (January 1990).

2. Pressure Distribution Systems

   Pressure distribution systems enable wastewater disposal in conditions of shallow topsoil over slowly permeable or fractured subsoils on slopes up to 30%. Percolation rates of 1 to 120 minutes per inch are required. The system shall have a minimum depth to groundwater, fractured or consolidated rock, or impermeable soils of 24 inches beneath trench bottom. The design shall comply with criteria set forth by the local regulatory agency.

3. At-Grade Systems

   At-Grade Systems enable wastewater disposal in conditions of shallow topsoils on slopes up to 25%. Percolation rates of up to 120 minutes per inch are allowed. A minimum of 36 inches of separation between groundwater and native ground surface is required. The design shall be based on the Wisconsin At-Grade Soil Absorption System Siting, Design and Construction Manual, Small Scale Wastewater Management Project, University of Wisconsin (January 1990).

4. Sand Filters

   Sand filters may be used to pretreat the effluent from a septic tank by application to a bed of specified media. Maintenance is required to assure the long-term effectiveness of sand filters.

5. Proposals for alternative systems other than those listed above shall be evaluated jointly by the local regulatory agency and the Regional Water Board staff on a case by case basis.

J. Cumulative Effects

The potential cumulative effects on ground and surface waters include, but are not limited to, groundwater mounding and nitrate loading. The local regulatory agency and the Regional Water Board shall determine the need for cumulative impact assessment for on-site systems, and will consider in particular, subdivision developments, commercial establishments, and on-site systems receiving greater than 1,500 gallons per day. For most on-site systems, the assessment of cumulative effects is not necessary.

Analysis of cumulative impact effects shall be conducted using accepted principles of groundwater hydraulics, shall describe the specific methodology, and shall include literature references as appropriate. The wastewater flow used for cumulative impact analysis shall normally be as follows: 100 gallons per day per bedroom for individual residential system; design sewage flow for multi-family and other non-residential systems.

a. Groundwater Mounding Analysis

   Groundwater mounding analysis shall be used to predict the highest rise of the water table and shall account for background groundwater conditions during the wet weather season. The maximum acceptable rise of the water table for short periods of time during the wet weather season, as estimated from groundwater mounding analysis, shall be as follows:

   For systems with design flows of less than 1,500 gallons per day, groundwater mounding beneath the disposal field shall not result in more than a 50 percent reduction in the minimum depth to seasonally high groundwater as specified in this policy.

   For systems with design flows of 1,500 gallons per day or more, a minimum groundwater clearance of 24 inches shall be maintained beneath the system.

b. Nitrate Loading

   Analysis of nitrate loading effects shall be based, at a minimum, on an estimate of an annual chemical-water mass balance.

   Minimum values used for the total nitrogen concentration of septic tank effluent shall be: 40 mg/l as N (for average flow conditions) for residential wastewater, or as determined from sampling of comparable system(s) or from

literature values.

On-site systems shall not cause the groundwater nitrate concentration to exceed 10.0 mg/l as N at any source of drinking water on the property nor on any off-site potential drinking water source.

K. Septage Disposal

Septage disposal shall comply, as a minimum, with the California Code of Regulations, Title 23, Division 3, Chapter 15 and with federal regulations as described in 40 CFR Part 503.

V. Maintenance Responsibilities

Maintenance, monitoring, and repair of individual waste treatment and disposal systems shall be the responsibility of:

1. The individual property owner; or

2. A legally responsible entity of dischargers empowered to carry out such functions. That legally responsible entity shall be a public agency, unless demonstration is made to the Regional Water Board that an existing public agency is unavailable and formation of a new public agency is unreasonable. If such a demonstration is made, a private entity must be established with adequate financial, legal, and institutional resources to assume responsibility for waste discharge.

For subdivision developments where waste discharge requirements are prescribed by the Regional Water Board, the existence or formation of a legally responsible entity of dischargers shall be required.

VI. Abatement

Abatement of failing individual waste treatment and disposal systems shall be obtained in accordance with local agency codes and procedures. When such remedies are ineffective and for systems subject to waste discharge requirements, abatement shall be obtained through Regional Water Board enforcement action.

Abatement of failing systems shall include short-term mitigation and permanent corrective measures. At a minimum, short-term mitigation shall include reduction of effluent flows and the posting of areas subject to the surfacing of inadequately treated sewage effluent.

VII. Waiver Prohibition Areas

Surveys conducted by local regulatory agencies with the assistance of the Regional Water Board staff indicate that discharges from septic tanks in specific areas are resulting in health hazards and water quality impairment. In accordance with the provisions of this policy, the Regional Water Board hereby prohibits the discharge of wastes from new septic tanks in the Jacoby Creek and Old Arcata Road areas in Humboldt County unless all provisions of the above policy are met without waiver.

(**Note:** This waiver prohibition exists by a prior Regional Water Board Order. The map has not been reproduced here in the interest of brevity.)

VIII. Individual System Prohibitions

In order to achieve water quality objectives, protect present and future beneficial water uses, protect public health and prevent nuisance, discharge of waste from new individual disposal systems may be prohibited forthwith and discharge of waste from existing individual disposal systems may be prohibited in defined areas.

The Regional Water Board may grant an exemption to the prohibition for:

1. New individual disposal systems after presentation of geologic and hydrologic evidence by the proposed discharger that such systems will not individually or collectively result in a pollution or a nuisance; and

2. Existing individual disposal systems if it finds that the continued operation of such systems in a particular area will not individually or collectively directly or indirectly affect water quality adversely.

IX. Education and Training

Informational bulletins concerning construction, use, maintenance, and repair of individual waste treatment and disposal system shall be made available for public education by local regulatory agencies.

Professional training concerning site evaluations and new alternative systems design concepts for subsurface effluent disposal shall be promoted periodically by Regional Water Board staff in cooperation with local regulatory agencies and public and private sector professional associations.

X. Implementation

1. Local agencies, shall, as necessary, revise existing sewage disposal ordinances to be compatible with the provisions of this policy. The Regional Water Board shall be notified by local agencies of the revisions.

2. Local agencies shall submit for Regional Water Board approval a report describing:

   a. The current program and methods for disposing of septic tank pumpage; and

   b. Plans for meeting future septage disposal needs.

3. Proposals for on-site waste treatment and disposal systems shall be processed as follows:

   a. Processed entirely by the local regulatory agency:

      i. Systems to serve a single dwelling unit within a recorded land development;

      ii. Systems for less than 1,500 gpd domestic waste flows from commercial/industrial establishments;

      iii. Land developments consisting of four or fewer parcels;

      iv. Dwellings involving four or fewer family units.

      The Regional Water Board shall be notified of waivers granted for any of the above.

   b. Reviewed by the Regional Water Board for possible establishment of waste discharge requirements:

      i. Land developments consisting of five or more parcels;

      ii. Dwellings involving five or more family units;

      iii. Systems for commercial/industrial establishments with domestic waste flows equal to or greater than 1,500 gpd.

      iv. All systems proposed for new construction or repairs on federal lands.

   c. The Regional Water Board shall retain jurisdiction over any individual waste treatment and disposal systems which may in its judgment result in water pollution, nuisance and/or health hazards.

4. The Regional Water Board and local regulatory agency shall develop and maintain working agreements concerning procedures and guidelines to be followed in the issuance of waivers as provided by this policy.

5. The Regional Water Board shall, as necessary, request of each local regulatory agency in the Region, an identification of geographical areas that may qualify for establishment of:

   a. On-site wastewater management district,

   b. Waiver prohibition areas, or

   c. Individual system prohibitions.

   Designation of such areas by the Regional Water Board shall be made formal by incorporation into this policy.

6. Site evaluations in accordance with this policy shall be performed by individuals who by virtue of their education, training, and experience, are qualified to examine and assess soil, geologic, and hydrologic properties as related to subsurface effluent disposal. Credentials required of such individuals shall be specified by local regulatory agencies and shall include, as a minimum, education, training, and experience as geologist, soil scientist, registered civil engineer, or registered environmental health specialist.

7. Laboratory analysis of soils shall be conducted at commercial soils testing laboratories, or at other firms or establishments which can demonstrate to the satisfaction of the Regional Water Board the necessary equipment and personnel capabilities for performing the required tests. Procedures for laboratory analysis shall be provided by the Regional Water Board. Examination of soil testing capabilities shall be conducted by the Regional Water Board according to the demand.

8. Alternative systems shall be evaluated as follows:

   a. The Regional Water Board shall, as necessary, prepare a written report which summarizes the progress and findings of the alternative systems within the Region.
   b. The local regulatory agency shall prepare a written report following the construction

season which describes the number of alternative systems permitted and the operational status of the alternative systems within its jurisdiction.

The Regional Water Board shall prepare annually a report which summarizes the status of mound systems within the North Coast Region.

c. The Regional Water Board shall maintain a literature and information file which pertains to alternative systems.

9. The Regional Water Board shall maintain a literature and information file which pertains to water conservation.

10. The local regulatory agencies shall establish, as necessary, a time schedule for compliance of septage disposal sites to be compatible with the provisions of this policy.

XI. Definitions

The following definitions apply to this policy.

Alternative System. Any individual system that does not include a standard septic tank or an NSF or IAPMO certified device for treatment, or does not include standard leaching trenches for effluent disposal, which has been demonstrated to function in such a manner as to protect water quality and preclude health hazards and nuisance conditions.

Bedrock. Solid rock, which may have fractures, that lies beneath soils and other unconsolidated material. Bedrock may be exposed at the surface or have an overburden several hundred feet thick.

Bulk Density. The mass of dry soil per unit bulk volume. The bulk volume is determined before drying to a constant weight of 105°.

Coarse Fragments. Rock or mineral particles greater than 2.0 mm in diameter.

Conventional On-Site Waste Treatment and Disposal System. Any system using a standard septic tank for treatment and standard leaching trenches or seepage pit for effluent disposal.

Cumulative Effects. The persistent and/or increasing effect of individual waste treatment and disposal systems resulting from the density of such discharges in relation to the assimilative capacity of the ground environment. Examples include salt or nitrate additions to groundwater, nutrient enrichment of surface water, and hydraulic interference with groundwater and between adjacent systems.

Cut Bank. A man-made excavation of the natural terrain in excess of three feet.

Dual Leachfield System. An effluent disposal system consisting of two complete standard leachfields connected by an accessible diversion valve and intended for alternating use on an annual or semiannual basis.

Entity of Dischargers. A public agency, or a party which can demonstrate to the Regional Water Board comparable, legal and financial authority and responsibility, for the purpose of monitoring, inspecting, and maintaining individual waste treatment and disposal systems.

Ephemeral Stream. Any observable water course that flows only in direct response to precipitation. It receives no water from springs and no long-continued supply from melting snow or other surface source. Its stream channel is at all times above the local water table. Any water course that does not meet this definition is to be considered a perennial stream for the purposes of this policy.

Failure. The ineffective treatment and disposal of waste resulting in the surfacing of sewage effluent and/or the degradation of ground and surface water quality.

Greywater. Untreated household wastewater which has not come into contact with toilet waste. Greywater includes used water from bathtubs, showers, bathroom wash basins, and water from clothes washing machines, and laundry tubs. It does not include wastewater from kitchen sinks, dishwaters or laundry water from soiled diapers.

Groundwater. Any subsurface body of water which is beneficially used or is usable. It includes perched water if such water is used or usable, or is hydraulically continuous with used or usable water.

Hardpan. An irreversibly hardened soil layer caused by the cementation of soil particles. The cementing agent may be silica, calcium carbonate, iron, or organic matter.

Impermeable Soil Layer. Any layer of soil having a percolation rate slower than 120 MPI or a Zone 4 Soil Texture according to Figure 4-2 of this policy which

has a high shrink swell potential (Plasticity Index of greater than 20, ASTM D 4318-84).

Incompatible Use. Any activity or land uses that would preclude or damage an area for future use as an effluent disposal site. Includes the construction of buildings, roads or other permanent structures and activities that may result in the permanent compaction or removal of existing soil.

Intercept Drain: A drain, installed to intercept the lateral movement of groundwater and discharge it to a suitable area. Often referred to as a certain drain.

Limiting Soil Layer. The portion of the soil profile that because of percolation characteristics, most restricts the successful operation of a leachfield.

Local Regulatory Agency. Any agency having authority as provided by county or city ordinances to control approval, installation, and use of individual waste treatment and disposal systems. May include county/city health department, building departments, or department of public works.

Mottles. Irregular spots of different colors that vary in number and size. The redoximorphic features of soils (mottling and gleying) are used to indicate poor aeration and lack of drainage.

On-Site Wastewater Disposal Zone. An area designated for operation and maintenance of individual waste treatment and disposal systems by a public agency entrusted with powers in accordance with the provisions of Chapter 3, Part 2, Division 6, of the State Health and Safety Code.

Perched Water. A subsurface body of water separated from the main groundwater body of a relatively impermeable stratum above the main groundwater body.

Perennial Stream. Any stretch of a stream that can be expected to flow continuously or seasonally. They are generally fed in part by springs.

Saturated Soil. The condition of soil when all available pore space is occupied by water and the soil is unable to accept additional moisture. In fine textured soils a free water surface may not be apparent. The extent of saturated soil conditions and anticipated level of high groundwater can be estimated by the extent of soil mottling.

Soil. The unconsolidated material on the surface of the earth that exhibits properties and characteristics that are a product of the combined factors of parent material, climate, living organisms, topography, and time.

Soil Depth. The combined thickness of adjacent soil layers that are suitable for effluent filtration. Soil depth is measured vertically to bedrock, hardpan, impermeable soil layer, or saturated soil.

Soil Horizon or Layer. A layer of soil approximately parallel to the land surface and differing from adjacent (underlying or overlying) layers in some property or characteristic. Differences include, but are not limited to, color, texture, pH, structure, and porosity.

Soil Texture (United States Department of Agriculture (USDA)). The relative amounts of sand, silt, and clay as defined by the classes of the soil textural triangle. Textural classes may be modified when coarse fragments are present in sufficient number, i.e., gravelly sandy loam, cobbled clay, etc.

Standard Leaching Trenches. Leaching trenches designed in accordance standard practice in local agency regulations.

Unstable Landform. An area which shows evidence of mass downslope movement such as debris flow, landslides, rockfills, and hummocky hillslopes with undrained depressions upslope. Unstable landforms may exhibit slip surfaces roughly parallel to the hillside; landslide scars and curving debris ridges; fences, trees, and telephone poles which appear tilted; or tree trunks which bend uniformly as they enter the ground. Active sand dunes are unstable land forms.

POLICY ON DISPOSAL OF SOLID WASTES

Solid waste is discarded to land throughout the North Coast Region. Solid waste can adversely affect water quality through (1) direct contact with receiving waters, (2) production of leachate which can subsequently commingle with receiving waters, and (3) the production of carbon dioxide which can subsequently dissolve in receiving waters. The resulting adverse effects on water quality may include: bacterial contamination, toxicity, tastes and odors, oxygen depletion, discoloration, turbidity, and increases in mineral and organic compound concentrations.

The Regional Water Board's solid waste program focuses on the protection of water quality by implementing the following regulations, laws, and

policies:

1) California Code of Regulations, Title 23, Division 3, Chapter 15, Discharges of Waste to Land;

2) The mandated tasks of the solid waste assessment testing (SWAT) program carried out pursuant to Section 13273 of the Water Code;

3) The federal regulations for municipal landfills under the Resource Conservation and Recovery Act (RCRA), Subtitle D, (Title 40, Code of Federal Regulations, Part 258 (40CFR258));

4) The State Water Board's Policy for Water Quality Control for Regulation of Discharges of Municipal Solid Waste (Resolution No. 93-62).

The laws and regulations governing the discharges of solid wastes have been revised and strengthened in the last few years.

The Regional Water Board policy on disposal of solid waste is to require the orderly implementation of Chapter 15 requirements for all activities which constitute a discharge of waste to land and the application of federal Subtitle D regulations for municipal landfills.

Chapter 15 of the California Code of Regulations provides the overriding framework for solid waste regulation in California. These regulations provide criteria for classifying wastes according to their potential to affect water quality, and establish appropriate siting, design, and containment standards and corrective actions for each waste category. Chapter 15 also specifies monitoring requirements for discharges of waste to land and describes the documentation that a discharger must submit to allow the Regional Water Board to develop appropriate waste discharge requirements for the discharge. For example, waste discharge requirements for a typical municipal landfill contain provisions for the siting, design, construction, water quality monitoring, closure, types of waste to be discharged, and financial responsibility requirements.

On October 9, 1991, the U.S. Environmental Protection Agency promulgated regulations pursuant to Subtitle D of the Resource Conservation and Recovery Act, that apply, in California, to dischargers who own and operate landfills which accept municipal solid waste on or after October 9, 1991. The majority of the federal regulations became effective on October 9, 1993. The U.S. EPA has identified several areas of Chapter 15 which are not adequate to ensure compliance with certain provisions of the federal regulations. To ensure adequate compliance, the State Water Board adopted the "Policy for Water Quality Control" (Resolution 93-62) on June 17, 1993. The Policy directs the Regional Water Boards to henceforth implement in waste discharge requirements for discharges at municipal solid waste landfills, both the Chapter 15 regulations and those applicable provisions of the federal regulations that are necessary to protect water quality. The Regional Water Boards shall revise existing waste discharge requirements to accomplish this by October 9, 1993.

The Regional Water Board continues to implement the SWAT program as resources become available. The primary goal of the SWAT program is to determine if disposal sites are discharging hazardous wastes into surface waters or groundwaters. The California Integrated Waste Management Board (CIWMB) is currently providing funding to the State and Regional Water Boards to work on Ranks 1 through 5. These were the sites which were perceived to pose the greatest threat to water quality. Work on high priority SWAT sites in the North Coast Region is expected to be completed in 1994.

Any additional work required at disposal sites in order to evaluate the threat or impact on beneficial uses of waters will be addressed through the implementation of Chapter 15 requirements.

In carrying out its mandate to protect water quality and regulate solid waste, the Regional Water Board has significant interaction with the CIWMB permitting, compliance, closure, and remediation programs. The CIWMB's the lead agency for nonhazardous waste management in California. The Regional Water Board also interacts with the local enforcement agencies, which enforce the requirements of the CIWMB and issue solid waste facility permits.

This policy describes the collaborative approach to the management of solid waste as required by federal and state regulations and policies. Implementation of this policy is necessary to protect beneficial uses of surface and ground waters in the North Coast Region.

POLICY FOR AGRICULTURAL WASTEWATER MANAGEMENT

The regulation of wastewater resulting from confined animal facilities is described in the California Code of Regulations, Title 23, Division 3, Chapter 15.

In addition, the 1972 Amendments to Public Law 92-500 directed the U.S. Environmental Protection Agency to set up a permit system for all dischargers. The authority to administer the permit program was transferred to the State of California for waters within the State. Currently, federal regulations require permits only for point source surface water discharges from the following agricultural operations:

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 55-pound swine.

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 acres of land when conveyed to navigable waters from one or more point sources.

However, the state may prescribe waste discharge requirements for any point source discharger regardless of size.

ACTION PLAN FOR REGULATION OF MINING WASTES

Several hundred existing and abandoned mines are located within the north coastal area. Many of the mines in the Klamath River Basin are being reworked for gold as a result of rising world gold prices. Improper operation and in some cases poor location have resulted in turbidity and sediment discharges which adversely affect beneficial uses.

A number of mining operations, principally sand and gravel extraction, occur in the watersheds of the North Coastal Basin. In addition to sand and gravel, numerous other commodities such as manganese, copper, mercury, and crushed rock have been mined. The major potential problems relating to these operations are increased turbidity resulting from wash-off or discharge of tailings, and the toxic threat of heavy metals to aquatic organisms.

The regulation of mining waste is described in the California Code of Regulations, Title 23, Division 3, Chapter 15. To implement the Code and to protect the quality of waters from adverse effects resulting from mining waste discharges, the Regional Water Board shall (1) adopt waste discharge requirements on operations which could potentially adversely affect water quality in the Region, (2) immediately issue cleanup and abatement orders to mining operations which are potentially or actually adversely affecting water quality, (3) immediately begin documentation of waste discharges for purposes of taking enforcement actions if necessary, (4) issue enforcement orders when appropriate, and (5) seek civil penalties and/or refer violations of cleanup and abatement orders and cease and desist orders to the Attorney General.

ACTION PLAN FOR ACCIDENTAL SPILLS AND CONTINGENCIES

On July 24, 1974, the Regional Water Board adopted Resolution No. 74-151 entitled "Contingency Planning and Notification Requirements for Accidental Spills and Discharges". The Order was formulated and adopted by the Regional Water Board when it became apparent that specific waste dischargers were unprepared for emergency situations.

The Order requires entities which discharge, convey, supply, store, or otherwise manage wastes to (1) formulate and submit a contingency plan to the Regional Water Board, (2) immediately report to the Board by telephone any accidental discharge, (3) begin immediate cleanup and abatement activities, and (4) confirm the telephone notification in writing within two weeks of the incident. The written notification is to include the reason for the discharge, the duration and the volume of the discharge, steps taken to correct the problem, and steps taken to prevent the problem from recurring. In the event of a spill or discharge emergency, the Regional Water Board acts as a liaison with the discharger and other affected agencies and persons to provide assistance in clean-up and abatement activities.

Section 25180.7 of the Health and Safety Code requires designated employees of the Regional Water Board to inform local agencies of any illegal discharge or threatened illegal discharge of a hazardous waste.

Section 13271 (a) of the Porter-Cologne Water Quality Control Act requires immediate notification of illegal and accidental discharges of sewage or hazardous substances to the Office of Emergency Services and the Regional Water Board, and further requires that the Regional Water Board: 1) list all such notifications at its next business meeting, and 2) notify appropriate local health officials.

POLICY ON THE REGULATION OF FISH HATCHERIES, FISH REARING FACILITIES, AND AQUACULTURE OPERATIONS

Fish hatcheries, fish rearing facilities, and aquaculture operations, if regulated, may enhance beneficial water uses. These operations characteristically require the utilization of large quantities of water on a continuous basis. Most of the water is used to satisfy the flow-through requirements of the fish, and is returned to the receiving waters without alteration of beneficial uses. Wastes generated during the care and feeding of fish may include suspended and settleable solids, salt (sodium chloride), antibiotics, anesthetics, and disease control agents. The following criteria shall apply to the discharge from fish hatcheries, rearing facilities, and aquaculture operations:

1. The discharge shall not adversely impact the recognized existing and potential beneficial uses of the receiving waters.

2. The discharge of waste resulting from cleaning activities shall be prohibited.

3. The discharge of detectable levels of chemicals used for the treatment and control of disease, other than salt (NaCl) shall be prohibited.
4. The discharge will be subject to review by the Regional Water Board for possible issuance of Waste Discharge Requirements/NPDES permit.

5. The Regional Water Board may waive Waste Discharge Requirements for fish hatcheries, fish rearing, and aquaculture facilities, provided that the discharge complies with applicable sections of the Water Quality Control Plan for the North Coast Region and satisfies the conditions for waiver which are described in Regional Water Board Resolution No. 87-113 (Appendix Section of this Plan).

6. The public interest is served by the fish hatchery, rearing facility, or aquaculture operation.

POLICY ON POWERPLANT COOLING

Utilization of fresh waters of the basin for powerplant cooling poses both quantity and quality problems. Approximately 25,000 acre-feet of water per year are required for cooling purposes for each 1,000 megawatts of installed generating capacity if evaporative cooling towers are used. Losses of cooling water through evaporation would be approximately 22,000 acre-feet per each 1,000 megawatts of generating capacity. Such losses for powerplant cooling could seriously affect the availability of water for other consumptive uses, and may impair the beneficial use of the water for such nonconsumptive uses as esthetic, fish and wildlife habitat, and recreation purposes.

The utilization of fresh inland waters of the Region for powerplant cooling is regulated by the State Water Resources Control Board's Thermal Plan, (Appendix Section of this Plan). In addition, the Regional Water Board can adopt waste discharge requirements on powerplant cooling operations which could potentially adversely affect water quality in the Region.

POLICY ON RESIDUAL WASTES

Residual wastes such as raw sludge from sewage treatment plants shall be disposed of only at sites approved by the Regional Water Board. In approving such sites the Board shall be guided by the regulations contained in the California Code of Regulations, Title 23, Division 3, Chapter 15.

NONPOINT SOURCE MEASURES

California has achieved considerable improvements in controlling point source discharges, such as wastewater from municipalities and industrial facilities. It is now recognized that in many areas nonpoint source discharges, such as stormwater runoff, are the principal sources of contaminant discharges to surface water and groundwater.

In contrast to point sources, which discharge wastewater of predictable quantity and quality at a discrete point (usually at the end of a pipe), nonpoint source discharges are diffuse in origin and variable in quality. Management of nonpoint source discharges is in many ways more difficult to achieve, since it requires an array of control techniques customized to local watershed conditions.

Section 319 of the 1987 amendments to the federal Clean Water Act establishes the framework for nonpoint source activities. Section 319 requires each state to develop nonpoint source management plans and to conduct an assessment of the impact nonpoint sources have on the State's waterbodies. In response to these requirements, the State Water Board adopted the Nonpoint Source Management Plan in 1988 and the Water Quality Assessment in 1990.

This section presents the actions intended to meet water quality objectives and protect beneficial uses with regards to nonpoint source discharges. The following measures shall be taken with respect to actual and potential nonpoint sources of water quality degradation. The action plans contained in this section are consistent with the State Water Board's Nonpoint Source Management Plan (see Section 5). The action plans emphasize cooperation with local governments and other agencies to promote the voluntary implementation of best management practices and remedial projects in a three-tiered approach: 1) voluntary implementation, 2) regulatory-based encouragement, and 3) effluent limitations.

ACTION PLAN FOR LOGGING, CONSTRUCTION, AND ASSOCIATED ACTIVITIES

The following waste discharge prohibitions pertain to logging, construction, and associated activities in the North Coast Region.

1. The discharge of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature into any stream or watercourse in the basin in quantities deleterious to fish, wildlife, or other beneficial uses is prohibited.

2. The placing or disposal of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, or associated activity of whatever nature at locations where such material could pass into any stream or watercourse in the basin in quantities which could be deleterious to fish, wildlife, or other beneficial uses is prohibited.

Similarly, the guidelines for implementation of the prohibitions have proven most helpful to the Regional Water Board and its staff as well as to potential waste dischargers.[11] They reflect state regulations, objectives, and procedures, and are as follows:

GUIDELINES FOR IMPLEMENTATION AND ENFORCEMENT OF DISCHARGE PROHIBITIONS RELATING TO LOGGING, CONSTRUCTION, OR ASSOCIATED ACTIVITIES

These guidelines, which are hereby incorporated into the Water Quality Control Plan for the North Coast Region (Basin Plan), have been developed with the objective of (1) defining the criteria by which the Regional Water Board will consider that violations of the prohibitions have occurred or threaten to occur; (2) instructing the Regional Water Board staff of procedures and actions they will take in implementing the prohibitions; (3) advising all potential dischargers of the scope and intent of the prohibitions; and (4) advising all interested parties that it is the intent of this Regional Water Board to carry out its responsibilities in this matter in a reasonable and effective manner.

Criteria

A. Section 3 of the Basin Plan contains water quality objectives, which specify limitations on certain water quality parameters that are not to be exceeded as a result of waste discharges. Accordingly, the Executive Officer of the Regional Water Board is directed to investigate and report to the Regional Water Board evidence of violations of the water quality objectives contained in the Basin Plan which result or threaten to result in unreasonable effects on the beneficial uses of the waters of the Region. When such investigation reveals that such violations are occurring or are threatened due to the discharge or threatened discharge of waste, the Executive Officer shall take all appropriate actions as directed by the Enforcement section of these guidelines.

   The following water quality objectives, from Section 3 of the Basin Plan, are considered of particular importance in protecting beneficial uses from unreasonable effect due to discharges from logging, construction, or associated activities:

   1. Waters shall be free of coloration that causes

[11] Since 1984 these guidelines have been applied to watershed disruptions which might be caused by small hydropower development projects, and the prohibitions are recognized by project sponsors as the water quality protection standard for these activities.

nuisance or adversely affects beneficial uses.

2. Turbidity shall not be increased more than 20 percent above naturally occurring background levels.

3. Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance or adversely affect the beneficial uses.

4. Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

5. Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses.

6. The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

7. All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.

8. Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

B. Definitions

1. Definitions for the following terms in these guidelines are provided in Section 13050 of the Porter-Cologne Act:

   a. "**Waste**" includes sewage and any and all other substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature, including such waste placed within containers of whatever nature prior to, and for purposes of, disposal.

   b. "**Beneficial uses**" of the waters of the State that may be protected against quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation, aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources of preserves.

   c. "**Water quality objectives**" means the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

   d. "**Water quality control**" means the regulation of any activity or factor which may affect the quality of the waters of the State and includes the prevention and correction of water pollution and nuisance.

   e. "**Water quality control plan**" consists of a designation or establishment for the waters within a specified area of (1) beneficial uses to be protected, (2) water quality objectives, and (3) a program of implementation needed for achieving water quality objectives.

   f. "**Pollution**" means an alteration of the quality of the waters of the State by waste to a degree which unreasonably affects: (1) such waters for beneficial uses, or (2) facilities which serve such beneficial uses. "Pollution" may include "contamination".

2. The definition for "stream or watercourse" as those terms are used in the waste discharge prohibitions relative to logging and construction activities shall be interpreted by the Regional Water Board to mean the following: Natural watercourse as designated by a solid line or dash and three dots symbol shown in blue on the largest scale United States Geological Survey Topographic Map most recently published.

C. The Regional Water Board acknowledges that it does not have jurisdiction for direct enforcement

of the rules and regulations of other local, state, or federal agencies. However, the Regional Water Board directs the Executive Officer to investigate the violation or threatened violation of those rules and regulations of other agencies which have been adopted to protect the quality of the waters in the Region. The violation of the following rules, regulations, or provisions may be considered a threatened violation of the waste discharge prohibitions and accordingly the Executive Officer shall take appropriate action as directed by the Enforcement section of these guidelines.

1. A violation of current rules for forest practices relating to erosion control or water quality protection in any logging or related activity being conducted pursuant to regulations administered by the California Department of Forestry and Fire Protection.

2. A violation of the Best Management Practices designated in the U.S. Forest Service document entitled "Water Quality Management for National Forest System Lands in California", dated April, 1979.

3. A violation of the water pollution control provisions of the current California Standard Specifications in any highway project being constructed under contract entered into by the Department of Transportation, State Department of Public Works.

4. A violation of Sections 1601, 1602, 1603, 5650, and 5948 of the California Fish and Game Code when such violation involves activities or discharges enumerated in the aforesaid prohibition.

Investigative and Coordinating Activities

A. The Regional Water Board directs the Executive Officer to implement the following investigative activities. It is intended that, wherever possible, existing state reporting procedures and requirements will be utilized to minimize additional administrative burden on prospective waste dischargers.

1. The staff of the Regional Water Board is directed to investigate and review, on a continuing basis, logging operations, road building, and related construction activities within the Region to determine the effect, or potential effect, of such activities on water quality.

2. The staff shall consult with any individual associated with logging operations, road building or construction activities having an effect on the quality of waters in the Region, and shall investigate such activities when requested to do so.

3. The staff shall obtain from the California Department of Forestry and Fire Protection, the Board of Forestry, and the Department of Fish and Game copies of all notices received from timber operations, timber harvesting plans, and stream alteration activities within the Region.

4. The staff shall obtain from the Department of Transportation the names of all contractors performing work that could result in violation of the discharge prohibitions. The Forest Service, USDA and other federal agencies will be requested to furnish the Regional Water Board, as early as feasible, with the names, addresses, and location of anticipated operations of all private contractors who will be engaged in logging, construction or related activities on lands in the region which are under their control. In connection with these contracts, request will be made for copies of any special conditions or regulations for the control of erosion or protection of water quality.

5. Upon receipt and review of such information, the staff will transmit to the permittee or contractor copies of the discharge prohibitions and provisions as contained in the Regional Basin Plans and copies of this or subsequent implementation statements on this subject issued by the Regional Water Board.

6. The staff will request that the California Department of Forestry and Fire Protection notify the Regional Water Board's office of citations or of other notices issued by Forestry personnel for violation of erosion control sections of the Forest Practice Rules. The staff will request that the Department of Fish and Game advise the Regional Water Board's office of all violations of its code Sections 5650, 1601, 1602, and 5948 resulting from logging, road building, or associated construction activities. The staff will request that the Department of

Transportation notify the Regional Water Board office of all violations of the water pollution control provisions of the California Standard Specifications and will request that the Forest Service, USDA, and other federal agencies, notify the Regional Water Board's office of all violations of rules and regulations for the control of erosion or protection of water quality.

7. The staff will notify the State Department of Fish and Game, the California Department of Forestry and Fire Protection, the State Department of Transportation, the Forest Service, USDA, and the violating timber operator and/or land owner, of all violations of the discharge prohibitions and of all actions taken by the Regional Water Board with regard to such violations or threatened violations.

8. The staff may request additional information from any individual or firm engaged in timber operations, road building, or related construction activity in accordance with Water Code Section 13267(b) as may be necessary to implement their investigations and carry out the policy of this Regional Water Board.

B. The Regional Water Board considers that implementation of the discharge prohibitions relating to logging, construction, or associated activities can provide appropriate protection to waters of the region from these sources of waste and, in the great majority of their activities, will waive the need for reports of waste discharge and waste discharge requirements. However, where investigations indicate that the beneficial uses of water may be adversely affected by waste discharges, the staff shall require the submission of Reports of Waste Discharge.

Enforcement Activities

When investigation by the staff reveals that violations as described in the Criteria section of these guidelines are occurring or are threatened due to the discharge or threatened discharge of waste, the actions to be taken by the Executive Officer are as follows:

A. Cleanup and Abatement Order

1. If the discharge of waste can be cleaned up or its adverse effects abated, a cleanup or abatement order shall be issued to the discharger or other responsible persons.

2. The order and all relevant information shall be transmitted to the discharger as provided in the Manual of Administrative Procedures. Copies of these materials shall be transmitted concurrently to all Regional Water Board members and all other interested agencies.

3. The Regional Water Board may hold a public hearing for purposes of making the necessary findings under Water Code Section 13350(a) (2) with respect to a cleanup or abatement order or violation of waste discharge prohibition at any regular meeting of the Regional Water Board, or at a special meeting of the Regional Water Board called by the Chairman, on his own motion or at the request of the Executive Officer, or when called by two Regional Water Board members as provided in Water Code Section 13204.

B. Cease and Desist Order

If a cleanup or abatement order would not be the most expeditious means of achieving compliance with the prohibitions, the Executive Officer shall notify the Regional Water Board Chairman of his intention to bring the matter before the Regional Water Board, at either a regular or a special meeting, for consideration of evidence and recommendation that a cease and desist order be issued. The decision by the Executive Officer to recommend a cease and desist order hearing shall be made after consideration of the following factors:

1. The nature of the activity of the discharger.

2. The anticipated length of time the discharger will be carrying on the activity which results or threatens to result in a waste discharge.

3. The potential deleterious and unreasonable effect on beneficial uses of the waters during the time before the Regional Water Board will be able to take action on the violation of the prohibitions.

4. Other relevant factors considered applicable by the Executive Officer as necessary to bring before the Regional Water Board for their consideration and deliberation.

POLICY FOR THE CONTROL OF DISCHARGES OF HERBICIDE WASTES FROM SILVICULTURAL APPLICATIONS

It is the policy of this Regional Water Board to assure that the use and possible discharge of herbicide wastes be controlled to provide all necessary protection of the beneficial uses of water. Accordingly, the Regional Water Board establishes a program to control the discharge of herbicides to waters of the State within the North Coast Region to protect water quality. It is the policy of this Regional Water Board to determine safe limits for the discharge of pollutants, including herbicides. All limits will be incorporated into the Action Plan as they are determined and self-monitoring programs will be developed and prescribed to assure compliance with all appropriate limits.

ACTION PLAN FOR CONTROL OF DISCHARGES OF HERBICIDE WASTES FROM SILVICULTURAL APPLICATIONS

The Regional Water Board acknowledges that it is not the lead agency in regulating pesticide use in the North Coast; the lead agency is the Department of Food and Agriculture (DFA). However, the Regional Water Board recognizes its obligation in regulating all wastes discharged to water and in protecting water quality. It is not the Regional Water Board's intent to prescribe waste discharge requirements for pesticide applications when the rules, regulations, and guidelines of other agencies adequately protect beneficial water uses. It is not the intent of the Regional Water Board to require the discharger to furnish information that has already been furnished to other agencies. Accordingly, the Executive Officer shall obtain the needed information from other governmental agencies to the maximum extent possible. Therefore, the Regional Water Board directs the Executive Officer to obtain information on proposed aerial herbicide application projects which will provide assurance that the proposed silvicultural herbicide use will protect water quality. Such information includes, but is not limited to, the following:

a. Topographic map or other map scaled at not less than four inches equals one mile or other scale acceptable to the Executive Officer which clearly delineates the treatment areas and all nearby water courses, wells, ponds, irrigation ditches, or wet areas.

b. Description of the application method and means employed to avoid discharge to water.

c. A water monitoring plan responsive to the need for an "early warning" capability.

d. A spill contingency and control plan indicating downstream water users and the mechanism to provide "early warning" in the event of substantial water contamination.

e. This information should be received by the Regional Water Board 45 days in advance of the operation.

The Executive Officer shall consult with the discharger and the lead agencies to mitigate threatened discharges which would violate any section of this Action Plan. Issues unable to be resolved shall be brought before this Regional Water Board for consideration of the need to adopt waste discharge requirements.

The Regional Water Board acknowledges that it does not have jurisdiction for direct enforcement of the rules and regulations of other local, state, or federal agencies. However, the Regional Water Board directs the Executive Officer to investigate the violation or threatened violation of those rules and regulations of other agencies which have been promulgated to protect the quality of the waters of the state within the North Coast Region and to appropriately enforce violations of the Water Code.

The violation of the following rules, regulations, or provisions may be considered a violation of the waste discharge prohibitions in this Action Plan and accordingly the Executive Officer shall take appropriate action.

1. A violation of current rules, regulations, or guidelines relating to water quality protection from any silvicultural herbicide application being conducted pursuant to permits issued by the County Agricultural Commissioners.

2. A violation of federal or state label requirements relating to water quality protection.

3. A violation of current rules, regulations, or guidelines of the DFA relating to water quality protection.

In accordance with this policy, limits have been determined for three herbicides. Accordingly, the following prohibitions apply to waste discharges from herbicide applications of 2,4,5-T, 2,4,5-TP,

and 2,4-D:

1. There shall be no discharge of 2,4,5-T or 2,4,5-TP to waters of the State within the North Coast Region.

2. There shall be no discharge of 2,4-D PGBE ester to waters of the State within the North Coast Region that would cause the concentration of this substance in the receiving waters to exceed an instantaneous value of 40 parts per billion (ppb) acid equivalent or a 24-hour average of 2 ppb acid equivalent.

Monitoring programs will be designed to measure both the maximum instantaneous concentration and a statistically valid 24-hour average concentration of 2,4-D. Sampling locations for monitoring will be selected on the basis of the risk of discharge and the probable presence of beneficial water uses to be protected. Discharge monitoring will occur during and shortly after spraying and with stormwater.

Violations of water quality objectives contained in Chapter 4, particularly the objectives relating to pesticides and toxicity, shall be brought to the immediate attention of the County Agricultural Commissioner. In addition, the California Environmental Quality Act functional equivalent requirements of Section 21080.5 as adopted by the DFA and certified by the Resources Agency on November 1, 1979, require that the County Agricultural Commissioners meet quarterly with the Regional Water Board staff and other agencies concerned with resource protection. These quarterly consultations should develop needed mitigation to prevent violation of waste discharge prohibitions and Basin Plan objectives.

The United States Forest Service has developed Best Management Practices for the application of herbicides and other pesticides on public lands to ensure protection of water quality. Accordingly,

1. The North Coast Regional Water Quality Control Board hereby accepts United States Forest Service Practices 5.8-5.14 as Best Management Practices (BMPs) for water quality protection from aerial herbicide application on Forest Service lands within the North Coast Region, and recognizes the "Aerial Herbicide Application Handbook" (FSH 2109.21) as a management practice that best protects water quality.

2. Experience gained over the past several years by the United States Forest Service on implementation of these management practices has led the Regional Water Board to conclude that discharges from aerial spray applications can be controlled such that: (1) past or present standards for protection of water quality are not violated, (2) Basin Plan water quality objectives are met, (3) most (99 percent) United States Forest Service spray application monitored result in less than 2 ppb of 2,4-D or similar herbicides being detected in receiving waters.

3. The Basin Plan contains provisions (as specified in the Action Plan above) for adequate descriptions of treatment areas and application practices, monitoring programs, and spill contingency planning that, combined with the implementation of Best Management Practices by the United States Forest Service or other entity, will result in the waiver of issuance of waste discharge requirements (excluding issuance of requirements under No. 4 below).

   Adoption of waste discharge requirements are hereby waived as not contrary to the public interest when the United States Forest Service Best Management Practices are implemented, relevant Basin Plan provisions are followed, and water quality is protected.

4. Waste Discharge Requirements shall be issued on a case-by-case basis where the implementation of Best Management Practices proposed for specific projects will be insufficient for protection of water quality.

The State Legislature, Department of Food and Agriculture, and the County Agricultural Commissioners have developed a body of laws, regulations, and permit conditions for the application of herbicides and other pesticides on forest lands to ensure protection of water quality. Accordingly,

1. The North Coast Regional Water Quality Control Board accepts the practices conducted pursuant to the state pesticide regulatory program and the County Agricultural Commissioner regulatory program as Best Management Practices (BMPs) for water quality protection from aerial herbicide application on private lands within the North Coast Region, and recognizes the mitigation measures developed through permit conditions set by the County Agricultural Commissioners as management practices that best protect water quality.

2. Experience gained over the past several years by private forest landowners on implementation of these management practices has led the Regional Water Board to conclude that discharges from aerial spray applications can be controlled such that: (1) past or present standards for protection of water quality are not violated, (2) Basin Plan water quality objectives are met, (3) most (98%) of private landowner spraying applications monitored result in less that 10 ppb of 2,4-D or similar herbicides being detected in receiving waters (92% result in less than 2 ppb.)

3. The Basin Plan (as specified in the Action Plan above) contains provisions for adequate descriptions of treatment areas and application practices, monitoring programs, and spill contingency planning that, combined with the implementation of Best Management Practices by private landowners, will result in the waiver of issuance of waste discharge requirements (excluding issuance of requirements under Number 4 below).

   Adoption of waste discharge requirements are hereby waived as not contrary to the public interest when Best Management Practices are implemented, relevant Basin Plan provisions are followed, and water quality is protected.

4. Waste Discharge Requirements shall be issued on a case-by-case basis where the implementation of Best Management Practices proposed for specific projects will be insufficient for protection of water quality.

TOTAL MAXIMUM DAILY LOADS

Section 303(d) of the federal Clean Water Act (33 USC §1313) requires that "Each state shall identify those waters within its boundaries for which the effluent limitations . . . are not stringent enough to implement any water quality standard applicable to such waters." The Clean Water Act requires states to establish a priority ranking for waters on the Section 303(d) list of impaired waters and to establish total maximum daily loads for such waters.

The total maximum daily load (TMDL) is the maximum amount of a pollutant that a body of water can contain and still achieve water quality standards. Strategies for implementing the pollution load reductions needed to achieve the TMDL and move the water body toward attainment of water quality standards may be adopted in several ways, as described by the Impaired Waters Policy below. When TMDL implementation strategies are incorporated into the Basin Plan, they are known as TMDL action plans.

This section of the Basin Plan contains (1) a description of policies and regulatory tools that are applicable to TMDLs, and (2) TMDL action plans for specific water bodies and pollutants. Future TMDL action plans will be added as they are approved. The background information used to develop each of the specific TMDL action plans will be retained with the administrative record for the Basin Plan amendment.

POLICIES & REGULATORY TOOLS APPLICABLE TO TMDLS

State-wide Policies Affecting TMDLs

A. Impaired Waters Policy

The *Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options* (Impaired Waters Policy)[12] is a state-wide policy that describes the process for developing and adopting TMDLs. In summary, the Impaired Waters Policy states that TMDLs may be adopted in any of the following ways:

1. TMDLs and TMDL implementation strategies may be adopted with a basin plan amendment or another regulation or policy for water quality control.

2. TMDLs and TMDL implementation strategies may be adopted with a permitting action, enforcement action, or other single regulatory action.

3. TMDLs and TMDL implementation strategies may be adopted with a resolution that certifies either that (1) a regulatory program has been adopted and is being implemented by another state, regional, local, or federal agency; or (2) a non-regulatory program is being implemented by another entity.

The Impaired Waters Policy also states that TMDLs and TMDL implementation strategies will be incorporated into the Basin Plan, even if they are initially adopted through a regulatory process

[12] SWRCB Res. No. 2005-0050.

that is not a basin plan amendment. This is in compliance with Sections 303(d)(2) and 303(e)(3) of the Clean Water Act.

B. Nonpoint Source Policy

Many water bodies in the North Coast Region are impaired by nonpoint sources (NPS) of pollution, such as sediment discharges and elevated water temperatures. Therefore, many of the following TMDL action plans focus on NPS pollution control.

The *Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy)[13] is a state-wide policy that explains how existing permitting and enforcement tools will be used to address nonpoint sources of pollution. The NPS Policy states that all current and proposed NPS discharges must be regulated under waste discharge requirements (WDRs), waivers of WDRs, a basin plan prohibition, or some combination of these tools.

A NPS pollution control implementation program is a program developed to comply with WDRs, waivers of WDRS, or basin plan prohibitions. A NPS pollution control implementation program must contain five key elements, which are summarized as follows:

Key Element 1: Explanation of the purpose of the NPS pollution control implementation program and how it will meet water quality standards.

Key Element 2: Description of the management practices and other program elements that are to be used to meet water quality standards and an evaluation that ensures proper implementation.

Key Element 3: A time schedule with quantifiable milestones.

Key Element 4: Adequate monitoring.

Key Element 5: The potential consequences for failure.

[13] SWRCB Res. No. 2004-0030. 23 CCR §2915

Region-wide Policies Affecting TMDLs

A. Sediment TMDL Implementation Policy

The TMDL implementation strategy for sediment-impaired water bodies in the North Coast Region is set forth in the *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Receiving Waters in the North Coast Region* (Sediment TMDL Implementation Policy).[14]

The Sediment TMDL Implementation Policy states that the Regional Water Board shall address sediment waste discharges on a watershed-specific basis and directs staff to take the following actions to control sediment waste discharges:

1. Rely on the use of existing permitting and enforcement actions. These actions are consistent with the NPS Policy.
2. Rely on the use of existing prohibitions, including any future amendments.
3. Pursue non-regulatory actions, such as Memoranda of Understanding, with other agencies and organizations.
4. Work with local governments and non-profit organizations to develop sediment control strategies, such as grading ordinances.
5. Encourage organizations and individuals to control sediment waste discharges and conduct watershed restoration activities.
6. Focus on public outreach and education.
7. Develop a guidance document on sediment waste discharge control.
8. Develop a sediment TMDL implementation monitoring strategy.

Permitting and Enforcement Tools

The federal Clean Water Act and the California Water Code (CWC) authorize the Regional Water Board to use permitting and enforcement tools to control waste discharges and ensure attainment of water quality standards. The Regional Water Board shall use permitting and enforcement tools, when and where

[14] NCRWQCB Res. No. R1-2004-0087.

appropriate, to address waste discharges and ensure attainment of water quality standards and TMDLs.

A. Permitting Tools

Permitting tools include, but are not limited to, the authority to:

1. Require technical reports and reports on the conditions and operation of a facility, in accordance with CWC §13267.

2. Require monitoring reports, in accordance with CWC §13267.

3. Inspect a facility, in accordance with CWC §13267.

4. Permit the discharge of waste, or proposed discharge of waste, to waters of the state through Waste Discharge Requirements (WDRs), in accordance with Article 4 of the CWC. WDRs may take the form of individual or project-specific WDRs, watershed-specific WDRs, or general WDRs that are applicable to a specific activity.

5. Waive the requirement for a WDR, in accordance with CWC §13269.

6. Permit the discharge of waste to waters of the United States through National Pollutant Discharge Elimination System (NPDES) permits, in accordance with Section 402 of the Clean Water Act and CWC §13370.

7. Certify that proposed activities which require a federal permit or license comply with water quality standards, in accordance with Section 401 of the Clean Water Act.

Permits and waivers may apply to individuals, organizations, activities, and/or watersheds in the North Coast Region or the State of California.

B. Enforcement Tools

Enforcement tools include, but are not limited to, the authority to:

1. Require a time schedule of specific actions to be taken, in accordance with CWC §13300.

2. Issue a cease and desist order, in accordance with CWC §13301.

3. Issue a cleanup and abatement order, in accordance with CWC §13304.

4. Impose monetary liabilities or fines (administrative civil liabilities), in accordance with CWC §13268 and §13350.

Enforcement actions should be consistent with the State Water Board's *Water Quality Enforcement Policy*,[15] adopted February 19, 2002, and as subsequently amended. The Enforcement Policy promotes a fair, firm, and consistent enforcement approach appropriate to the nature and severity of a violation.

ACTION PLAN FOR THE GARCIA RIVER WATERSHED SEDIMENT TMDL

Note: The "*Action Plan for the Garcia River Watershed Sediment TMDL"* was approved by the North Coast Regional Water Quality Control Board, the State Water Resources Control Board, and the Office of Administrative Law under the more lengthy title of the "G*arcia River Watershed Water Quality Attainment Action Plan for Sediment."*

The Garcia River watershed comprises approximately 73,223 acres in southwestern Mendocino County and discharges to the Pacific Ocean. In 1996, the state of California identified the Garcia River as a high-priority waterbody according to the requirements in Section 303(d) of the federal Clean Water Act (CWA). Section 303(d)(1)(A) of the CWA requires that states list those waters within its boundaries for which existing management practices are not sufficient to achieve water quality standards. The Garcia River was identified as a high-priority waterbody due to excessive sedimentation. Accelerated erosion from land use practices and other causes was identified as affecting the migration, spawning, reproduction, and early development of cold-water fish such as coho salmon and steelhead trout. When the Garcia River was designated a high-priority waterbody under the requirements of the CWA, the development of a Total Maximum Daily Load (TMDL) for the river became necessary.

As a result of the designation of the Garcia River as a high-priority waterbody under the guidelines of the CWA, landowners, land managers, resource protection agencies, and interested members of the

[15] SWRCB Res. No. 2002-0040. 23 CCR §2910.

public provided input in the preparation of the *Garcia River Watershed Water Quality Attainment Strategy for Sediment* (1997) (Strategy). The Strategy has been revised and renamed to reflect its role as a supporting document to a Basin Plan amendment and is now known as the *Reference Document for the Garcia River Watershed Water Quality Attainment Action Plan for Sediment* (Reference Document). The Reference Document and the Strategy are staff-level tools for landowners; land managers; interested public; and state, local and federal resource protection agency personnel to use as an aid for developing and implementing plans to reduce sediment delivery to the Garcia River and its tributaries. It also is useful for providing additional detail about the concepts that follow. It is a planning document that should be revised or updated over time as factors affecting sediment conditions are better understood. The following Action Plan describes the approach of the Regional Water Board to achieve sedimentation reduction and attain beneficial uses in the Garcia River watershed and serves as a phased TMDL, implementation plan, and monitoring plan for the Garcia River watershed. As a phased TMDL, it will be updated and revised, through Basin Plan amendments, based on new information gathered by Regional Water Board staff and/or submitted by landowners, other agencies, academic institutions and the public that provides an improved assessment of conditions in the Garcia River watershed.

I. Problem Statement

The Garcia River and its tributaries have experienced a reduction in the quality and amount of instream habitat that is capable of fully supporting the beneficial use of a cold-water fishery, due to increased sedimentation. This has resulted in a reduction in the stocks of coho salmon and steelhead trout. The acceleration of sediment delivery in the Garcia River watershed due to land management activities has resulted in the loss or reduction of pools necessary for salmonid rearing and the loss or degradation of potential spawning gravel. In addition, the loss or reduction of instream channel structure in the Garcia River watershed due to land management activities has contributed to this habitat loss or reduction.

II. Numeric Targets

The Numeric Targets, as derived from the scientific literature, focus on the elimination of sediment as a pollutant of concern, and provide instream water quality goals for restoring the cold-water fishery habitat. The Numeric Targets represent the desired future condition of the watershed, and are intended to be consistent with existing water quality objectives and beneficial uses, but are not themselves enforceable. The Numeric Targets will be revised through Basin Plan amendments if additional site-specific data for the watershed or additional research support the need for revision. They are expected to be attained throughout the watershed by the year 2049. Table 4-3 provides the Numeric Targets for the Garcia River watershed.

III. Source Analysis

The analysis of sediment sources is divided into three components: mass wasting (primarily landslides), fluvial erosion (primarily from gullies), and surface erosion (primarily from rills and sheetwash). For each of these categories, data was reviewed to estimate the sediment delivery rate associated with natural background, roads (including but not limited to private, public, rural residential and skid trails), timber harvest units, and agricultural operations. Aerial photograph interpretation and road density data analysis were used to estimate the existing rates of sediment delivery from the above sources and from natural background, where the data was sufficient to do so. The estimates are contained in Table 4-4. Based on the existing data, at a minimum, the Garcia River watershed produced an average of 1,380 tons of sediment per square mile per year as measured from 1956 to 1996.

IV. Loading Capacity Calculation

Data from the Garcia River watershed were compared to those from other north coast watersheds with similar physical, climatic, and geologic characteristics to the Garcia River watershed. In particular, data from the North and South Forks of Caspar Creek, also located in western Mendocino County, were used to estimate the reduction in sediment loading needed to achieve the desired future condition in the Garcia River. South Fork Caspar Creek was heavily logged by ground-based equipment (tractors) up until the 1970s and is reported by Pacific Watershed Associates (1997) to produce 1,420 tons/mi^2/yr of sediment. North Fork Caspar Creek, on the other hand, received very little tractor logging up through

Table 4-3 Numeric Targets for the Garcia River Watershed

PARAMETER	NUMERIC TARGET
Migration barriers on Class I watercourses[1]	Zero human-caused barriers
Embeddedness on Class I watercourses	Improving trend[2]
Percent fines < 0.85 mm on Class I watercourses	<14 percent
Percent fines < 6.5 mm on Class I watercourses	<30 percent
Primary pool frequency in Class I watercourses [3]	Primary pools covering 40 percent of the length of the watercourse
V* in 3rd order streams with slopes between 1 percent and 4 percent[4]	<0.21 (mean) <0.45 (max)
Median particle size diameter (d_{50}) in 3rd order stream with slopes between 1 percent and 4 percent	>69 mm (mean) >37 mm (min)
Large woody debris in Class I , II, and III watercourses	Improving trend[5]
Width-to-depth ratio in Class I, II, and III watercourses	Improving trend[6]
Thalweg profile in Class I, II, and III watercourses	Increasing variability around the mean
Inman, Signal and Hathaway (Planning Watersheds 113.70014, 113.70020 and 113.70026 except mainstem)	0 percent open stream channel[7]
Pardaloe, Larmour, Whitlow, and Blue Waterhole and North Fork (Planning Watersheds 113.70010 – 113.70013 and 113.70025)	<1 percent open stream channel
Rolling Brook (Planning Watershed 113.70024)	<3 percent open stream channel
Graphite, Beebe (Planning Watersheds 113.70021 – 113.70022)	<6 percent open stream channel
South Fork (Planning Watershed 113.70023)	<20 percent open stream channel

[1] Class I watercourses are watercourses that contain domestic water supplies, including springs, on site and/or within 100 feet downstream, or have fish always or seasonally present onsite, or contain habitat to sustain fish migration and spawning. Class I watercourses include historically fish-bearing watercourses.
Class II watercourses are watercourses that have fish always or seasonally present offsite within 1000 feet downstream, or contain aquatic habitat for non-fish aquatic species. Class II watercourses do not include Class III watercourses that are directly tributary to Class I watercourses.
Class III watercourses are watercourses that do not have aquatic life present, but show evidence of being capable of sediment transport to Class I and II watercourses under normal high flow conditions during and after completion of land management activities.

[2] Embeddedness measures the degree to which the larger particles (boulders, rubble, or gravel) of watercourse channels are surrounded or covered by fine sediment, impeding the ability of fish to dig an adequate redd, or nest. Measurements are generally recorded as 0-25 percent, 25-50 percent, 50-75 percent, or 75-100 percent embedded. An improving trend would be represented by a decrease in embeddedness as measured over a rolling 10 year period.

[3] Primary pools have a depth greater than three feet at the pool's deepest point, a width greater than one-half the width of the low flow channel at the pool's widest point (measured by a transect perpendicular to flow), and a length greater than the width of the low-flow channel at the pool's longest point (measured by a transect parallel to flow). Primary pool frequency will be measured by surveying segments of the watercourse that provide a statistically significant representation of the watercourse as a whole and are located based on field conditions.

[4] V* is a numerical value that represents the proportion of fine sediment that occupies the scoured residual volume of a pool. Stream order is the designation of the relative position of stream segments in the drainage basin network. For example, a first order stream is the smallest, unbranched, tributary that terminates at the upper point. A second order stream is formed when two first order streams join.

[5] An improving trend in large woody debris would be represented by an increase in the volume of large woody debris measured within a given stream segment over a rolling 10 year period. Large woody debris is defined as a piece of woody material having a diameter greater than 30 cm (12 inches) and a length greater than 2 m (6 feet) that is located in a position where it is in the watercourse channel or may enter the watercourse channel.

[6] An improving trend in the width-to-depth ratio would be represented by a change over a rolling 10 year period in the existing width-to-depth ratio towards the width-to-depth ratio appropriate for the stream channel type in question, as determined using the Rosgen stream classification system described in *Applied River Morphology* (1996) by Dave Rosgen.

[7] Open stream channels are those segments of channel, as viewed in aerial photographs with a 1:24,000 resolution or better, that are not covered by canopy and thus are visible.

Table 4-4 Average Annual Sediment Load
(Derived from*: Garcia River Sediment Total Maximum Daily Load, Table 16*, promulgated by USEPA, Region IX on March 16, 1998)

SOURCE	ESTIMATED AVERAGE ANNUAL SEDIMENT LOAD (tons/mi^2/yr)
Natural Background	
□ Mass wasting	162
□ Fluvial erosion	Insufficient data
□ Surface erosion	Insufficient data
Roads (including skid trails)	
□ Mass wasting	486
□ Fluvial erosion	532
□ Surface erosion	38
Timber Harvest Units	
□ Mass wasting	162
□ Fluvial erosion	Insufficient data
□ Surface erosion	Insufficient data
Agricultural Operations	
□ Mass wasting	Insufficient data
□ Fluvial erosion	Insufficient data
□ Surface erosion	Insufficient data
TOTAL	1,380

the 1970s and is reported by Pacific Watershed Associates (1997) to produce 680 tons/mi^2/yr of sediment. The U.S. Environmental Protection Agency Region IX (USEPA) promulgated a TMDL for the Garcia River on March 16, 1998. In it, USEPA assumes that the condition of South Fork Caspar Creek is comparable to the existing condition of the Garcia River watershed and that North Fork Caspar Creek represents a reference for the desired future condition of the Garcia River watershed, a condition similar to that which existed prior to the steep decline in salmonid populations. As a result, a reduction in sediment delivery of 52 percent is identified as appropriate to achieve the desired future conditions in the Garcia River watershed [(1420-680)/1420=0.52]. Applying a margin of safety of 8 percent to account for uncertainties in the data and differences between the Garcia River watershed and the Caspar Creek watershed, an overall reduction in sediment loading of 60 percent is established. (*Garcia River Sediment Total Maximum Daily Load,* USEPA, Region IX, March 16, 1998).

A 60 percent reduction of the average annual sediment load to the Garcia River watershed (1,380 tons/mi^2) results in a Loading Capacity of 552 tons/mi^2/yr [a)1,380 X 0.60=828; b) 1,380-828=552]. The loading capacity of 552 tons/mi^2/yr is a conservative estimate based on the best available data, and will be measured over a 40-year period. This loading capacity is the TMDL for the purposes of 40 CFR 130.2 and 130.7. As a phased TMDL, the loading capacity can be modified through a Basin Plan amendment if new information is made available that supports such modification. Neither the order of magnitude of the overall sediment budget nor that of the loading capacity is expected to change significantly as a result of new information.

V. Load Allocations

The existing data are insufficient to allocate specific components of the TMDL to individual landowners or to individual land management activities. That is, it does not include estimates of sediment delivery from individual properties, all landuse, or the amount of sediment delivery that can be reasonably controlled. These three elements are necessary to form rational individual load allocations.

To address the limitations in the existing data, a general load allocation is developed as follows. It is phased, as contemplated in a phased TMDL. First, landowners are required to inventory the Sediment

Delivery Sites on their property. Sediment Delivery Sites are controllable, human-caused erosion sites that are currently eroding or have the potential to erode in such a manner as to deliver sediment to a watercourse. Landowners are then directed to reduce the controllable volume of sediment at the inventoried Sediment Delivery Sites. Correction or control of these sites is required according to a schedule contained in the Implementation Schedule section. Landowners are also directed to assess their property for Unstable Areas. Unstable Areas are areas with a naturally high risk of erosion and areas or sites that will not reasonably respond to efforts to prevent or mitigate sediment discharges. Finally, landowners are directed to implement protective land management measures designed to control future sediment delivery from land management activities on the identified unstable areas and on riparian areas, and from activities related to roads, skid trails, landings, agricultural facilities, and gravel mining. These practices are to be implemented in accordance with the schedules contained in the Implementation Section.

In short, as the first phase, landowners are directed to identify and control all existing and future controllable discharges of sediment. Controllable discharges are those discharges resulting from human activities that can influence the quality of waters of the State and that can be reasonably controlled by prevention or mitigation. For the purposes of the TMDL equation, the load allocation is expressed as zero controllable discharges. For the purpose of implementation and as noted in Table 4-5, it is recognized that measures to control discharges are not 100 percent effective. In the absence of additional data, the Regional Water Board judges that this program of source identification and source control will result, over time, in a reduction in the rate of sediment delivered to watercourses in the Garcia River watershed that is comparable to the rate that existed prior to the steep decline in salmonid populations and attainment of the desired future conditions. As per the Loading Capacity Calculation, that level of sediment delivery is estimated to be 552 tons/mi^2/yr. Should additional data be made available to the Regional Water Board that supports a revision to the Load Allocation, the Regional Water Board will consider such revisions in a Basin Plan Amendment.

VI. Implementation Plan

The Implementation Plan is intended to control existing and future sources of sediment delivery resulting from human activity to the Garcia River and its tributaries. To control these sources, three options are offered to landowners. These options are:

Option 1. Comply with the waste discharge prohibitions that apply within the Garcia River watershed.

Option 2. Comply with an approved Erosion Control Plan and an approved Site-Specific Management Plan, or

Option 3. Comply with an approved Erosion Control Plan and the Garcia River Management Plan.

Waste Discharge Prohibitions that Apply within the Garcia River Watershed

The following waste discharge prohibitions apply within the Garcia River watershed:

1. The controllable discharge of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, gravel mining, agricultural, grazing, or other activity of whatever nature into waters of the State within the Garcia River watershed is prohibited.

2. The controllable discharge of soil, silt, bark, slash, sawdust, or other organic and earthen material from any logging, construction, gravel mining, agricultural, grazing, or other activity of whatever nature to a location where such material could pass into waters of the state within the Garcia River watershed is prohibited.

Controllable discharges are those discharges resulting from human activities that can influence the quality of the water of the State and that can be reasonably controlled through prevention, mitigation or restoration. The above two waste discharge prohibitions replace the region-wide waste discharge prohibitions contained in the action plan for logging, construction, and associated activities. The region-wide waste discharge prohibitions no longer apply to activities in the Garcia River watershed. The above two prohibitions do not apply to landowners who are conducting their land management activities in

accordance with an approved Erosion Control Plan *and* either an approved Site-Specific Management Plan or the Garcia River Management Plan (Options 2 and 3, respectively). If the Regional Water Board finds that significant discharges or threatened discharges of sediment occur despite the implementation of an approved Erosion Control Plan and either an approved Site-Specific Management Plan or the Garcia River Management Plan, it will consider the need to revise the plans and will consider the issuance of a Cleanup and Abatement Order to address the discharge, but it will not impose administrative civil liabilities for violations of the prohibitions.

All landowners choosing either Option 2 or 3 as described above must submit an Erosion Control Plan. The general purpose of the Erosion Control Plan is to outline the program by which a landowner or landowners will identify areas of sediment delivery, identify areas at risk of sediment delivery, and control all sediment delivery associated with past and present land management activities. The necessary components of an Erosion Control Plan are enumerated below.

In addition, landowners choosing Option 2 must submit a Site-Specific Management Plan. Those choosing Option 3 must comply with the Garcia River Management Plan, as outlined below. (The Site-Specific Management Plan and Garcia River Management Plan are collectively referred to as Management Plans.) The general purpose of the Management Plans is to outline the program by which a landowner or landowners will manage their property or properties to reduce the future risk of initiating new sediment delivery problems and to increase the ability of the Riparian Management Zone to properly function with regard to sediment filtering, large woody debris recruitment and stream bank stabilization.

A Site-Specific Management Plan differs from the Garcia River Management Plan. With the Site-Specific Management Plan, the landowner is able to select land management measures for controlling sediment that are suitable for the specific activities and conditions on his or her land. In the Garcia River Management Plan, more general land management measures are specified for unstable areas and riparian areas, and for activities related to roads, skid trails, landings, near stream facilities, and gravel mining. The Regional Water Board strongly encourages all landowners to prepare Site-Specific Management Plans and to use the Garcia River Management Plan only until they can develop their own plans to control discharges of sediment from their properties. The Regional Water Board also encourages groups of dischargers with similar land management activities to develop collective watershed-based Erosion Control Plans and Site-Specific Management Plans (Group Plans), where appropriate.

Erosion Control Plans, Site-Specific Management Plans, and the Garcia River Management Plan are not independently enforceable. The submission of an Erosion Control Plan and Site-Specific Management Plan by a landowner does not create an obligation by the landowner to implement the plans. However, if the landowner chooses not to implement the plans, then Option 1 will apply. In addition, none of the land management measures contained in a Management Plan shall be construed as a gift or dedication of private lands to the general public. A landowner may submit to the Executive Officer a request for an interim extension of time to develop or implement either the Erosion Control Plan or the Management Plan. If the Executive Officer determines that the landowner is making a good faith effort to develop or implement the plans in accordance with the final timelines described in the Implementation Schedule, the extension will be granted. A landowner who is not making a good faith effort to develop or implement an Erosion Control Plan and a Management Plan is subject to the above prohibitions (Option 1).

The elements of an approvable Erosion Control Plan and Site-Specific Management Plan are described below. In addition, the Garcia River Management Plan is outlined in detail. Erosion Control Plans must be submitted no later than January 3, 2005. Site-Specific Management Plans can be submitted at any time. The Garcia River Management Plan must be implemented by January 3, 2002 or substituted by an approved Site-Specific Management Plan.

Elements of an Erosion Control Plan

1. Baseline Data Inventory

   A Baseline Data Inventory includes an ownership-wide inventory of Sediment Delivery Sites. Sediment Delivery Sites are controllable, human-caused erosion sites that are currently eroding or have the potential to erode in such a manner as

to deliver at least 10 cubic yards of sediment to a watercourse over the life of the TMDL. They include such features as undersized culverts, culverts with diversion potential, eroding sidecast or fill, downcutting inside ditches, etc.
The Baseline Data Inventory shall include a description of all active and potential sediment sources resulting from roads, landings, skid trails, timber operations and agricultural operations, and other significant human-caused earth movement activities that have or might have the ability to enter waters of the state.

The Baseline Data Inventory shall include, at a minimum:

- A description of the inventory method used;
- A topographic map with 80 foot intervals showing the ownership boundary and the location of all inventoried sites, as well as roads and drainages; and
- For each site, an estimate of the volume of sediment and the relative potential for sediment delivery.

The Baseline Data Inventory must be comprehensive and may follow as examples, completely or in part, the inventory methods described in the *Assessment and Implementation Techniques for Road-Related Sediment Inventories and Storm-Proofing* and contained in the draft *Sustained Yield Plan/Habitat Conservation Plan* for the Pacific Lumber Company (August 25, 1997, Appendix 20, prepared by William Weaver, of Pacific Watershed Associates, Inc.); the *STAR* Worksheet system of the *Watershed and Aquatic Habitat Assessment* (September 29, 1997, Appendix 6:1 prepared by Coastal Forestlands, Ltd.); or the *Sediment TMDL Inventory and Monitoring Worksheet* developed by U.C. Davis (1998).

2. Sediment Reduction Schedule

The Sediment Reduction Schedule shall describe how and in what order of priority the sediment discharges from the Sediment Delivery Sites identified in the Baseline Data Inventory will be reduced in accordance with the schedule set forth in Table 4-5 of the Implementation Schedule section. The Baseline Data Inventory described in 1. above shall be used when prioritizing and conducting sediment delivery reduction activities, and the highest priority for sediment delivery reduction shall be assigned to those sites with the greatest potential to discharge sediment to a watercourse that supports fish**.**

3. Assessment of Unstable Areas

The Assessment of Unstable Areas shall identify through modeling, data analysis and/or a field inventory, areas of instability across the property. Unstable Areas are areas with a naturally high risk of erosion and areas or sites that will not reasonably respond to efforts to prevent, restore or mitigate sediment discharges. Unstable Areas are characterized by slide areas, gullies, eroding stream banks, or unstable soils that are capable of delivering sediment to a watercourse. Slide areas include shallow and deep seated landslides, debris flows, debris slides, debris torrents, earthflows, headwall swales, inner gorges and hummocky ground. Unstable soils include unconsolidated, non-cohesive soils and colluvial debris.

The Assessment of Unstable Areas shall include, at a minimum:

- All known active and potential shallow and deep-seated landslides, debris flows, debris slides, debris torrents, earthflows, headwall swales, inner gorges, and unstable soils.
- All known active or potentially active gullies and streambank erosion sites, as appropriate, but should not include the sites identified in 1. above.

Preparers of the Assessment of Unstable Areas may but are not required to use existing California Department of Conservation maps such as the series entitled "Geology and Geomorphic Features Related to Landsliding" or a digital terrain-type model like the one developed by Louisiana Pacific Corporation in its draft *Sustained Yield Plan for Coastal Mendocino County* (1997) in combination with field-based maps of Unstable Areas.

4. Monitoring Plan

The Monitoring Plan shall describe the method for monitoring the effectiveness of the sediment

control efforts the landowner or group of landowners has implemented for the Sediment Delivery Sites identified in the Baseline Data Inventory. The monitoring method must be consistent with the submitted Baseline Data Inventory method so that results are comparable from year to year. The results of the sediment control efforts and any other erosion control related activities, including the implementation of land management measures, shall be submitted to the Regional Water Board in an annual report, due January 30. Any changes in ownership or primary land management activities shall also be included in the annual report. In addition, individual landowners are encouraged to establish instream monitoring points above and below any significant land management activity on their properties and in potential anadromous fish refugia. (See Monitoring section, below).

Elements of a Site-Specific Management Plan

1. Description of Land Management Measures to Control Sediment Delivery

   A Site-Specific Management Plan shall include a description of, and schedule for, the Land Management Measures the landowner proposes to implement to control the future delivery of sediment from the following land management activities:

   - Roads, landings, skid trails, watercourse crossing construction, reconstruction, maintenance, use, and obliteration;
   - Operations on unstable slopes;
   - Use of skid trails and landings;
   - Use of near stream facilities, including agricultural activities; and
   - Gravel mining.

   In addition, the description must include:

   - A Long-term Road System Plan (Road Plan) similar to that described below in the Garcia River Management Plan, and
   - Supporting information that demonstrates that the proposed Land Management Measures will provide a level of water quality protection that is roughly equivalent to that expected from the corresponding measures of the Garcia River Management Plan.

2. Description of Land Management Measures to Improve the Condition of the Riparian Management Zone

   The Site-Specific Management Plan shall include a description of, and schedule for, the Land Management Measures and any restoration activities the landowner proposes to improve or maintain the condition of the Riparian Management Zone such that it provides:

   - Stream bank protection,
   - Filtering of eroded material prior to its entering the watercourse channel, and
   - Recruitment of large woody debris to the watercourse channel and flood plain.

   In addition, the description shall include supporting information that demonstrates that the proposed Land Management Measures will provide a level of water quality protection that is roughly equivalent to that expected from the corresponding riparian measures of the Garcia River Management Plan.

Group Plans

Dischargers with similar land management activities may choose to develop collective Erosion Control Plans and Management Plans (Group Plans). Group Plans offer landowners the ability to work together to solve their erosion problems, while also affording a measure of privacy to the members of the Group. The Group Plan shall clearly indicate the members of the Group and the land that is covered under the Group Plan. Where a Group member has multiple land management activities (e.g., ranching and timber harvesting), the Group Plan will cover only that portion of the member's land that is used for land management activities that are similar to those of the remainder of the Group.

The Implementation Plan applies to Groups in the same manner as it applies to individual landowners except as noted below. A Group Erosion Control Plan shall contain the same elements and level of detail as an individual Erosion Control Plan, with the following exceptions. (1) The Baseline Data Inventory Map shall show the perimeter boundary of the land covered by the Group Plan, but it does not need to depict the members' interior ownership boundaries. Shading or cross-hatching shall be used to depict any properties within the perimeter that are not covered by the Group Plan. (2) The

Baseline Data Inventory Map shall show the location of the Group's Sediment Delivery Sites, but the specific Sediment Delivery Sites do not need to be associated with any individual landowner. (3) The Sediment Reduction Schedule shall be consistent with the schedule in Table 4-5, but the sediment control work may be prioritized on a Group basis, rather than an individual landowner basis. (4) The Assessment of Unstable Areas does not need to be associated with any individual landowner. The Group Management Plan shall include the elements of either a Site Specific Management Plan or the Garcia River Management Plan (or a combination of the two), but the management measures shall be associated with the Group, rather than any of the individual landowners.

All members of the Group are responsible for ensuring that the Group Plans are developed and implemented. The waste discharge prohibitions do not apply to any of the members of the Group as long as the approved Group Plans are being implemented. If the Group Plan is not developed or implemented due to a member's failure to make a good faith effort to develop or implement the Group Plan, then that individual member of the Group is subject to the Prohibitions. Membership in a Group shall be based upon consent of all the members of the Group. The Group may change its membership by submitting a revised Group Plan for approval by the Executive Officer.

Relation of Other Planning Efforts to Erosion Control Plans and Management Plans

The Regional Water Board does not intend for landowners to engage in duplicative or overly complex planning efforts if they are already involved in planning efforts that will satisfy the requirements of this Basin Plan Amendment. For example, the Regional Water Board will consider all of the following to be approvable as an Erosion Control Plan and Management Plan, as long as three conditions are met. First, the document(s) must include, or be modified to include, the elements described above. Second, the document(s) must demonstrate water quality protection and restoration for the area of ownership that is roughly equivalent to the Garcia River Management Plan. Third, the document(s) must provide an assurance that the Implementation Schedule will be met.

- Non-Industrial Timber Management Plans
- Sustained Yield Plans
- Habitat Conservation Plans
- Letters of Intent followed by Ranch Plans as described in the *California Rangeland Water Quality Management Plan* (July 1995)
- Timber Harvest Plans that cover entire ownerships

The Garcia River Management Plan

The term "roads" as used in the Garcia River Management Plan include private roads, public roads, rural residential roads, skid trails, and landings. The term "near stream facility" includes any building, equipment, corral, pen, pasture, field, trail, livestock crossing or other feature or structure which is associated with commercial land use operations and is close enough to any watercourse to have the potential to cause the discharge of sediment to the watercourse. The term "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technical factors.

<u>Land Management Measures That Apply To Roads, Watercourse Crossings, and Near Stream Facilities Throughout the Garcia River Watershed</u>

1. By January 3, 2005, a Long-term Road System Plan (Road Plan) shall be developed and submitted which describes the long-term road system, and identifies all roads and watercourse crossings. The road system described in the Road Plan shall be designed and constructed to provide surfacing, drainage, and watercourse crossings to match the intended road use and maintenance abilities. Roads (including road prism and watercourse crossing drainage structures) that are constructed or reconstructed after January 3, 2002, shall comply with the standards below. Existing usable roads will be scheduled for upgrading as necessary as Sediment Delivery Sites under the Erosion Control Plan. Roads that are not needed as part of the long-term road system and that discharge or threaten to discharge earthen material to waters of the state shall be scheduled as necessary for abandonment or obliteration as Sediment Delivery Sites under the Erosion Control Plan. The road plan shall include, at a minimum:

- The location of all roads and watercourse crossings within the ownership,
- The current status of each road, including road surface material, road and watercourse design, and use restrictions, and
- The future plan and schedule for each road.

A. Roads used year round shall be designed, constructed, reconstructed or upgraded to permanent road status with the application of an adequate layer of competent rock for surface material and the installation of permanent watercourse crossings and road prism drainage structures. These roads shall receive regular and storm period inspection and maintenance.

B. Roads used primarily during the dry season but to a limited extent during wet weather shall be designed, constructed, reconstructed or upgraded to seasonal road status with the application of spot rocking where needed to provide a stable running surface during the period of use. These roads shall be designed, constructed, reconstructed, and upgraded to provide permanent watercourse crossings and road surface drainage structures. These roads shall receive inspection at least once during the wet weather period and shall receive at least annual maintenance.

C. Roads that are not used or maintained during wet weather shall be constructed or reconstructed to a temporary road status. Spot rocking of the road surface shall be used, where needed, to provide a stable running surface during the period of use. Road surface drainage structures shall be designed and constructed to prevent erosion so that regular and storm period maintenance is not needed to prevent sediment discharge to watercourses. All roads that will not receive at least annual maintenance shall have watercourse crossings, except rock fords, removed prior to October 15 of each year of installation.

2. All watercourse road crossings shall, at a minimum, utilize the standards described on pages 64 - 79 of the *Handbook for Forest and Ranch Roads* (prepared by Weaver and Hagans, 1994). These standards include but are not limited to the design and installation of permanent crossings using a culvert with a minimum diameter designed to pass at least a 50-year flood frequency event. Larger diameter culverts shall be used if debris that might result in blockage of the culvert inlet is present in the channel. All crossings shall be designed and installed to prevent the diversion of stream flow down or through the road prism in the event of culvert failure, and to provide free passage to fish at all flow regimes. All watercourse road crossings that do not meet these minimum standards as of January 3, 2002, must be scheduled as necessary for upgrade as Sediment Delivery Sites under the Erosion Control Plan. All watercourse road crossings installed after January 3, 2002, must be installed according to these minimum standards.

3. All road design, construction, and reconstruction shall use, at a minimum, the standards described on pages 39 - 54 and 81 - 120 of the *Handbook for Forest Ranch Roads* (prepared by Weaver and Hagans, 1994). These standards include but are not limited to the outsloping of the road prism (whenever feasible and safe) and the installation of rolling dips (rather than water bars) for additional road drainage. If insloped roads are necessary, ditch relief culverts shall be installed, at a minimum, at the distances described in Table 20 of the *Handbook for Forest and Ranch Roads*, and located to prevent discharge of road drainage directly onto erodible soils. All roads that do not meet the minimum standards as of January 3, 2002, must be scheduled as necessary for upgrade as Sediment Delivery Sites under the Erosion Control Plan. All roads constructed or reconstructed after January 3, 2002, must be constructed or reconstructed to these minimum standards.

4. Straw bale check dams or silt fences shall be installed at the outlet of all road drainage structures prior to use of the road for all roads used after January 3, 2002, if less than one hundred feet of 90 percent vegetative buffer exists between the outlet and a watercourse. Road drainage structures with less than one hundred feet of 90 percent vegetative buffer that are associated with roads not in use after January 3, 2002, must be scheduled as

necessary for upgrade as Sediment Delivery Sites.

5. After January 3, 2002, there shall be no construction, reconstruction, or use of roads within the channel of any watercourse. This measure does not apply to watercourse crossings.

6. After January 3, 2002, there shall be no construction, reconstruction, or use of skid trails on slopes greater than 40 percent within 200 feet of a watercourse, as measured from the channel or bankfull stage, whichever is wider.

7. After January 3, 2002, there shall be no use of roads or near stream facilities, when the activity contributes to the discharge of visibly turbid water from the road or near stream facility surface or is flowing in an inside ditch in amounts that cause a visible increase in the turbidity of a watercourse. As an exception, short-term, temporary use of near stream facilities may occur if there is no feasible alternative.

8. After January 3, 2002, the use of heavy equipment (defined as 1.5 tons) between October 15 and May 1 shall be limited to roads that have permanent drainage and are surfaced with an adequate layer of rock to maintain a stable road surface throughout the period of use. A stable road surface is defined as a surface that does not allow the concentration of road runoff to the extent that depressions or rills that are capable of channeling water are formed on the road surface. On near stream facilities, use of heavy equipment in this time period shall be limited to facilities with drainage collection and storage capabilities and/or facilities with a stable soil surface throughout the period of use. As an exception, short-term, temporary use of heavy equipment on near stream facilities may occur if there is no feasible alternative.

9. After January 3, 2002, all roads and other near stream facilities that are actively used shall have drainage and/or drainage collection and storage facilities installed before the start of any rain that causes overland flow across or along the disturbed surface and could result in the delivery of sediment to a watercourse. Roads and near stream facilities that are no longer actively used and have the potential to discharge sediment to a water of the state shall be addressed as necessary as Sediment Delivery Sites.

10. After January 3, 2002, there shall be no road construction, reconstruction, or upgrading from October 15 to May 1, except for emergency road maintenance.

11. After January 3, 2002, all new crossings installed as temporary watercourse crossings and designed to carry less water and debris than predicted for a 50 year flood discharge shall be removed and stabilized by October 15 of each year of installation. For all watercourses, the approaches to all temporary watercourses crossings shall be pulled back to create side slopes of less than 50 percent, and stabilized with rock, grass seed, mulch, or slash from the lowest (closest) drainage structure to the watercourse transition line. Existing temporary watercourse crossings not removed and stabilized by January 3, 2002, shall be addressed as necessary as Sediment Delivery Sites.

12. After January 3, 2002, off-channel water drafting and livestock watering locations shall be developed to the extent feasible.

<u>Land Management Measures That Apply in Unstable Areas – effective date January 3, 2002</u>

13. No road construction shall occur across unstable areas without the field review and development of site specific mitigation measures by a Certified Engineering Geologist registered in the State of California. A report prepared by the Certified Engineering Geologist shall be submitted to the Regional Water Board before construction/ reconstruction activities begin.

14. No more than 50 percent of the existing basal area formed by tree species shall be removed from unstable areas that have the potential to deliver sediment into a watercourse.

15. No concentrated flow shall be directed across the head, toe, or lateral margin of any unstable area.

16. Agricultural activities on unstable slopes that have the potential to deliver sediment to a water of the state shall be minimized to the extent practical.

Land Management Measures That Apply in the Riparian Management Zone

A Riparian Management Zone width shall be assigned to each watercourse based on the class of the watercourse. For Class I and II watercourses, the Riparian Management Zone is a 100-foot strip of land on each side of, and adjacent to, the watercourse. For Class III watercourses, the Riparian Management Zone is a 50-foot strip of land on each side of, and adjacent to, the watercourse. The Riparian Management Zone shall be measured from the active channel or bankfull stage, whichever is wider.

17. All roads within the Riparian Management Zone used after January 3, 2002, shall be surfaced with competent rock to a sufficient depth prior to use of the road to prevent road fines from discharging into watercourses.

18. After January 3, 2002, any new soil exposure within the Riparian Management Zone caused by land management activities shall be stabilized with the application of grass seed, mulch, slash or rock before October 15 of the year of disturbance. Stabilization measures shall achieve at least 90 percent coverage of all soil within the Riparian Management Zone exposed by land management activities. Existing exposed soil caused by land management activities that is not stabilized prior to January 3, 2002, shall be addressed as Sediment Delivery Sites.

19. After January 3, 2002, to promote stream bank stability, each landowner shall ensure that there are no commercial land management activities, including commercial or salvage timber harvest, grazing or crop agriculture, within the first 25 feet of the Riparian Management Zone for Class I or II watercourses. This measure does not apply to watercourse crossings. Commercial land management activities existing prior to January 3, 2002, must be phased out by January 3, 2007.

20. After January 3, 2002, in order to maintain present levels and promote future instream large woody debris, each landowner shall restrict commercial land use activities within the Riparian Management Zone to ensure that:

    A. There is no removal of downed large woody debris from watercourse channels unless the debris is causing a safety hazard.

    B. On Class I and II watercourses, at least five standing conifer trees greater than 32 inches in diameter at breast height (DBH) are permanently retained at any given time per 100 linear feet of watercourse. Where sites lack enough trees to meet this goal, there shall be no commercial harvest of the five largest diameter trees per 100 linear feet of watercourse.

    C. There is no removal of trees from unstable areas within a Riparian Management Zone that have the potential to deliver sediment to a water of the State unless the tree is causing a safety hazard.

Land Management Measures That Apply to Gravel Mining in the Garcia River Watershed – effective date January 3, 2002

21. In-channel gravel mining shall follow the following recommendations from the *Garcia River Gravel Management Plan,* prepared for the Mendocino County Water Agency, August 1996.

    A. Establish an Absolute Elevation below Which No Extraction May Occur. The absolute elevation below which no mining could occur would be surveyed on a site specific basis. A “redline” elevation tied to National Geodetic Vertical Datum of 1929 (NGVD) or North American Vertical Datum (NAVD) should be established below which mining may not take place, in order to avoid impacts to structures such as bridges and to avoid vegetation impacts associated with downcutting due to excess removal of sediment. A redline elevation should be 2 feet above the low flow water surface elevation (at the edge of the bar closest to the low flow channel) during the first year following adoption of the gravel management plan (assuming that this will occur in 1996) [note: The Mendocino County adopted the Gravel Management Plan on December 9, 1996]. A 2-foot minimum elevation as a buffer with a 2% grade toward the bank is consistent with that required by the National Marine Fisheries Service (NMFS).

B. Limit In-channel Extraction Methods To "Bar Skimming" or an Alternative Method Recommended by the Mendocino County Data Evaluation Team. If mining is limited to the downstream end of the bar as described above with a riparian buffer on both the channel and hillslope (or floodplain) side, bar skimming would minimize impacts. Other methods such as excavation of trenches or pools in the low flow channel lower the local base level, and maximize upstream (headcutting and incision) and downstream (widening and braiding) impacts. In addition, direct disturbance of the substrate in the low flow channel should be avoided. Trenching on bars (described in the Eel River EIR; EIP, 1992) may be beneficial in the future for the Garcia if it becomes severely aggraded, flat, shallow, and braided and has few invertebrates. The Department of Fish and Game should be consulted in order to determine if the Garcia River meets these conditions in the future. In the future, the Mendocino County Data Evaluation Team should have flexibility to decide on the most appropriate method to enhance habitat on a site specific basis.

   An excavated pool (or larger in-stream pit) acts as a local base level, and can cause upstream and downstream incision as the channel re-establishes its gradient. Incision is a negative effect of trenching that may result in increased bank erosion and loss of habitat. In-channel excavation of pools would take place in summer after June 15 – after the need for spawning habitat has passed. Subsequent winter flows may re-fill the pool before it can be used by fish in the following season.

C. Grade Slope of Excavated Bar to Prevent Fish Entrapment. Excavation on bars by gravel skimming would have a 2% slope toward the bank. After extraction, gravel bars must be left void of isolated pockets or holes.

D. Extract Gravel from the Downstream Portion of the Bar. Retaining the upstream one to two thirds of the bar and riparian vegetation while excavating from the downstream third of the bar is accepted as a method to promote channel stability and protect the narrow width of the low flow channel necessary for fish. Gravel would be redeposited in the excavated downstream one to two thirds of the bar (or downstream of the widest point of the bar) where an eddy would form during sediment transporting flows. In contrast, if excavation occurs on the entire bar after removing existing riparian vegetation, there is a greater potential for widening and braiding of the low flow channel.

E. Concentrate Activities to Minimize Disturbance. In-channel extraction activities should be concentrated or localized to a few bars rather than spread out over many bars. This localization of extraction will minimize the area of disturbance of upstream and downstream effects. Skimming decreases habitat and species diversity - these effects should not be expanded over a large portion of the study area.

F. Maintain Flood Capacity. Flood capacity in the Garcia River should be maintained in areas where there are significant flood hazards to existing structures or infrastructure.

G. Minimize Activities That Release Fine Sediment to the River. No washing, crushing, screening, stockpiling, or plant operations should occur at or below the streams "average high water elevation," or the dominant discharge. In the Garcia River the elevation of the dominant discharge is near the top of bank. These and similar activities have the potential to release fine sediments into the stream, providing habitat conditions deleterious to salmonids. The Regional Water Board regulates fine sediment releases to the river from gravel processing through its waste discharge requirements. Gravel mining and processing applicants should notify the Regional Water Board if waste discharge requirements are applicable to their operation.

H. Avoid Dry Road Crossings. Dry road crossings disrupt the substrate and can result in direct mortality or increased predation opportunity on fry. The crossing of choice and the one utilized in recent years in the lower Garcia is the free-span seasonal bridge. This type of crossing protects the upstream habitat as well as improving river

conditions for recreation. If dry crossings are unavoidable, they should not be placed in the channel prior to June 15, and should be removed by October 15 so that they do not interfere with incubating or migrating salmonids. The number of crossings should be kept to a minimum. Placement of crossings should also take into account the damage which might occur to riparian vegetation. Roads should lead directly to the crossings and not long distances through the riparian corridor. Placement of any road crossing should be done with the approval of the Data Evaluation Team. Any structure placed across a river or recreationally navigable stream should be designed and installed so as to provide sufficient overhead clearance to allow unobstructed and safe passage for small recreational craft.

I. Limit In-channel Operations to the Period Between June 15 and October 15. Gravel extraction for outside this window may interfere with salmonid incubation and migration. The hatching period for late steelhead spawners may extend for 40-50 days. Therefore, the June 15 start date is necessary to protect eggs laid from late April to May. Spawning salmonids have been observed in the Garcia River system as late as June 2.

J. Avoid Expansion of Instream Mining Activities Upstream of River Mile 3.7. The reach of channel upstream of River Mile 3.7 is important to steelhead spawning. Gravel mining increases the probability of additional fine sediments in spawning gravels. In order to maintain suitable spawning gravels of riffles in this reach, it is strongly recommended that gravel mining within this reach be restricted to the site of present operations.

22. Floodplain (Off-Channel) gravel mining shall follow the following recommendations from the *Garcia River Gravel Management Plan,* prepared for the Mendocino County Water Agency, August 1996.

A. Floodplain Gravel Extraction Should Be Set Back from the Main Channel. In a dynamic alluvial system, it is not uncommon for meanders to migrate across a floodplain. In areas where gravel extraction occurs on floodplains or terraces, there is a potential for the river channel to migrate toward the pit. If the river erodes through the area left between the excavated pit and the river, there is a potential for "river capture," a situation where the low flow channel is diverted through the pit. In the Garcia River, a setback of at least 400 feet is recommended to minimize the potential for river capture. In order to avoid river capture, excavation pits should set back from the river to provide a buffer and should be designed to withstand the 100-year flood. Adequate buffer widths and reduced pit slope gradients are preferred over engineered structures which require maintenance in perpetuity. Hydraulic, geomorphic and geotechnical studies should be conducted prior to design and construction of the pit and levee.

In addition to river capture, extraction pits create the possibility of stranding fish. To avoid this impact, California Department of Fish and Game (CDFG) requires that all off-channel mining be conducted above the 25-year floodplain.

B. The Maximum Depth of Floodplain Gravel Extraction Should Remain above the Channel Thalweg. Floodplain gravel pits should not be excavated below the elevation of the thalweg in the adjacent channel. This will minimize the impacts of potential river capture by limiting the potential for headcutting and the potential of the pit to trap sediment. A shallow excavation (above the water table) would provide a depression that would fill with water part of the year, and develop seasonal wetland habitat. An excavation below the water table would provide deep water habitat.

C. Side Slopes of Floodplain Excavation Should Range from 3:1 to 10:1. Side slopes of a floodplain pit should be graded to a slope that ranges from 3:1 to10:1. This will allow for a range of vegetation from wetland to upland. Steep side slopes excavated in floodplain pits on other systems have not been successfully reclaimed, since it is difficult for vegetation to become established. Terrace pits should be

designed with a large percentage of edge habitat with a low gradient which will naturally sustain vegetation at a variety of water levels. Pit margins should be reclaimed with riparian buffer zones of fifty feet surrounding them. Islands should be incorporated into the reclaimed pits as waterfowl refugia. Pits should be designed with input from the Mosquito Abatement District.

D. Place Stockpiled Topsoil above the 25-year Floodplain. Stockpiled topsoil can introduce a large supply of fines to the river during a flood event and degrade salmonid habitat. The CDFG considers storage above the 25-year flood inundation level sufficient to minimize this risk.

E. Floodplain Pits Should Be Restored to Wetland Habitat or Reclaimed for Agriculture. There are very few examples of successfully restored or reclaimed gravel extraction pits on other river systems with gravel extraction. The key to over coming barriers to successful restoration or reclamation is to conserve or import adequate material to re-fill the pit, while ensuring that pit margins are graded to allow for development of significant wetland and emergent vegetation.

Review of Individual Land Management Projects

Proposed land management projects that require Regional Water Board review for possible issuance of waste discharge requirements pursuant to Section 13260 of the California Porter-Cologne Water Quality Control Act, Clean Water Act Section 404 permits, and/or Clean Water Act Section 401 certification shall comply with this Action Plan, including TMDL, Implementation Plan and Monitoring Plan, as appropriate.

Restoration Projects

Landowners, agencies, and interested groups are encouraged to continue their interest, participation, and cooperation with restoration activities in the Garcia River watershed. Restoration is a tool useful for both stabilizing eroding stream banks throughout the watershed and improving instream habitat conditions. To ensure that stream restoration projects are planned and implemented in a manner that allows compliance with the provisions of the Action Plan, each landowner conducting restoration projects on his/her ownership shall notify the Regional Water Board in writing of any stream restoration activity, its location, the time frame of the project, and a summary of the work proposed. Landowners may propose to conduct restoration work in lieu of controlling a Sediment Delivery Site. The Executive Officer may consider allowing such a substitute in those cases where a greater environmental benefit would result.

Implementation Schedule

This Action Plan, including TMDL, Implementation Plan, and Monitoring Plan will take effect on January 3, 2002, in order to give landowners in the watershed the opportunity to implement voluntary actions.

Regional Water Board staff will send a letter to each landowner in the Garcia River watershed requesting a Statement of Intent regarding this Action Plan. The Regional Water Board letter will describe the options available to the landowner, which are as follows:

Option 1. Comply with the waste discharge prohibitions that apply to the Garcia River watershed.

Option 2. Comply with an approved Erosion Control Plan and a Site-Specific Management Plan.

Option 3. Comply with an approved Erosion Control Plan and the Garcia River Management Plan.

Landowners must comply with this Action Plan, including TMDL, Implementation Plan and Monitoring Plan through one of these three options or face potential permitting and/or enforcement action in the event of discharges of sediment. Landowners who do not submit a Statement of Intent are subject to the waste discharge prohibitions (Option 1).

Regional Water Board staff will review and respond to each Statement of Intent. The Board will then prioritize efforts in the Garcia River watershed, based on its general estimates of relative threat to water quality. Highest priority will be assigned on an ownership by ownership basis to those sites

identified as having the highest existing discharge or potential discharge of sediment to a watercourse that supports fisheries.

Landowners who intend to follow either Option 2 or Option 3 are encouraged to do so as soon as possible and to submit their plans to the Regional Water Board. Regional Water Board staff will acknowledge receipt of each plan submitted and will review each plan for completeness. The Executive Officer will approve the plans if the review indicates that the plans meet the requirements specified above and complies with the schedule contained in Table 4-5, below. The Executive Officer will notify the landowner of his/her approval in a letter. Prior to approving an Erosion Control Plan or Site-Specific Management Plan, the Executive Officer will provide notice and an opportunity to comment to those who have requested it. At the Executive Officer's discretion, a Regional Water Board workshop may be scheduled to receive comments. Time extensions and minor revisions to approved Erosion Control Plans and Site-Specific Management Plans may be approved by the Executive Officer without notice.

VII. Monitoring Plan

Monitoring is intended to provide information regarding the effectiveness of sediment control efforts in attaining the Numeric Targets over time. Instream and hillslope monitoring parameters, monitoring protocols, and frequency of monitoring are described in Table 4-6. Instream and hillslope monitoring by landowners (except for the Sediment Delivery Site monitoring described in the Erosion Control Plan, above) is on a voluntary basis. Regional Water Board staff will coordinate instream monitoring efforts of the landowners, other regulatory agencies, academic institutions, and members of the public and shall set a goal of establishing at least one instream monitoring point in each of the twelve Planning watersheds in the Garcia River watershed. In addition, Regional Water Board staff will work together with the University of California Cooperative Extension to assist landowners in developing voluntary monitoring plans.

Landowners choosing Option 2 or Option 3 should assess the landscape associated with their property to determine which of the listed instream and hillslope monitoring parameters are most appropriately measured and are encouraged to submit their plans for voluntary monitoring to the Regional Water Board for comment prior to implementing them. Landowners are strongly encouraged to conduct voluntary instream and hillslope monitoring as a means of improving the scientific understanding of the Garcia River watershed and to provide a site specific basis for revising the Action Plan over time. Landowners are particularly encouraged to establish instream monitoring points above and below any significant land management activity on their properties and in potential anadromous fish refugia.

Landowners are required to submit by January 30 of each year an annual report describing the erosion control-related activities of the previous year and the sediment delivery reduction results of those activities, including source reduction volumes. In addition, landowners are encouraged to disclose in the annual reports the results of any voluntary instream and hillslope monitoring. At least annually, Regional Water Board staff will compile and evaluate the results of the annual reports provided by landowners for review by the Regional Water Board to assess the progress of the Action Plan. In the event that sufficient information to assess the progress of the Action Plan is not gained through the voluntary monitoring efforts of landowners and others as augmented by the Regional Water Board, revisions to the monitoring provisions of the Action Plan, through a Basin Plan amendment, will be contemplated.

Table 4-5 Schedule for Reducing Sediment Delivery from Land Management Activities in the Garcia River Watershed

SOURCE AND LAND USE	FINAL COMPLIANCE DATE	ACTIVITY AND INTERIM SCHEDULE[1]
Roads, landings, skid trails, timber harvest operations, agricultural operations, gravel mining, and other significant	January 3, 2005, and every 10 years thereafter, as necessary if new	Prepare an ownership-wide Baseline Data Inventory of controllable Sediment Delivery Sites and a Sediment Reduction Schedule for the reduction of sediment from the inventoried sites. No interim schedule.

human-caused earth movement	Sediment Delivery Sites are identified	
SOURCE AND LAND USE	FINAL COMPLIANCE DATE	ACTIVITY AND INTERIM SCHEDULE[1]
Unstable Areas	January 3, 2005, and every 10 years thereafter, as necessary if new Unstable Areas are identified	Prepare an ownership-wide Assessment of Unstable Areas. No interim schedule.
Sediment Delivery Sites associated with Roads	January 3, 2015	Following the completion of the Baseline Data Inventory, control, in order of priority, all controllable Sediment Delivery Sites identified in the Baseline Data Inventory in such a manner as to reduce the sediment from sites representing 10 percent of the overall volume of inventoried sediment every year, or until 100 percent of the sites are controlled, whichever occurs first. Control measures are predicted to be 90 percent effective at reducing sediment delivery.
Sediment Delivery Sites associated with Timber Harvest Operations, including skid trails and landings	January 3, 2015	Following the completion of the Baseline Data Inventory, control, in order of priority, all controllable Sediment Delivery Sites identified in the Baseline Data Inventory in such a manner as to reduce the sediment from sites representing 10 percent of the overall volume of inventoried sediment every year, or until 100 percent of the sites are controlled, whichever occurs first. Control measures are predicted to be 90 percent effective at reducing sediment delivery.
Sediment Delivery Sites associated with agricultural operations in the Riparian Management Zone	January 3, 2025	Following the completion of the Baseline Data Inventory, control, in order of priority, all controllable Sediment Delivery Sites in the Riparian Management Zone in such a manner as to reduce the sediment from sites representing 20 percent of the overall volume of inventoried sediment every four years, or until 100 percent of the sites have been controlled, whichever occurs first. Control measures in the Riparian Management Zone are predicted to be 90 percent effective at reducing sediment delivery.
Sediment Delivery Sites associated with agricultural operations on the hillslopes	January 3, 2025	Following the completion of the Baseline Data Inventory, control, in order of priority, all controllable Sediment Delivery Sites on hillslopes in such a manner as to reduce the overall volume of inventoried sediment by 20 percent every four years, or until a 100 percent of the sites have been controlled, whichever occurs first. Control measures on the hillslopes are predicted to be 50 percent effective at reducing sediment delivery.
Activities on Unstable Areas and in Riparian Management Zones, and activities related to roads, watercourse crossings, near stream facilities, and gravel mining	See the Garcia River Management Plan or the approved Site-Specific Management Plan	Implement Land Management Measures contained in an approved Site-Specific Management Plan or the Garcia River Management Plan in accordance with the schedule contained therein.
Annual Report	January 30, 2004 and each January 30th thereafter	Report to the Regional Water Board all erosion control-related activities and sedimentation reduction results of the previous year.

[1] Compliance with the interim schedules for the control of Sediment Delivery Sites will be calculated by dividing the volume of sediment controlled during each one year or four year period by the overall volume of inventoried sediment associated with that category of source or land use.

VIII. Estimated Total Cost and Potential Sources of Funding

An estimated cost to implement the sedimentation reduction efforts described in the Action Plan is $5 million plus unquantified costs which include inventory costs and the opportunity cost of the volume of unharvested timber, up to an additional $2 million. Potential training and financing resources available to landowners include but are not limited to the Wildlife Habitat Incentive Program (WHIP), the Environmental Quality Incentives Program (EQUIP), the Conservation Reserve Program (CRP), the Salmon and Steelhead Restoration Program (SSRP), the Forestry Incentive Program (FIP), the Salmon and Steelhead Restoration Account (SSRA), and Clean Water Act Section 205(j) and Section 319(h) funding.

IX. Plan for Future Review of the Strategy

Public participation was a key element in the development of the Strategy and will continue to be an essential component in its implementation. Interested persons will have the opportunity to comment on the progress of the Action Plan at watershed meetings, and to the Regional Water Board at least once every 3 years, at which time the Regional Water Board shall determine if there is sufficient progress toward implementation of erosion control and management activities, as well as movement towards attainment of the Numeric Targets described in the Action Plan. If sufficient progress as described above is not documented, the Regional Water Board will consider revising the Action Plan through a Basin Plan amendment. If the Regional Water Board concludes that the Numeric Targets are being attained throughout a Planning watershed, it may consider suspending or terminating some or all of the Action Plan for landowners within that Planning watershed.

Table 4-6 Summary of Monitoring Parameters and Protocols

PARAMETER	PROTOCOL	BRIEF DESCRIPTION (Protocol should be consulted for detailed methodology)	FREQUENCY
INSTREAM MONITORING			
Sediment-related barriers	Any defensible method	Stream survey; identification of sediment deltas, underground stream sections, shotgun culverts, reaches with water depths less than 0.18 meters, etc.; measurement or estimate of extent of barrier and mapping of location.	Annual
Embeddedness	Flosi and Reynolds (1994), Burns (1984)	Identify at least 5 riffle habitat units in Class I streams. Randomly select at least 50 cobbles from each habitat unit and measure or estimate the percent of each cobble which is covered or surrounded by fines. This will be obvious from a dark ring around the cobble indicating its exposure to stream flow. Rate each cobble 1, 2, 3, or 4 as follows: score of 1=cobbles 0-25% surrounded or covered by fines; 2=26-50%; 3=51-75%; 4=76-100%.	Annual
% fines, gravel composition	McNeil protocol, Valentine (1995)	Identify at least 5 riffle habitat units in Class I streams. Collect at least 2 bulk core samples of sediment in each habitat unit in the first at the pool/riffle break immediately downstream of pool crests. Measure the amount of volume of sediment associated with each size class in the field. Bag at least 5 samples to be weighed in the laboratory to establish a correlation between weight and volume.	Annual

PARAMETER	PROTOCOL	BRIEF DESCRIPTION (Protocol should be consulted for detailed methodology)	FREQUENCY
Pool characteristics	Flosi and Reynolds (1994)	Identify at least 10 pool habitat units within a reach that is 20-30 bankfull widths long in Class I streams. Measure habitat unit length, characterize habitat types in each unit, and measure mean width of low flow channel. Measure maximum length, width and depth of all pools in each unit. Measure depth of each pool tail crest.	Annual
Frequency of primary pools	Flosi and Reynolds (1994)	Within each reach (as described above), identify the maximum length of all pools which are >3 feet deep, > in width then 1/2 width of low flow channel, and > in length then width of low flow channel.	Annual
V*	Lisle and Hilton (1992), Knopp (1993)	Identify at least 10 survey units within a reach of 20-30 bankfull widths in length in 3rd order streams with slopes 1-4%. Measure the residual volume of each pool within the unit with a graduated rod along transects, as described by Lisle and Hilton.	Annual
D50	Knopp (1993), Rosgen (1996)	Identify at least 5 survey units within a reach of at least 20-30 bankfull channel widths long in 3rd order streams with slopes 1-4%. Lay out transects, as described by Rosgen, and collect at least 100 particles in each reach. Measure the particle, as described, and tally for later graphing.	Annual
Volume of large woody debris	Shuett-Hames (1994) for Timber, Fish and Wildlife Watershed Assessment Manual (Level 2 analysis)	Identify at least 10 survey units of at least 500 feet long within Class I, II and III streams. Identify and measure all pieces of large woody debris, including logs at least 4 inches in diameter and 72 inches long, and root wads. Note the location of the LWD in the channel, the channel length, wood type, stabilizing factors, pool formation function and orientation and decay class.	At least once every three years
Cross-section	Rosgen (1996)	Identify at least 1 survey unit within a reach of 20-30 bankfull widths long in each Class I and II streams. Establish at least 3 transects across the bankfull channel in each survey unit and collect evenly spaced measurements of the depth to channel along each transect. The transect should be marked for return at subsequent samplings.	At least once every three years
Thalweg profile	Dunne and Leopold (1976)	Identify at least 1 survey unit within a reach of at least 20-30 bankfull widths long in each Class I and II streams. Survey units must be no less than 30 times the bankfull channel width with 3-4 meanders within the survey unit.	At least once every three years
Miles of open stream channel	Grant (1988)	Modified RAPID analysis measuring linear distance of open stream channels from aerial photographs.	At least once every ten years
Flow and/or stage height	Gordon, et. al. (1992)	Measurements or estimates determined during instream sampling. Continuous measurements are desirable but require sophisticated equipment that is vulnerable to damage. Point measurements of stage height during storm event and routinely through the year are more manageable.	Ongoing
Rainfall		Daily measurement using a gage with a sensitivity of 0.1 inch.	Ongoing
HILLSLOPE MONITORING			
Landslides, fluvial, and surface erosion associated with roads, landings and skid trails	Pacific Watershed Associates or similar method	Road inventory; identification of existing and potential sediment delivery sites; measurement or estimation of volume of sediment associated with each site.	Annual

PARAMETER	PROTOCOL	BRIEF DESCRIPTION (Protocol should be consulted for detailed methodology)	FREQUENCY
Landslides associated with harvest units	Timber, Fish and Wildlife (Washington State)	Aerial photographs; identification of landslide features associated with timber harvest units; measurement of the area of the landslide feature; estimate of the volume of sediment delivered to the stream from each feature.	Annual
Landslides, fluvial, and surface erosion associated with agricultural activities	Any defensible method	Property survey; identification of existing and potential erosion problems; measurement or estimation of volume of sediment associated with each site or situation.	Annual
Stream crossing failures	Pacific Watershed Associates or similar method	Road survey after storms with a 20 year recurrence interval or greater; identify location of failed or partially failed crossings; measurement or estimation of volume of sediment associated with failure.	Once in summer of years having storms with a 20 year recurrence interval, or greater
Density of unpaved roads	Any defensible method	GIS and/or THP data review; cumulative tally of miles of road per tributary or Planning Watershed, the average width of the road system, and the density of unpaved roads.	At least once every ten years

ACTION PLAN FOR THE SCOTT RIVER SEDIMENT AND TEMPERATURE TOTAL MAXIMUM DAILY LOADS[16]

The Scott River watershed, (CalWater Hydrologic Area 105.40), comprises approximately 520,184 acres (813 mi^2) in Siskiyou County. The Scott River is tributary to the Klamath River.

The *Action Plan for the Scott River Sediment and Temperature Total Maximum Daily Loads*, hereinafter known as the Scott River TMDL Action Plan, includes sediment and temperature total maximum daily loads (TMDLs) and describes the implementation actions necessary to achieve the TMDLs and attain water quality standards in the Scott River watershed within 40 years of United States Environmental Protection Agency approval of the Scott River TMDL Action Plan.

The goal of the Scott River TMDL Action Plan is to achieve the TMDLs, and thereby achieve sediment and temperature related water quality standards, including the protection of the beneficial uses of water in the Scott River watershed.

The Scott River TMDL Action Plan sets out the loads and directs conditions to be considered and incorporated into regulatory and non-regulatory actions in the Scott River watershed. The Scott River TMDL Action Plan is not directly and independently enforceable, except as incorporated into appropriate permitting or enforcement orders.

A glossary defining key terms is located on page 4-65.00.

I. Problem Statement

Excessive sediment loads and elevated water temperatures in the Scott River and its tributaries have resulted in degraded water quality conditions that impair designated beneficial uses, including contact (REC-1) and non-contact water recreation (REC-2); commercial and sport fishing (COMM); cold freshwater habitat (COLD); rare, threatened, and endangered species (RARE); migration of aquatic organisms (MIGR); and spawning, reproduction, and/or early development of fish (SPWN). Excessive sediment loads have resulted in the non-attainment of water quality objectives for sediment, suspended material, and settleable material. Elevated water temperatures have resulted in the non-attainment of the water quality objective for temperature. Excessive sediment loads and elevated water temperatures have adversely

[16] Adopted by the North Coast Regional Water Quality Control Board on December 7, 2005. Adopted by the State Water Resources Control Board on June 21, 2006. Approved by the State Office of Administrative Law on August 11, 2006. Approved by the United States Environmental Protection Agency on September 8, 2006.

affected the beneficial uses associated with the cold water salmonid fishery. The Scott River watershed has been listed as impaired with relation to sediment since 1992, and impaired with relation to temperature since 1998, pursuant to Section 303(d) of the Clean Water Act.

II. Watershed Restoration Efforts

Throughout the Scott River watershed, many individuals, groups, and agencies have been working to enhance and restore fish habitat and water quality. These groups include, but are not limited to, the Siskiyou Resource Conservation District, the Scott River Watershed Council, the French Creek Watershed Advisory Group, private timber companies, Siskiyou County and the Five Counties Salmon Conservation Process, the California Department of Fish and Game, the California Department of Water Resources, the United States Forest Service, and the Klamath River Basin Fisheries Task Force. The past and present proactive efforts of these stakeholders have improved, and will continue to improve, water quality conditions in the Scott River and its tributaries.

III. Sediment

A. Scott River Sediment Source Analysis

The sediment source analysis identifies the various sediment delivery processes and sources in the Scott River watershed and estimates delivery from these sources. The results of the sediment source analysis are located in Table 4-7.

B. Scott River Sediment TMDL

The sediment TMDL for the Scott River watershed is 550 tons of sediment per square mile per year. The sediment TMDL is the estimate of the total amount of sediment, from both natural and anthropogenic sources, that can be delivered to a water body without causing non-attainment of applicable water quality standards. The TMDL is to be evaluated as a ten-year, rolling-average of the annual sediment yield.

C. Scott River Sediment Load Allocations

In accordance with the Clean Water Act, the Scott River sediment TMDL is allocated to the sources of sediment in the watershed. The load allocations are located in Table 4-8.

The load allocations are expressed as averages over the entire Scott River watershed and are to be evaluated on a ten-year, rolling-average basis. Each square mile is not expected to meet the load allocations within a particular source category. Rather, it is expected that the average for the entire source category will meet the load allocation for that category.

D. Scott River Sediment Margin of Safety

The TMDL includes an implicit margin of safety, based on conservative assumptions, to account for uncertainties in the analysis. The conservative assumptions include (1) underestimating sediment delivery from natural soil creep because available information did not indicate all streams; and (2) underestimating the age of small streamside sediment sources, which results in higher annual rates of sediment delivery from these sources.

E. Scott River Sediment Seasonal Variations & Critical Conditions

To account for annual and seasonal variability in sediment delivery events, sediment delivery mechanisms, and storm patterns in the Scott River watershed, the TMDL and load allocations apply to sources of sediment, not the movement of sediment across the landscape.

To account for critical conditions in stream flow, sediment loading, and water quality, the TMDL uses instream salmonid habitat parameters with desired conditions to reflect net long term effects of sediment loading and transport.

IV. Temperature

A. Scott River Temperature Source Analysis

The temperature source analysis identifies the various water heating and cooling processes and sources of elevated water temperatures in the Scott River watershed. Anthropogenic processes that influence water temperature include changes to: stream shade, stream flow via changes in groundwater accretion, stream flow via surface water use, microclimate, and channel geometry.

The primary factor affecting stream temperatures in the Scott River watershed is

increased solar radiation resulting from reductions of shade provided by near-stream vegetation. Changes in groundwater accretion also impact water temperatures in Scott Valley. Diversions of surface water lead to relatively small temperature impacts in the mainstem Scott River, but have the potential to affect temperatures in smaller tributaries where the volume of water diverted is relatively large compared to the total stream flow. Microclimate alterations resulting from near-stream vegetation removal increase temperatures, where microclimates exist. Changes in channel geometry from natural conditions also negatively affect water temperatures.

B. Scott River Temperature TMDL

The temperature TMDL is focused on effective shade and adjusted potential effective shade (see the Glossary for definitions). The temperature TMDL for the Scott River watershed is the adjusted potential effective shade conditions for the date of the summer solstice as expressed graphically in Figure 4-4 and numerically in Table 4-9 that can occur along a water body without causing non-attainment of applicable water quality standards.

Figure 4-4 shows the percent of stream length in the watershed that is shadier than a given shade value. For example, approximately 30% of the stream length has an effective shade index value of 5.00 or more under current conditions, whereas approximately 74% of the stream length would have an effective shade index value of 5.00 or more under adjusted potential shade conditions. An effective shade index value of 5.00 is equivalent to 50% effective shade.

As more information becomes available, the temperature TMDL may require revision.

C. Scott River Temperature Load Allocations

The Scott River temperature load allocations are adjusted potential effective shade conditions as expressed in Figure 4-5.

D. Scott River Temperature Margin of Safety

The TMDL includes an implicit margin of safety, based on conservative assumptions, to account for uncertainties in the analysis. The conservative assumptions include not accounting for improvements in stream temperatures that are likely to result from reductions in sediment inputs and increases in large woody debris. The resulting water temperature improvements were not accounted for in the analysis and provide a margin of safety.

E. Scott River Temperature Seasonal Variations & Critical Conditions

To account for annual and seasonal variability, the analysis evaluated temperatures and thermal processes during the most critical time period for the most sensitive beneficial use (i.e., the hottest time of the year).

V. Implementation

Table 4-10 describes the specific implementation actions that shall be taken to achieve the TMDLs and meet the sediment and temperature-related water quality standards in the Scott River watershed. Table 4-10 is organized by topic or source and by responsible party. Individual landowners and responsible parties may find that more than one implementation action is applicable to their unique circumstances.

The implementation actions are designed to encourage and build upon on-going, proactive restoration and enhancement efforts in the watershed. Additionally, the implementation actions described in Table 4-10 are necessary to fulfill obligations of the NPS Policy[17] and the Sediment TMDL Implementation Policy.[18]

Although the Regional Water Board prefers to pursue the implementation actions described in Table 4-10, the Regional Water Board shall take appropriate permitting and/or enforcement actions should any of the implementation actions fail to be implemented by the responsible party or should the implementation actions prove to be inadequate. Various permitting and enforcement actions are described in the permitting and enforcement tools section on pages 4-33.00 through 4-34.00.

VI. Monitoring

Monitoring shall be conducted upon the request of

[17] The *Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy).

[18] The *Total Maximum Daily Load Implementation Policy Statement for Sediment-Impaired Waters in the North Coast Region* (Sediment TMDL Implementation Policy).

the Regional Water Board's Executive Officer in conjunction with existing and/or proposed human activities that will result or likely result in sediment waste discharges and/or elevated water temperatures within the Scott River watershed. Monitoring shall involve one or more of the following: implementation monitoring, upslope effectiveness monitoring, instream effectiveness monitoring, and compliance and trend monitoring. See the Glossary for definitions of these terms.

In order to determine the effectiveness of the Scott River TMDL Action Plan, Regional Water Board staff shall develop a compliance and trend monitoring plan. The plan should include a description of monitoring objectives, parameters to monitor, procedures and techniques, locations of monitoring stations, frequency and duration, quality control and quality assurance protocols, data management procedures, data and analysis distribution procedures, benchmark conditions where available, measurable milestones, and specific due dates for monitoring and data analysis. Regional Water Board staff shall complete the monitoring plan by September 8, 2007.

Monitoring requirements, primarily implementation monitoring and upslope effectiveness monitoring, are specifically incorporated into the proposed Memoranda of Understanding with the County of Siskiyou, the USFS, and the BLM. Additionally, implementation and upslope effectiveness monitoring will likely be required of those landowners/dischargers required to develop and implement an Erosion Control Plan and/or a Grazing and Riparian Management Plan, as necessary and appropriate on a case-by-case basis.

VII. Reassessment and Adaptive Management

The Regional Water Board will review, reassess, and possibly revise the Scott River TMDL Action Plan. Reassessment is likely to occur every three years during the Basin Planning Triennial Review process. Regional Water Board staff will report to the Regional Water Board at least yearly on the status and progress of implementation activities, and on whether current efforts are reasonably calculated and on track to achieve water quality standards within forty years. For activities that rely on encouragement as a first step, a formal assessment of effectiveness of these efforts will be completed by September 8, 2011. A more extensive reassessment will occur after September 8, 2016, the date that is ten years after the TMDL Action Plan took effect, or sooner, if the Regional Water Board determines it necessary. During reassessment, the Regional Water Board is likely to consider how effective the requirements of the TMDL Action Plan are at meeting the TMDLs, achieving sediment and temperature water quality objectives, and protecting the beneficial uses of water in the Scott River watershed.

VIII. Enforcement

The Regional Water Board shall take enforcement actions for violations of the Scott River TMDL Action Plan where elements of the TMDL Action Plan are made enforceable restrictions in a specific permit or order, as appropriate. Nothing in this TMDL Action Plan precludes actions to enforce any directly applicable prohibition found elsewhere in the Basin Plan or to require cleanup and abatement of existing sources of pollution where appropriate.

Table 4-7
Scott River Sediment Source Analysis Results in tons/sq. mi.-yr[1]

Subwatershed[2]	Natural Sources					Anthropogenic Sources					Total Volume of Sediment Sources
	Landslides[3]	Large Discrete Streamside Features[4]	Small Discrete Streamside Features[5]	Streamside Soil Creep	Unique Landslide Features	Landslides[6]	Large Discrete Streamside Features[4]	Small Discrete Streamside Features[5]	Road Related Sources[7]	Unique Landslide Features	
West Canyon	111	104	295	33	0	132	84	166	105	0	1031
East Canyon	0	87	387	37	0	1	31	180	31	0	754
Eastside	0	88	367	36	0	0	39	168	10	0	709
East Headwaters	0	108	236	33	0	1	124	175	13	0	691
West Headwaters	8	149	276	29	140	35	105	166	29	9	945
Westside	45	117	330	31	0	12	52	176	29	0	786
Scott Valley	0	0	226	13	0	0	0	287	6	0	533
Scott River watershed	23	85	302	29	8	21	55	195	29	0	747

1. Minor addition errors caused by rounding differences.
2. Each subwatershed is delineated in Figure 4-3.
3. Includes landslides visible on air photos generally greater than one acre in size.
4. Large Discrete Features: Generally long-term continuing sources of sediment that typically originate on, or extend up onto, the mountainside based on on-site streamside surveys.
5. Small Discrete Features: Stream bank failures, gullies, and other small failures that mostly deliver episodically to a water body based on on-site streamside surveys.
6. Includes landslides visible on air photos generally greater than one acre in size. Excludes road-related landslides.
7. Includes road-related stream crossing failures, gullies, fill failures, and landslides based on road inventories. Includes road-related surface erosion and cut bank failures based on modeling.

Table 4-8
Scott River Sediment Load Allocations[1]

Sediment Source		Current Load (tons/sq. mi. - yr)		Reduction Needed	Load Allocations (tons/sq. mi. - yr)	
Natural	Landslides[2]	23	448	0%	23	448
	Large Discrete Streamside Features	93		0%	93	
	Small Discrete Streamside Features	302		0%	302	
	Streamside Soil Creep	29		0%	29	
Anthropogenic	Road Surface Erosion	4	299	54%	2	112
	Road-Related Stream Crossing Failures	3		71%	1	
	Road-Related Gullies	1		31%	1	
	Road-Related Cut/Fill Failures	4		76%	1	
	Road-Related Landslides[2]	16		56%	7	
	Landslides, Timber Harvest Related	19		52%	9	
	Landslides, Mining Related[2]	2		0%	2	
	Large Discrete Streamside Features[3]	55		69%	17	
	Small Discrete Streamside Features, Harvest Related	54		63%	20	
	Small Discrete Streamside Features, Mining Related	2		0%	2	
	Small Discrete Streamside Features, Other[3]	139		64%	50	
Totals		747		63%	560	

1. Minor addition errors caused by rounding differences.
2. Includes both “Landslides” and “Unique Landslide Features” from Table 4-7.
3. Sources influenced or caused by multiple interacting human activities not inventoried by other methods.

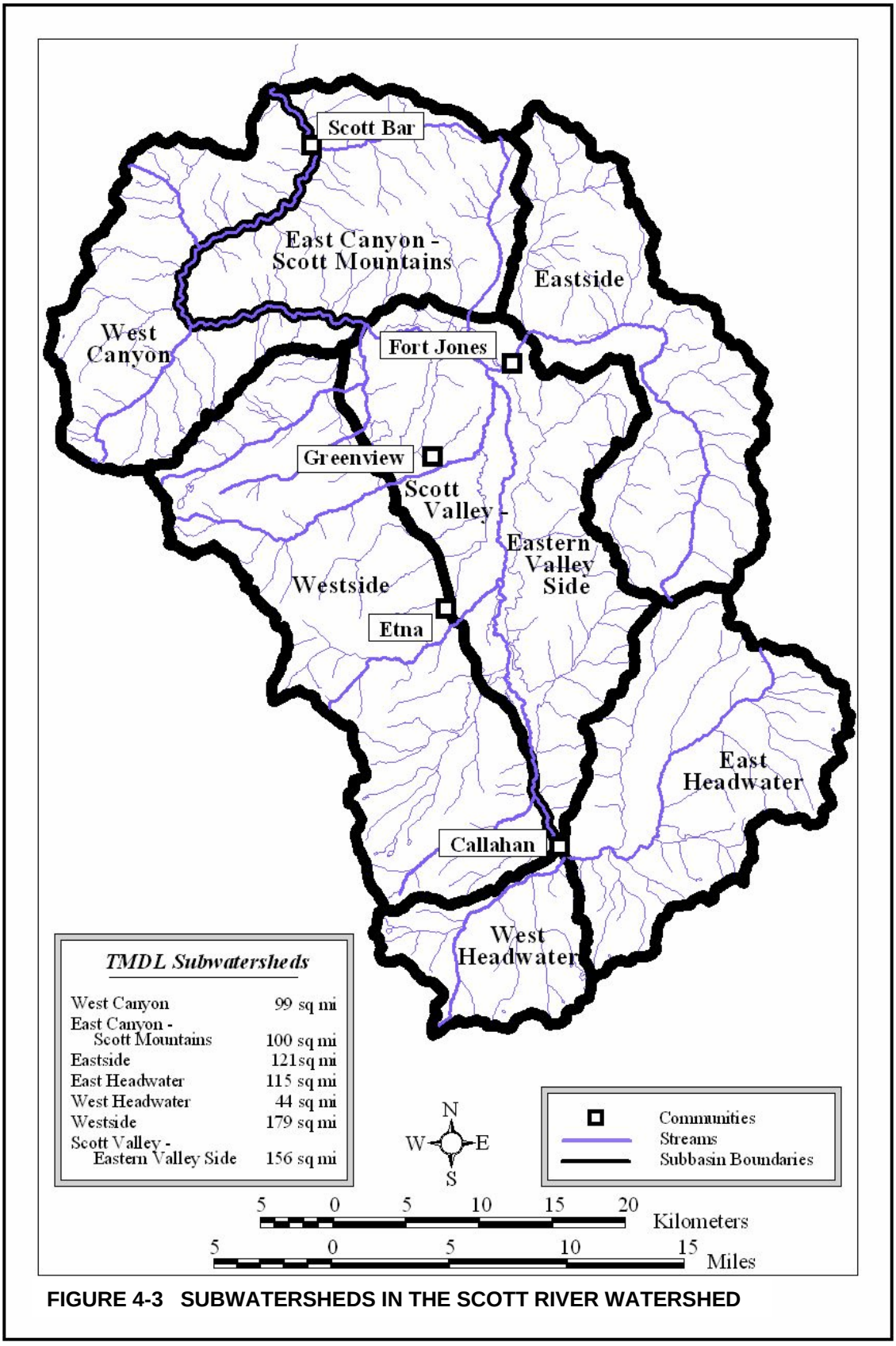


FIGURE 4-3 SUBWATERSHEDS IN THE SCOTT RIVER WATERSHED

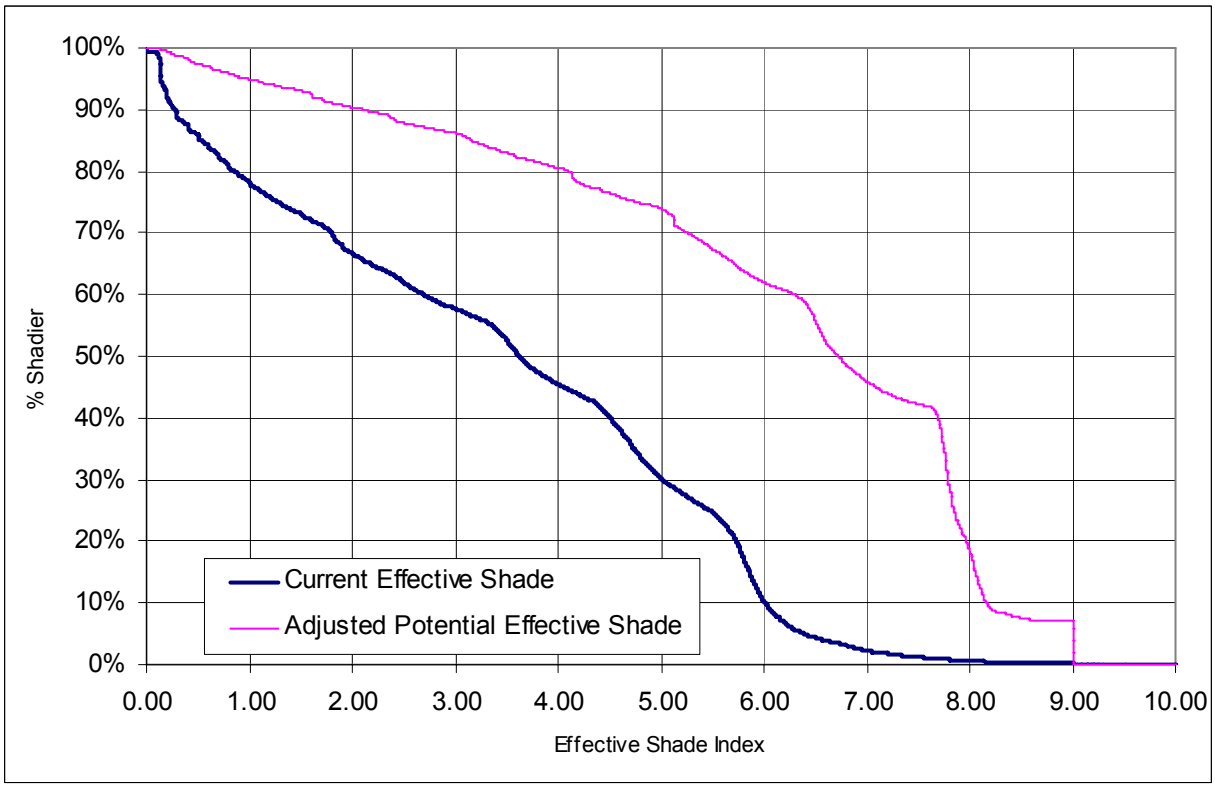


FIGURE 4-4 SCOTT RIVER TEMPERATURE TMDL EXPRESSED GRAPHICALLY
("% Shadier" refers to the percentage of stream length with more shade than the corresponding effective shade index.)

Table 4-9 Scott River Temperature TMDL Expressed Numerically

Shade Class	Stream Length - Current Vegetation Conditions				Stream Length - Potential Vegetation Conditions			
(%)	(miles)	(km)	% Shadier	% of Total	(miles)	(km)	% Shadier	% of Total
0-1	141	227	77.9%	22.1%	33	53	94.8%	22.1%
>1-2	73	117	66.6%	11.3%	29	46	90.3%	4.5%
>2-3	57	91	57.7%	8.8%	26	43	86.2%	4.1%
>3-4	78	126	45.4%	12.3%	26	58	80.5%	5.7%
>4-5	97	157	30.2%	15.2%	43	69	73.9%	6.7%
>5-6	127	204	10.3%	19.9%	76	122	62.0%	11.9%
>6-7	52	83	2.3%	8.1%	103	165	45.9%	16.0%
>7-8	10	17	0.6%	1.6%	177	284	18.3%	27.6%
>8-9	3	5	0.2%	0.5%	116	186	0.2%	18.1%
>9-10	1	2	0.0%	0.2%	1	2	0.0%	0.2%
Total:	639	1028			639	1028		

(% Shadier refers to the percentage of stream length shadier than the upper bound of the corresponding shade class)

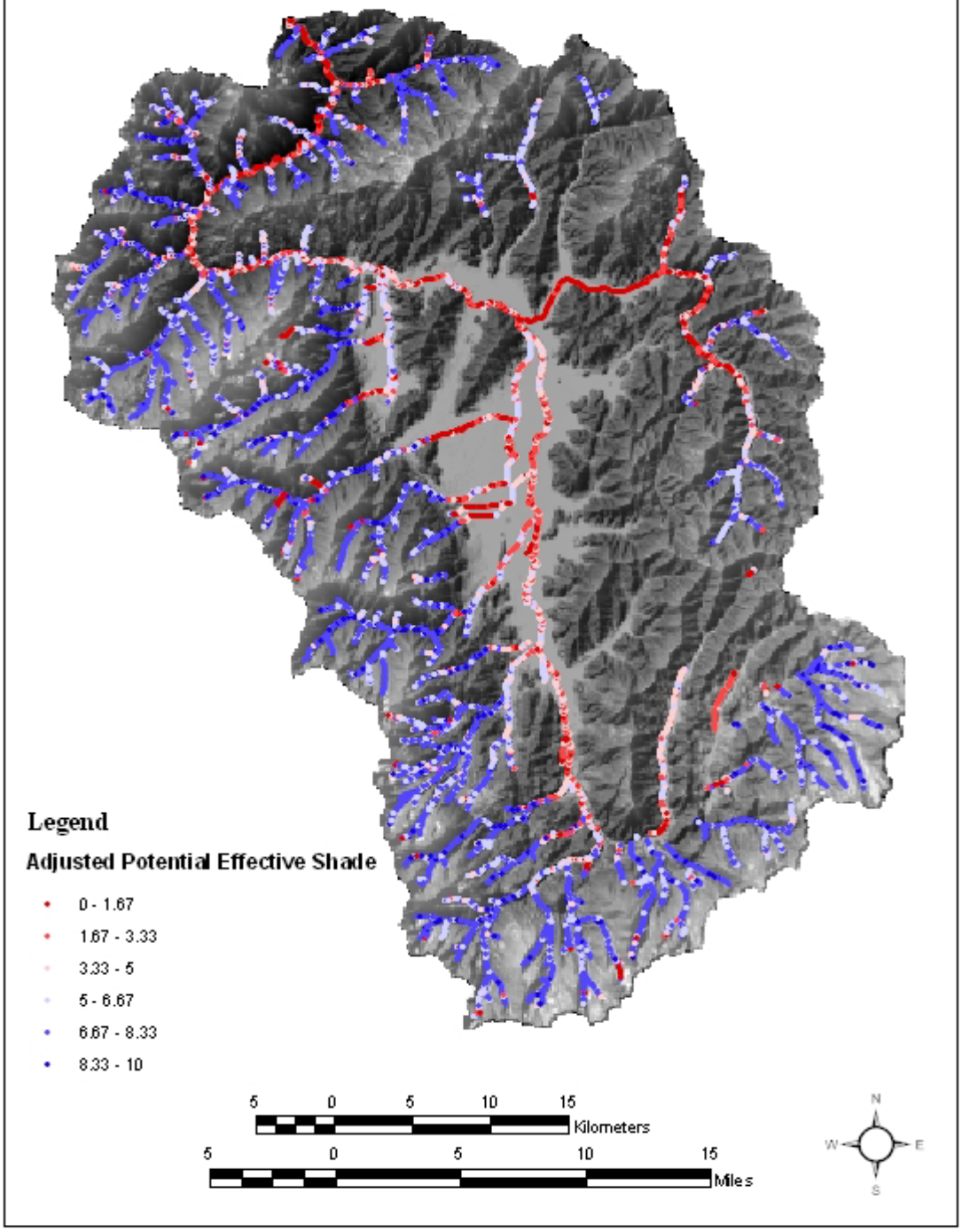


FIGURE 4-5 SCOTT RIVER TEMPERATURE LOAD ALLOCATIONS

Table 4-10 Scott River Sediment and Temperature TMDL Implementation Actions*		
Topic	**Responsible Parties**	**Actions**
Roads & Sediment Waste Discharges	• Parties Responsible for Roads and Sediment Waste Discharge Sites. • Regional Water Board.	• The Regional Water Board encourages parties responsible for roads and sediment waste discharge sites to take actions necessary to prevent, minimize, and control road-caused sediment waste discharges. Such actions may include the inventory, prioritization, control, monitoring, and adaptive management of sediment waste discharge sites and proper road inspection and maintenance. • The Regional Water Board's Executive Officer shall require parties responsible for roads, on an as-needed, site-specific basis, to develop and submit an Erosion Control Plan and a Monitoring Plan. An Erosion Control Plan shall describe, in detail, sediment waste discharge sites and how and when those sites are to be controlled. By September 8, 2008, criteria shall be developed for determining when an Erosion Control Plan shall be required, although nothing precludes the Executive Officer from requiring Erosion Control Plans prior to this date. • Should discharges or threatened discharges of sediment waste that could negatively affect the quality of waters of the State be identified in an Erosion Control Plan or by other means, dischargers shall be required to implement their Erosion Control Plan and monitor sediment waste discharge sites through appropriate permitting or enforcement actions.
Roads	• California Department of Transportation (Caltrans). • Regional Water Board.	• Regional Water Board staff shall evaluate the effects of Caltrans' state-wide NPDES permit, storm water permit, and waste discharge requirements (collectively known as the Caltrans Storm Water Program) by September 8, 2008. The evaluation shall determine the adequacy and effectiveness of the Caltrans Storm Water Program in preventing, reducing, and controlling sediment waste discharges and elevated water temperatures in the North Coast Region, including the Scott River watershed. If Regional Water Board staff find that the Caltrans Storm Water Program is not adequate and effective, Regional Water Board staff shall develop specific requirements, for State Water Board consideration, to be incorporated into the Caltrans Storm Water Program at the earliest opportunity, or the Regional Water Board shall take other appropriate permitting or enforcement actions.
Roads	• County of Siskiyou (County). • Regional Water Board.	• The Regional Water Board and the County shall work together to draft and finalize a Memorandum of Understanding (MOU) to address county roads in the Scott River watershed. The MOU shall be drafted and ready for consideration by the appropriate decision-making body(ies) of the County by September 8, 2008. The following items shall be addressed during MOU development: 1. A date for the initiation and completion of an inventory of all sediment waste discharge sites caused by county roads within the Scott River watershed, which can be done with assistance from the Five Counties Salmonid Conservation Program. 2. A date for the completion of a priority list of sediment waste discharge sites. 3. A date for the completion of a schedule for the repair and control of sediment waste discharge sites. 4. A date for the completion of a document describing the sediment control practices to be implemented by the County to repair and control sediment waste discharge sites, which can be done with assistance from the Five Counties Salmonid Conservation Program. 5. A description of the sediment control practices, maintenance practices, and other management measures to be implemented by the County to prevent future sediment waste discharges, which can be done with assistance from the Five Counties Salmonid Conservation Program. 6. A monitoring plan to ensure that the sediment control practices are implemented as proposed and effective at controlling discharges of sediment waste. 7. A commitment by the County to complete the inventory, develop the priority list, develop and implement the schedule, develop and implement sediment control practices, implement the monitoring plan, and conduct adaptive management.

Table 4-10 Scott River Sediment And Temperature TMDL Implementation Actions* (cont.)

Topic	Responsible Parties	Actions
Grading	• County of Siskiyou (County). • Regional Water Board.	• The Regional Water Board encourages the County to develop a comprehensive ordinance addressing roads, land disturbance activities, and grading activities outside of subdivisions in the Scott River watershed, or an equivalent County-enforceable mechanism, by September 8, 2008. The ordinance may be specific to the Scott River watershed or county-wide in scope.
Dredge Mining	• Regional Water Board.	• Regional Water Board staff shall review laws and regulations that address water quality effects of suction dredge mining and shall investigate the impact of suction dredge mining activities on sediment and temperature loads in the Scott River watershed by September 8, 2009. If Regional Water Board staff find that dredge mining activities are discharging deleterious sediment waste and/or resulting in elevated water temperatures, staff shall propose, for Board consideration, the regulation of such discharges through appropriate permitting or enforcement actions.
Temperature & Vegetation	• Parties Responsible for Vegetation that Shades Water Bodies. • Regional Water Board.	• The Regional Water Board encourages parties responsible for vegetation that provides shade to a water body in the Scott River watershed to preserve and restore such vegetation. This may include planting riparian trees, minimizing the removal of vegetation that provides shade to a water body, and minimizing activities that might suppress the growth of new or existing vegetation (e.g., allowing cattle to eat and trample riparian vegetation). • To address compliance with the Nonpoint Source Policy, the Regional Water Board shall develop and take appropriate permitting and enforcement actions to address the human-caused removal and suppression of vegetation that provides shade to a water body in the Scott River watershed. The Regional Water Board's Executive Officer shall report to the Regional Water Board on the status of the preparation and development of appropriate permitting and enforcement actions by September 8, 2009.
Water Use	• Water Users. • County of Siskiyou (County). • Stakeholders. • Regional Water Board.	• The Regional Water Board encourages water users to develop and implement water conservation practices. • The Regional Water Board requests the County, in cooperation with other appropriate stakeholders, to study the connection between groundwater and surface water, the impacts of groundwater use on surface flow and beneficial uses, and the impacts of groundwater levels on the health of riparian vegetation in the Scott River watershed. The study should: (1) consider groundwater located both within and outside of the interconnected groundwater area delineated in the Scott River Adjudication,** (2) the amount of water transpired by trees and other vegetation, and (3), if deleterious impacts to beneficial uses are found, identify potential solutions including mitigation measures and changes to management plans. • Should the County determine that it and its stakeholders are able to commit to conducting the above study, the County, in cooperation with other stakeholders, shall develop a study plan by September 8, 2007. The study plan shall include: (1) goals and objectives; (2) data collection methods; (3) general locations of data collection sites; (4) data analysis methods; (5) quality control and quality assurance protocols; (6) responsible parties; (7) timelines and due dates for data collection, data analysis, and reporting; (8) financial resources to be used; and (9) provisions for adaptive change to the study plan and to the study based on additional study data and results, as they are available.
Flood Control & Bank Stabilization	• Parties Responsible for Flood Control Structures or Dredge, Fill, and/or Bank Stabilization Activities. • Regional Water Board.	• The Regional Water Board encourages parties responsible for levees and other flood control structures to plant and restore stream banks on and around existing flood control structures. • The Regional Water Board shall rely on existing authorities and regulatory tools, such as the 401 Water Quality Certification program, to ensure that flood control and bank stabilization activities in the Scott River watershed are conducted in a manner that minimizes the removal or suppression of vegetation that provides shade to a water body, prevents or minimizes sediment delivery, and minimizes changes in channel morphology that could increase water temperatures.

Table 4-10 Scott River Sediment And Temperature TMDL Implementation Actions* (cont.)

Topic	Responsible Parties	Actions
Timber Harvest	• Private & Public Parties Conducting Timber Harvest Activities. • Habitat Conservation Plan Holders. • Regional Water Board.	• The Regional Water Board shall use appropriate permitting and enforcement tools to regulate discharges from timber harvest activities in the Scott River watershed, including, but not limited to, cooperation with, and participation in, the California Department of Forestry and Fire Protection's timber harvest project approval process. • The Regional Water Board shall use, where applicable, general or specific waste discharge requirements and waivers of waste discharge requirements to regulate timber harvest activities on private and public lands in the Scott River watershed. • Timber harvest activities on private lands in the Scott River watershed are not eligible for Categorical Waiver C included in the Categorical Waiver of Waste Discharge Requirements for Discharges Related to Timber Harvest Activities on Non-Federal Lands in the North Coast Region (Order No. R1-2004-0016, as it may be amended or updated for time to time) simply through the adoption of this TMDL Action Plan. However, timber harvest activities on private lands in the Scott River watershed may be eligible for Categorical Waivers A, B, D, E, and F, as appropriate. • Where a Habitat Conservation Plan (HCP) is developed, Regional Water Board staff shall work with the HCP holder to develop, for Board consideration, ownership-wide waste discharge requirements for activities covered by the HCP, with any additional restrictions necessary to protect water quality and beneficial uses. • If current laws and regulation governing timber harvest (e.g., the Forest Practice Rules) are changed in a manner that reduces water quality protections, the Regional Board will use its authorities to maintain at a minimum the current level of water quality protection.
U.S. Forest Service & U.S. Bureau of Land Management	• U.S. Forest Service (USFS). • U.S. Bureau of Land Management (BLM). • Regional Water Board.	• The Regional Water Board and federal land management agencies, including the USFS and the BLM, shall work together to draft and finalize Memoranda of Understanding (MOU) that shall address sediment waste discharges, elevated water temperatures, and grazing activities within the Scott River watershed. The MOUs shall be drafted and ready for consideration by the appropriate decision-making body(ies) by September 8, 2008. The following items shall be addressed during MOU development: Contents Related to Sediment Waste Discharges: 1. A date for the completion of an inventory of all significant sediment waste discharge sites and all roads on USFS/BLM land. 2. A date for the completion of a priority list. 3. A date for the completion of a schedule for the repair and control of significant sediment waste discharge sites. 4. A date for the completion of a document describing the sediment control practices to be implemented by the USFS/BLM to repair and control sediment waste discharge sites. 5. A description of sediment control practices, road maintenance practices, and other management measures to be implemented by the USFS/BLM to prevent or minimize future sediment waste discharges. 6. A monitoring plan to ensure that sediment control practices are implemented as proposed and are effective at controlling discharges of sediment waste. 7. A commitment by the USFS/BLM to complete the inventory, develop the priority list, develop and implement the schedule, develop and implement sediment control practices, implement the monitoring plan, and conduct adaptive management. Contents Related to Elevated Water Temperatures: 8. A commitment by the USFS/BLM to continue to implement the Riparian Reserve buffer width requirements. 9. A monitoring plan to ensure that the Riparian Reserve buffer widths are effective at preventing or minimizing effects on natural shade. 10. A commitment by the USFS/BLM to implement the Riparian Reserve monitoring plan and conduct adaptive management.

Table 4-10 Scott River Sediment And Temperature TMDL Implementation Actions* (cont.)

Topic	Responsible Parties	Actions
U.S. Forest Service & U.S. Bureau of Land Management	• U.S. Forest Service (USFS). • U.S. Bureau of Land Management (BLM). • Regional Water Board.	Continued from previous page. Contents Related to Grazing Activities: 11. A date for the completion of a description of grazing management practices and riparian monitoring activities implemented in grazing allotments on USFS/BLM lands. 12. A commitment by the USFS/BLM and the Regional Water Board to determine if existing grazing management practices and monitoring activities are adequate and effective at preventing, reducing, and controlling sediment waste discharges and elevated water temperatures. 13. A commitment by the USFS/BLM to develop revised grazing management practices and monitoring activities, should existing measures be inadequate or ineffective, subject to the approval of the Regional Water Board's Executive Officer. 14. A commitment by the USFS/BLM to implement adequate and effective grazing management practices and monitoring activities and to conduct adaptive management.
Grazing	• Private Parties Conducting Grazing Activities. • Regional Water Board.	• The Regional Water Board encourages the parties responsible for grazing activities to take necessary actions to prevent, minimize, and control sediment waste discharges and elevated water temperatures. • The Regional Water Board's Executive Officer shall require parties responsible for grazing activities on private lands in the Scott River watershed to develop, submit, and implement a Grazing and Riparian Management Plan and a Monitoring Plan on an as-needed, site-specific basis. A Grazing and Riparian Management Plan shall describe, in detail, (1) sediment waste discharges and sources of elevated water temperatures caused by livestock grazing, (2) how and when such sources are to be controlled and monitored, and (3) management practices that will prevent and reduce future sources. By September 8, 2008, criteria shall be developed for determining when a Grazing and Riparian Management Plan shall be required, although nothing precludes the Executive Officer from requiring Grazing and Riparian Management Plans prior to this date. • Should human activities that will likely result in sediment waste discharges and/or elevated water temperatures be proposed or identified, through a Grazing and Riparian Management Plan or by other means, the responsible party(ies) shall be required to implement their Grazing and Riparian Management Plans and monitor through appropriate permitting or enforcement actions.
Siskiyou RCD & Scott River Watershed Council	• Siskiyou Resource Conservation District (SRCD). • Scott River Watershed Council (SRWC). • Regional Water Board.	• The Regional Water Board and staff shall increase efforts to work cooperatively with the SRCD and SRWC to provide technical support and information to landowners and stakeholders in the Scott River watershed and to coordinate educational and outreach efforts. • The Regional Water Board shall encourage the SRWC to (1) implement the strategic actions specified in the Strategic Action Plan and (2) assist landowners in developing and implementing management practices that are adequate and effective at preventing, minimizing, and controlling sediment waste discharges and elevated water temperatures.
Natural Resources Conservation Service and University of California Cooperative Extension	• Natural Resources Conservation Service (NRCS). • University of California Cooperative Extension (UCCE) • Regional Water Bd	• The Regional Water Board shall increase efforts to work cooperatively with the NRCS and UCCE to provide technical support and information to responsible parties and stakeholders in the Scott River watershed and to coordinate educational and outreach efforts.
CA Dept. of Fish and Game	• CA Depart. of Fish & Game (CDFG). • Regional Water Board.	• The Regional Water Board shall encourage the CDFG and aid, where appropriate, in the implementation of necessary tasks, actions, and recovery recommendations as specified in the Recovery Strategy for California Coho Salmon (CDFG 2004) in the Scott River watershed.

* Although the Regional Water Board prefers to pursue the implementation actions listed in Table 4-10, the Regional Water Board shall take appropriate permitting and/or enforcement actions should any of the implementation actions fail to be implemented by the responsible party or should the implementation actions prove to be inadequate.

** Superior Court of Siskiyou County. 1980. Scott River Adjudication: Decree No. 30662.

IX. Glossary

Adjusted Potential Effective Shade:
The percentage of direct beam solar radiation attenuated and scattered before reaching the ground or stream surface from the potential vegetation conditions, reduced by 10% to account for natural disturbances such as fire, windthrow, disease, and earth movements that reduce the actual riparian vegetation below the site potential.

Compliance and Trend Monitoring:
Monitoring intended to determine, on a watershed scale, if water quality standards are being met, and to track progress towards meeting water quality standards.

Effective Shade:
The percentage of direct beam solar radiation attenuated and scattered before reaching the ground or stream surface from topographic and vegetation conditions.

Groundwater Accretion:
The gradual increase in surface flow in a stream resulting from the influx of groundwater.

Implementation Monitoring:
Monitoring used to assess whether activities and control practices were carried out as planned. This type of monitoring can be as simple as photographic documentation, provided that the photographs are adequate to represent and substantiate the implementation of control practices.

Instream Effectiveness Monitoring:
Monitoring of instream conditions to assess whether sediment control practices are effective at keeping waste sediment from being discharged to a water body. Instream effectiveness monitoring may be conducted upstream and downstream of the discharge point or before, during, and after the implementation of sediment control practices.

Potential Vegetation Conditions:
The most advanced seral stage that nature is capable of developing and making actual at a site in the absence of human interference. Seral stages are the series of plant communities that develop during ecological succession from bare ground to the climax community (e.g., fully mature, old-growth).

Road:
Any vehicle pathway, including, but not limited to: paved roads, dirt roads, gravel roads, public roads and highways, private roads, rural residential roads and driveways, permanent roads, temporary roads, seasonal roads, inactive roads, trunk roads, spur roads, ranch roads, timber roads, skid trails, and landings which are located on or adjacent to a road.

Salmonids:
Fish species in the family Salmonidae, including but not limited to, salmon, trout, and char.

Sediment:
Any inorganic or organic earthen material, including, but not limited to: soil, silt, sand, clay, and rock.

Sediment Waste:
Sediment that is generated directly or indirectly by anthropogenic activities or projects.

Sediment Waste Discharge Site:
An individual, anthropogenic erosion site that is currently discharging or has the potential to discharge sediment waste to waters of the State.

Thermal Refugia:
Colder areas within a water body that provide cold water refuge from unsuitably warm water.

Timber Harvest Activities:
Commercial and non-commercial activities relating to forest management and timberland conversions. These activities include the cutting or removal of both timber and other solid wood forest products, including Christmas trees. These activities include, but not limited to, construction, reconstruction and maintenance of roads, fuel breaks, firebreaks, watercourse crossings, landings, skid trails, or beds for the falling of trees; fire hazard abatement and fuel reduction activities; burned area rehabilitation; and site preparation that involves disturbance of soil or burning of vegetation following timber harvesting activities; but excluding preparatory tree marking, surveying, or road flagging.

Upslope Effectiveness Monitoring:
Monitoring intended to determine, by assessing upslope conditions, if sediment control practices are effective at keeping waste sediment from being discharged to a water body. This type of monitoring can be as simple as photographic documentation, provided that the photographs are adequate to represent and substantiate that the sediment control practices are effective.

ACTION PLAN FOR THE SHASTA RIVER WATERSHED TEMPERATURE AND DISSOLVED OXYGEN TOTAL MAXIMUM DAILY LOADS[19]

The Shasta River watershed (CalWater Hydrologic Area 105.50), which includes all tributaries and Lake Shastina, comprises approximately 508,734 acres (795 mi^2) in Siskiyou County. The Shasta River is tributary to the Klamath River. This Action Plan for the Shasta River Temperature and Dissolved Oxygen Total Maximum Daily Loads, hereinafter known as the Shasta River TMDL Action Plan, includes temperature and dissolved oxygen total maximum daily loads (TMDLs) and describes the implementation actions necessary to achieve the TMDLs and attain water quality standards in the Shasta River watershed. The goal of the Shasta River TMDL Action Plan is to achieve the TMDLs, and thereby achieve dissolved oxygen and temperature related water quality standards, including the protection of the beneficial uses of water in the Shasta River watershed.

The Shasta River TMDL Action Plan sets out the loads and conditions to be considered and incorporated into regulatory and non-regulatory actions in the Shasta River watershed. The Shasta River TMDL Action Plan is not directly and independently enforceable, except as incorporated into appropriate permitting or enforcement orders.

A glossary defining key terms (**bolded first time used**) is located at Part IX of this Action Plan.

I. Problem Statement

The Shasta River watershed was listed as impaired for organic enrichment/dissolved oxygen in 1992, and as impaired for temperature in 1994, pursuant to Section 303(d) of the Clean Water Act. These listings were confirmed in the TMDL analysis. Dissolved oxygen concentrations are regularly too low to comply with the Basin Plan dissolved oxygen objectives. Water temperature conditions regularly exceed temperature thresholds protective of **salmonids**.

Low dissolved oxygen concentrations and elevated water temperatures in the Shasta River, its tributaries, and Lake Shastina have resulted in degraded water quality conditions that do not meet applicable water quality objectives and that impair designated beneficial uses. The designated beneficial uses that are not fully supported include: cold freshwater habitat (COLD); rare, threatened, and endangered species (RARE); migration of aquatic organisms (MIGR); and spawning, reproduction, and/or early development of fish (SPWN); commercial and sport fishing (COMM); and contact and non-contact water recreation (REC-1 and REC-2). The designated beneficial uses associated with the cold freshwater salmonid fishery (COMM, COLD, RARE, MIGR, SPWN) are the designated beneficial uses most sensitive to the dissolved oxygen and water temperature impairments. Important species in the Shasta River watershed include coho and chinook salmon, trout, and lamprey. These, as well as green sturgeon, are also significant species in the Klamath River.

The Klamath River, to which the Shasta River is a major tributary, is also listed as impaired for low dissolved oxygen, high water temperature, and high nutrient levels. The Klamath River has additional beneficial uses that are not designated for the Shasta River that may be adversely affected by inputs from the Shasta River. These beneficial uses include the Native American cultural use (CUL) that supports cultural and traditional rights of indigenous people, such as ceremonial uses, and the subsistence fishing use (FISH).

II. Watershed Restoration Efforts

Throughout the Shasta River watershed, many individuals, groups, and agencies have been working to enhance and restore fish habitat and water quality. These groups include, but are not limited to, the Shasta Valley Resource Conservation District, the Shasta River Coordinated Resources Management and Planning Committee, private timber companies, the Natural Resource Conservation Service, Siskiyou County and the Five Counties Salmonid Conservation Program, the California Department of Fish and Game, the California Department of Water Resources, the United States Forest Service, and the Klamath River Basin Fisheries Task Force. The past and present efforts of these stakeholders have improved water quality conditions in the Shasta River and its tributaries.

[19] Adopted by the North Coast Regional Water Quality Control Board on June 29, 2006. Adopted by the State Water Resources Control Board on November 15, 2006. Approved by the State Office of Administrative Law on January 9, 2007. Approved by the United States Environmental Protection Agency on January 26, 2007.

III. Temperature

A. Shasta River Temperature Source Analysis

The Shasta River temperature source analysis identifies the sources (or factors) that affect the temperature of the Shasta River watershed. Five primary factors have been identified as affecting stream temperatures in the Shasta River watershed. Human activities have affected, or have a potential to affect, each of these factors. The factors include:

- Reduced stream shade resulting from agricultural practices including grazing and livestock activities;
- **Tailwater return flows**;
- Flow modification and diversion;
- Spring inflow; and
- Lake Shastina and minor channel impoundments.

In addition, microclimate alterations resulting from near-stream vegetation removal may increase temperatures, where microclimates exist. Changes in channel geometry from natural conditions can also negatively affect water temperatures. These factors have not been quantified for the Shasta River temperature TMDL.

B. Shasta River Temperature TMDL

The "loading capacity" refers to the total loading of a pollutant that a water body can assimilate and still meet water quality objectives and protect beneficial uses. For the temperature TMDL the water quality objective of concern is the temperature objective, which prohibits the alteration of the natural receiving water temperature unless such alteration does not adversely affect beneficial uses. The loading capacity provides a reference for calculating the amount of pollutant load reduction needed to bring a water body into compliance with standards. The starting point for the load allocation analysis is the equation that describes the Total Maximum Daily Load or loading capacity:

TMDL = Loading Capacity = ΣWLAs + ΣLAs
+ Natural Background

where Σ = the sum, WLAs = waste load allocations, and LAs = load allocations. Waste load allocations are contributions of a pollutant from point sources, while load allocations are contributions from management-related non-point sources. There are no point source heat loads in the Shasta River watershed, and therefore no waste load allocations apply.

The Shasta River watershed temperature TMDL loading capacity is equal to the **potential percent solar radiation transmittance** for the mainstem Shasta River below Dwinnell Dam, **adjusted potential effective shade** for the Shasta River above Dwinnell Dam and on tributaries, no net increase in receiving water temperature from tailwater return flows, and a flow regime that results in reductions in maximum daily temperature of 1.5°C, 1.2°C, and 2.1°C for compliance points at river miles (RM) 24.1, 15.5, and 5.6, respectively.

The TMDL equation is:

TMDL = Loading Capacity =
Potential Percent Solar Radiation Transmittance of the Shasta River
+ Adjusted Potential Effective Shade of the Tributaries
+ No Net Increase in Temperature from Tailwater Return Flows
+ Flow Increases that Achieved Specific Temperature Reductions at Compliance Locations.

C. Shasta River Temperature Load Allocations

In accordance with the Clean Water Act, the Shasta River temperature TMDL is allocated to sources of elevated water temperature in the watershed. As there are no known point source heat loads to the Shasta River, the TMDL is allocated among the non-point source heat loads in the watershed. The non-point sources include (1) solar heat load (i.e., sunlight) at streamside (riparian) locations in the watershed, (2) heat load from tailwater return flows, and (3) reduced assimilative capacity from surface water flow reductions.

In order to quantify the part of the TMDL focused on solar heat loads that arise from changes in streamside vegetation, and to be able to compare it to current conditions, two surrogate measures are used: (1) potential percent solar radiation transmittance at locations along the mainstem Shasta River below Dwinnell Dam, and (2) adjusted potential effective shade at locations upstream of Dwinnell Dam and along tributary streams (see Glossary). Landowners and operators in the mainstem Shasta River below Dwinnell Dam are allocated loads equal to potential percent solar radiation transmittance, as tabulated in Table 4-11 and depicted in Figure 4-6. Landowners and operators on the Shasta River above Dwinnell Dam

FIGURE 4-6 EXISTING (BASELINE) AND POTENTIAL SOLAR RADIATION TRANSMITTANCE FOR THE LEFT BANK (A) AND RIGHT BANK (B) OF THE SHASTA RIVER

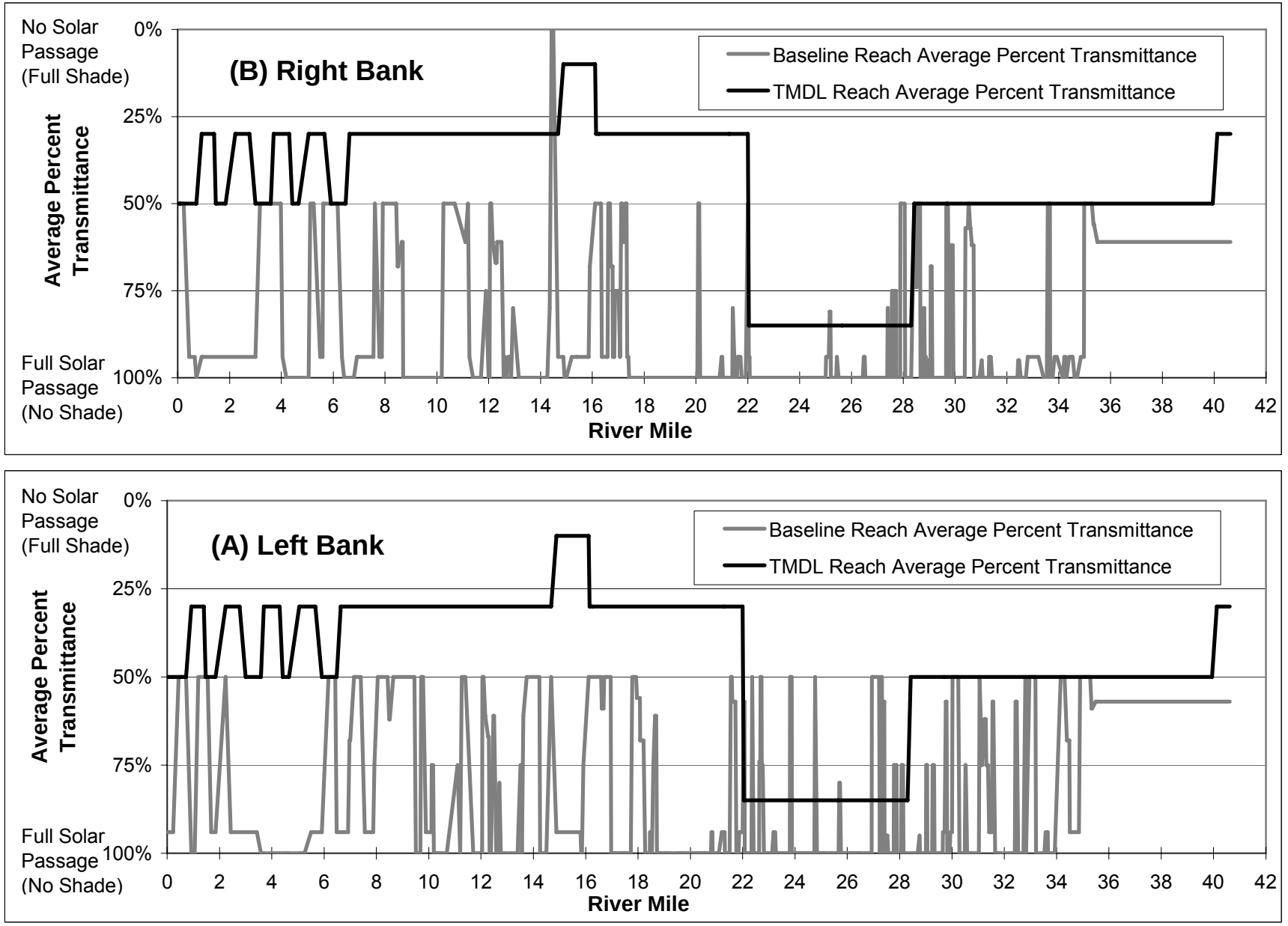


Table 4-11 Solar Heat Load Allocations for the Mainstem Shasta River, Expressed as the potential percent solar radiation transmittance by river reach.

River Reach	Upstream River Mile	Downstream River Mile	Potential Reach Average Percent Transmittance[1]
Dwinnell Dam to Riverside Road	40.6	39.9	30
Riverside Road to u/s of A12	39.9	28.3	50
U/S of A12 to near DeSoza Lane	28.3	22.0	85
Near DeSoza Lane to u/s of Montague-Grenada Road	22.0	16.1	30
Near Montague-Grenada Road	16.1	14.6	10
D/S Montague-Grenada Road to Hwy 263	14.6	7.3	30
Hwy 263 to mouth	7.3	0	30 to 50[2]

[1] Daylight-hour average percent transmittance for given reach.
[2] Alternates between 30% and 50%.

Table 4-12 Shasta River Watershed Temperature Load Allocations

Source	Allocation
Change in Riparian Vegetation	***Shasta River below Dwinnell Dam***: Reach average potential solar radiation transmittance, as presented in Table 4-11 and Figure 4-6. ***Shasta River above Dwinnell Dam and Tributaries***: Adjusted potential effective shade = 90% of site potential effective shade.
Irrigation Return Flow	No net increase in receiving water temperature.
Surface Water Flow	Reductions in the maximum daily stream temperatures of 1.5°C, 1.2°C, and 2.1°C from baseline at RM 24.1, RM 15.5, and RM 5.6

and on tributaries are allocated loads equal to adjusted potential effective shade, which is equal to 90% of site potential shade, to allow for natural riparian disturbances such as floods, wind throw, disease, landslides, and fire. The load allocation for tailwater return flow sources within the Shasta River watershed is a zero net increase in receiving water temperature.

The load allocation for surface water flow is a reduction in the maximum daily stream temperatures of 1.5°C, 1.2°C, and 2.1°C from baseline at RM 24.1, RM 15.5, and RM 5.6, respectively. These are the temperature compliance locations for the TMDL.

Table 4-12 summarizes the temperature load allocations for the Shasta River watershed.

D. Shasta River Temperature Margin of Safety, Seasonal Variations, and Critical Conditions

The temperature TMDL includes an implicit margin of safety, based on conservative assumptions and uncertainties. The **water quality compliance model scenario** incorporated temperature reductions from Big Springs Creek and Parks Creek to account for improvements associated with riparian shade and tailwater management, but did not incorporate temperature reductions from Yreka Creek and other small tributaries to the Shasta River, and provides a margin of safety. Topographic shade was not considered in the temperature model and is likely a factor in the Shasta canyon, and provides a margin of safety. Some improvements in stream temperature that may result from reduced **sediment** inputs are not quantified. Reduced sediment loads could lead to increased frequency and depth of pools, independent of changes in solar radiation input. These changes tend to result in lower stream temperatures overall and increase the amount of lower temperature pool habitat. These expected changes are not directly accounted for in the TMDL. Finally, the effects of changes to streamside riparian areas toward mature trees will tend to create microclimates that will lead to improvements in stream temperatures. These effects were not accounted for in the temperature analysis and provide a margin of safety.

To account for annual and seasonal variability, the Shasta River temperature TMDL analysis evaluated temperatures and thermal processes from late-spring through mid-fall, considered the most critical time period for the most sensitive beneficial uses.

The critical period, defined as May 15 to October 15, accounts for seasonal variation and provides an implicit margin of safety because during this period the air temperature is above average, the flow is below average, and the most sensitive beneficial uses – SPWN and COLD – are present. Sensitive life stages exist in Shasta River watershed throughout the year, but summer water temperatures represent the most critical conditions with respect to temperature and the most sensitive beneficial uses.

IV. Dissolved Oxygen

A. Shasta River Dissolved Oxygen Source Analysis

Dissolved oxygen levels in surface waters are controlled by a number of interacting processes including: photosynthesis, respiration, **carbonaceous deoxygenation**, **nitrogenous deoxygenation** and nitrification, reaeration, **sediment oxygen demand (SOD)**, water temperature, salinity, flow, and atmospheric pressure. The primary processes affecting dissolved oxygen concentrations in the Shasta River watershed are photosynthesis and respiration of aquatic plants, nitrogenous deoxygenation (termed **nitrogenous biochemical oxygen demand** or NBOD), and sediment oxygen demand. The following anthropogenic sources or factors, in no special order, adversely affect dissolved oxygen conditions in the Shasta River:

- Tailwater return flows;
- City of Yreka nonpoint and wastewater infiltration sources;
- Lake Shastina and minor impoundments;
- Agricultural practices including grazing and livestock activities that reduce riparian shade and deliver oxygen consuming materials to surface waters; and
- Flow modification and diversion.

B. Shasta River Dissolved Oxygen TMDL

The dissolved oxygen "loading capacity" of the Shasta River is the total net daily oxygen demand that results in attainment of the dissolved oxygen objectives. For the dissolved oxygen TMDL the water quality objective of concern is the minimum dissolved oxygen objective of 7.0 mg/L for the Shasta River. There are no known point sources of oxygen-demanding constituents to the Shasta River and tributaries. Each of the components that exert an oxygen demand on the Shasta River is attributed to nonpoint sources, and includes respiration of aquatic plants, SOD, and NBOD.

The dissolved oxygen loading capacity of the Shasta River is 12,353 pounds of oxygen demand per day, and is expressed as the following Shasta River dissolved oxygen TMDL equation:

TMDL = Loading Capacity = 12,353 lbs O_2/day

C. Shasta River Dissolved Oxygen Load Allocations

In accordance with the Clean Water Act, the Shasta River dissolved oxygen TMDL is allocated to the sources of oxygen demand in the watershed. There are no known point sources of oxygen-demanding constituents in the Shasta River watershed, and therefore the waste load allocation is set to zero. Therefore, the TMDL includes oxygen demand from natural and non-point anthropogenic sources. The load allocations are assigned to reaches of the Shasta River as identified in Table 4-13, and account for the total net daily oxygen demand for the designated river reaches. Responsibility for meeting these river reach allocations is assigned to the landowners whose operations contribute to water quality conditions within the specified reaches. In addition to these river-reach load allocations, allocations are applied to several river inputs that require NBOD reductions in order to achieve water quality compliance, including Dwinnell Dam outflow, Yreka Creek, and tailwater return flow. These allocations are assigned as NBOD concentrations of 0.91 mg/L for both Dwinnell Dam outflow and Yreka Creek, and 0.85 mg/L for all tailwater return flow.

Meeting the dissolved oxygen TMDL and load allocations requires:

- Fifty percent reduction in respiration rates of instream aquatic plants;
- Fifty percent reduction in SOD rates behind minor impoundments;
- Reduced NBOD input concentrations; and
- Increased dedicated cold water instream surface water flow.

D. Shasta River Dissolved Oxygen Margin of Safety, Seasonal Variations, and Critical Conditions

The TMDL includes an implicit margin of safety to account for uncertainties in the analysis and because conservative assumptions are used in the TMDL analysis. The water quality compliance model

Table 4-13 Shasta River TMDL River Reach Load Allocations and Total Oxygen Demand Reductions Needed for Water Quality Compliance

REACH	Reach Length (mi)	Hourly Demand Existing (Baseline) Conditions (lbs/hr)	Hourly Demand Water Quality Compliance Conditions (lbs/hr)	Reduction In Oxygen Demand Needed To Achieve Water Quality Compliance	
				(lbs/hr)	%
Dwinnell Reservoir - Riverside Drive	0.7	(12)	(8)	4	30%
Riverside Drive - Parks Creek	5.0	(72)	(40)	32	44%
Parks Creek - Big Springs Creek	1.3	(33)	(21)	13	38%
Big Springs Creek - Highway A-12	9.6	(331)	(217)	114	35%
Highway A-12 - Shasta River @ Freeman Lane	5.0	(147)	(93)	54	37%
Shasta River @ Freeman Lane - DWR Weir	3.6	(73)	(39)	33	46%
DWR Weir - Yreka-Ager Road	4.4	(62)	(31)	31	50%
Yreka-Ager Road - Anderson Grade Road	3.1	(52)	(27)	26	49%
Anderson Grade Road - Mouth	8.1	(77)	(39)	38	49%

REACH	Reach Length (mi)	24 Hour Demand Existing (Baseline) Conditions (lbs/day)	24 Hour Demand Water Quality Compliance Conditions (lbs/day)	Reduction In Oxygen Demand Needed To Achieve Water Quality Compliance	
				(lbs/day)	%
Dwinnell Reservoir - Riverside Drive	0.7	(285)	(198)	87	30%
Riverside Drive - Parks Creek	5.0	(1,722)	(957)	765	44%
Parks Creek - Big Springs Creek	1.3	(797)	(494)	304	38%
Big Springs Creek - Highway A-12	9.6	(7,937)	(5,197)	2,741	35%
Highway A-12 - Shasta River @ Freeman Lane	5.0	(3,529)	(2,226)	1,303	37%
Shasta River @ Freeman Lane - DWR Weir	3.6	(1,749)	(947)	803	46%
DWR Weir - Yreka-Ager Road	4.4	(1,492)	(749)	743	50%
Yreka-Ager Road - Anderson Grade Road	3.1	(1,253)	(637)	616	49%
Anderson Grade Road - Mouth	8.1	(1,857)	(948)	909	49%

scenario, which is the basis for the dissolved oxygen TMDL, includes a 50% reduction of sediment oxygen demand only at locations behind minor impoundments in the Shasta River. Fine sediment and organic material load reductions from tailwater return flows that can be achieved via controls targeting NBOD reductions would result in reductions in sediment oxygen demand in the entire river, not just behind impoundments. This represents a margin of safety. In addition, the water quality compliance model scenario does not include **biochemical oxygen demand** (CBOD) concentration reductions. Controls targeting NBOD reductions from tailwater return flows, Dwinnell Dam outflow, and Yreka Creek would result in reductions in CBOD concentrations, and provide a margin of safety.

The dissolved oxygen analysis was conducted for the period from late-spring through mid-fall. This critical period, defined as May 15 to October 15, accounts for seasonal variation and provides an implicit margin of safety because during this period the air temperature is above average, the flow is below average, and the most sensitive beneficial uses – SPWN and COLD – are present. Sensitive life stages exist in the Shasta River watershed throughout the year, but summer conditions represent the most critical conditions with respect to dissolved oxygen. This critical period also corresponds to the time of greatest photoperiod and highest water temperature, both of which contribute to low dissolved oxygen concentrations. To account for the possibility that excursions below the TMDL may occur during periods of time other than the critical period, the TMDL is established as a year-round load.

V. Implementation

Specific implementation actions that the Regional Water Board and other responsible parties shall pursue to achieve the TMDLs and meet the dissolved oxygen and temperature related water quality standards in the Shasta River and tributaries are described in Table 4-14. Table 4-14 is organized by source or land use activity, and responsible party(ies) considered appropriate to implement TMDL actions. Responsible parties may find that more than one implementation action is applicable to their circumstances. Action items are fully independent from each other and require 100% implementation within each Source or Land Use category. The implementation actions are designed to encourage and build upon on-going, proactive restoration and enhancement efforts in the watershed. Additionally, the implementation actions described in Table 4-14 are necessary to comply with the California's Nonpoint Source Pollution Control Program (NPS Policy), and include the five required key elements as described in the NPS Policy.

The Regional Water Board hereby waives the requirement to file a Report of Waste Discharge (RWD) and obtain Waste Discharge Requirements (WDR), pursuant to Water Code section 13269, for discharges addressed by this Action Plan for dischargers that choose to participate in the on-going collaborative programs and implement recommended measures as applicable, as described in Table 4-14. Should a discharger choose not to participate, or if the Regional Water Board's Executive Officer determines additional measures are necessary and provides the discharger with written notice to that effect, the discharger must submit a Report of Waste Discharge (RWD) and filing fee to the Regional Water Board immediately or in accordance with the written notice.

If the implementation actions identified in Table 4-14 fail to be implemented by the responsible party or if the implementation actions prove to be inadequate the Regional Water Board shall take additional permitting and/or enforcement actions, as necessary. The State and Regional Water Boards shall require compliance with the conditions pursuant to which the waiver is granted. This conditional waiver shall not apply to any discharges for which a WDR, waiver, or prohibition is issued under a separate action of the Board. This conditional waiver expires upon Regional Water Board adoption of a superseding regulatory action after the evaluation period specified below for each source category, or after five years, whichever occurs first. This waiver is conditional and may be terminated at any time by the State or Regional Water Board.

VI. Enforcement

The Regional Water Board shall take enforcement actions for violations of the Shasta River TMDL Action Plan where elements of the TMDL Action Plan are made enforceable restrictions in a specific permit or order, as appropriate. If necessary, Regional Water Board staff may propose appropriate enforcement actions for human activities that result in discharges, including but not limited to the removal or suppression of vegetation that provides shade to a water body in the Shasta River

watershed. Enforcement implementation is ongoing. Nothing in this TMDL Action Plan precludes actions to enforce any directly applicable prohibition or provisions found elsewhere in the Basin Plan or to require clean up and abatement of existing sources of pollution where appropriate.

VII. Monitoring

Monitoring is important for determining the success of the TMDL Action Plan in achieving dissolved oxygen and temperature water quality standards. Monitoring shall be conducted upon the request of the Regional Water Board's Executive Officer in conjunction with existing and/or proposed human activities that will likely result in increased dissolved oxygen and reduced water temperatures in the Shasta River watershed. Monitoring may involve implementation, upslope effectiveness, photo documentation, instream and near-stream effectiveness (e.g. riparian buffer establishment affecting nutrient discharges), and/or **compliance and trend monitoring** (e.g. temperature and dissolved oxygen, Potential Percent Solar Radiation Transmittance, time predicated dissolved oxygen sampling, nutrients, sediment oxygen demand, nitrates and nitrites, and any other parameters reflective of improvements toward achieving the TMDL). Monitoring parameters and frequency, numeric and narrative objectives, and other appropriate metrics shall be based on locations consistent with those reaches representative of the TMDL.

The Regional Water Board's Executive Officer will base the decision to require monitoring on site-specific conditions, the size and location of the discharger's ownership, and/or the type and intensity of land uses being conducted or proposed by the discharger. If monitoring is required, the Regional Water Board's Executive Officer may direct the discharger to develop a monitoring plan and may describe specific monitoring requirements to include in the plan.

VIII. Reassessment and Adaptive Management

The Regional Water Board will review, reassess, and possibly revise the Shasta River TMDL Action Plan. Reassessment is likely to occur every three years during the Basin Planning Triennial Review process. Regional Water Board staff will report to the Regional Water Board at least yearly on the status and progress of implementation activities, and on whether current efforts are reasonably calculated and on track to achieve water quality standards. In addition to the evaluation periods for individual source categories specified in Table 4-14, Regional Water Board staff will conduct a comprehensive and formal assessment of effectiveness of collaborative efforts in the on-going programs and additional efforts recommended by the Action Plan within five years from the date of EPA approval (by January 26, 2012). A more extensive reassessment will occur ten years from the date the TMDL Action Plan is effective, or sooner, if the Regional Water Board determines it necessary. During reassessment, the Regional Water Board is likely to consider how effective the requirements of the TMDL Action Plan are at meeting the TMDLs, achieving dissolved oxygen and temperature water quality objectives, and protecting the beneficial uses of water in the Shasta River watershed.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Range and Riparian Land Management	• Parties Conducting Grazing Activities • Landowners and managers owning and operating property adjacent to the Shasta River and its tributaries	**Landowner/User Actions:** Landowners should employ land stewardship practices and activities that minimize, control, and preferably prevent discharges of fine sediment, nutrients, and other oxygen consuming materials from affecting waters of the Shasta River and tributaries. Landowners should also employ land stewardship practices and activities that minimize, control, and preferably prevent elevated solar radiation loads from affecting waters of the Shasta River and its **Class I and II tributaries**. Those that oversee and manage grazing and range land activities in the Shasta River watershed should implement the applicable management measures for agriculture and grazing from the following sources: • *Policy for the Implementation and Enforcement of the Nonpoint* Source *Pollution Control Program* (NPS Policy) (SWRCB 2004 or as amended). • Shasta *Watershed Restoration Plan* (November 1997). • Shasta *Valley Resource Conservation District Master Incidental Take Permit* (ITP) *Application* (Shasta RCD 2005). • Recovery *Strategy for California Coho Salmon* (Coho Recovery Strategy) (CDFG 2004). See Appendix A of this Action Plan for examples of some of these applicable measures. Landowners may need to develop and implement management measures in addition to those specified above to address site-specific conditions. This may include determining appropriate riparian widths for tree planting activities such that the appropriate width buffer is created to ensure effective stream shading and oxygen consuming material discharge elimination. Landowners shall submit annually to the Regional Water Board a written summary of all range and riparian management actions taken to achieve compliance with water quality standards, the TMDLs, and the NPS Policy, either individually or through the Shasta Valley RCD and its CRMP or through the CDFG Coho ITP.
	• Shasta Valley Resource Conservation District (Shasta Valley RCD) • Shasta Coordinated Resource Management and Planning Committee (Shasta CRMP)	**RCD Actions:** The Shasta Valley RCD and its CRMP should: • Assist landowners in developing and implementing management practices that minimize, control and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials, as well as elevated solar radiation loads from affecting waters of the Shasta River and tributaries. • Assist landowners in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the range and riparian management actions taken by the landowner.
	• California Department of Fish and Game (CDFG)	**State Actions:** CDFG will: • Assist landowners in developing and implementing management practices that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials as well as elevated solar radiation loads from affecting waters of the

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Range and Riparian Land Management (cont.)	• CDFG (cont.) • Regional Water Board	Shasta River and tributaries. • Administer the Coho Recovery Strategy and the ITP (when approved). The Regional Water Board will: • Work cooperatively with the Shasta Valley RCD and its CRMP to: 1. Provide technical support and information to individuals, landowners, and community members in the Shasta River watershed. 2. Coordinate monitoring, educational and outreach efforts. 3. Develop a monitoring program to evaluate and document implementation and effectiveness of the range and riparian management actions taken by the landowners. • Should efforts fail to be implemented or effective, the Regional Water Board's Executive Officer shall require, on a site specific as-needed basis, the appropriate responsible parties to develop, submit, and implement a ranch management plan designed to prevent discharges of fine sediment, nutrients and other oxygen consuming materials, as well as elevated solar radiation loads from affecting waters of the Shasta River and tributaries. The ranch management plan shall describe in detail: 1. Locations discharging and/or with the potential to discharge nutrients and other oxygen consuming materials, and elevated solar radiation loads to watercourses which are caused by livestock grazing or related activities. 2. How and when identified sites are to be controlled and monitored, and management practices that will be implemented to prevent and reduce future discharges of nutrient and other oxygen consuming materials, and elevated solar radiation loads to the Shasta River and its tributaries. Group and/or individual ranch management plans shall be implemented upon review, comment, and approval by Regional Water Board staff and their Executive Officer for compliance with water quality standards, the TMDLs, and the NPS Policy. • The Regional Water Board shall address the removal and suppression of vegetation that provides shade to a water body through development of a Stream and Wetland System Protection Policy. This will be a comprehensive, region-wide riparian policy that will address the importance of shade on instream water temperatures and will potentially propose riparian setbacks and buffer widths. The Policy will likely propose new rules and regulations, and will therefore take the form of an amendment to the Basin Plan. Other actions under this section may be modified for consistency with this policy, once adopted. With funding already available through a grant from the U.S. EPA, Regional Water Board staff are scheduled to develop this Policy for Regional Water Board consideration and adoption by the end of 2007. • Within two years of EPA approval of the TMDL Action Plan (by January 26, 2009), the Regional Water Board's Executive Officer shall report to the Regional Water Board on the status of the preparation and development of appropriate permitting actions.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Range and Riparian Land Management (cont.)	• Regional Water Board (cont.)	• The Regional Water Board shall take appropriate permitting actions as necessary to address the removal and suppression of vegetation that provides shade to a water body in the Shasta River watershed. Such actions may include, but are not limited to, prohibitions, waste discharge requirements (WDRs) or waivers of WDRs for grazing and rangeland activities, farming activities near water bodies, stream bank stabilization activities, and other land uses that may remove and/or suppress vegetation that provides shade to a water body. Should prohibitions, waivers or WDRs be developed, they may apply to the entire North Coast Region or just to the Shasta River watershed. • Within ten years of EPA approval of the TMDL (by January 26, 2017), all identified discharges associated with riparian land use activities shall be in compliance with water quality standards, the TMDLs, and the NPS Policy.
Tailwater Return Flows	• Irrigators	**Landowner Actions:** Those that oversee and manage tailwater discharges from irrigated lands in the Shasta River watershed, which may include landowners, lessees, and land managers (collectively referred to as irrigators), should employ land stewardship and irrigation management practices and activities that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials, and elevated water temperatures from affecting waters of the Shasta River and its tributaries. Irrigators should implement the applicable management measures for tailwater return flows from the following sources: • Policy *for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy) (SWRCB 2004 or as amended). • Shasta *Watershed Restoration Plan* (November 1997). • Shasta *Valley Resource Conservation District Master Incidental Take Permit* (ITP) *Application* (Shasta RCD 2005). • *Recovery Strategy for California Coho Salmon* (Coho Recovery Strategy) (CDFG 2004). See Appendix B of this Action Plan for examples of some of these tailwater return flow measures. In addition, landowners may develop and implement management measures suitable for their site-specific conditions. Irrigators should submit annually to the Regional Water Board a written summary of all tailwater return flow management actions taken to help achieve compliance with water quality standards, the TMDLs, and the NPS Policy, either individually or through the Shasta Valley RCD and its CRMP or through the CDFG Coho ITP.
	• Shasta Valley RCD • Shasta CRMP	**RCD Actions:** The Shasta Valley RCD and its CRMP should: • Assist irrigators in developing and implementing management practices that minimize, control and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials, and elevated water temperatures from affecting waters of the Shasta River and its tributaries.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Tailwater Return Flows (cont.)	• Shasta Valley RCD and Shasta CRMP (cont.)	• Implement the recommended actions specified in the Shasta Watershed Restoration Plan, Coho Recovery Strategy, and the ITP (when approved). • Assist irrigators in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the tailwater management actions taken by the irrigators.
	• CDFG	**State Actions:** CDFG will: • Assist irrigators in developing and implementing management practices that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials, and elevated water temperatures from affecting waters of the Shasta River and its tributaries. • Administer the Coho Recovery Strategy and the ITP (when approved).
	• Regional Water Board	Regional Water Board will: • Work with the Shasta Valley RCD and its CRMP to develop a monitoring program to evaluate and document implementation and effectiveness of the tailwater management actions taken by the irrigators. • Evaluate the effectiveness of tailwater management actions and develop recommendations for the most effective regulatory vehicle to bring tailwater discharges into compliance with water quality standards, the TMDLs, and the NPS Policy. • Should efforts fail to be implemented or effective, the Regional Water Board's Executive Officer may require irrigators, on a site specific as-needed basis, to develop, submit, and implement, upon review, comment and approval by the Regional Water Board's Executive Officer, a tailwater management plan designed to prevent discharges of fine sediment, nutrients and other oxygen consuming materials, and elevated solar radiation loads from affecting waters of the Shasta River and its tributaries. • Within one year of EPA approval of the TMDL (by January 26, 2008), the Regional Water Board's Executive Officer shall report to the Regional Water Board on the status of the preparation and development of appropriate permitting actions to bring the discharge into compliance with water quality standards, the TMDLs, and the NPS Policy. • Within five years of EPA approval of the TMDL (by January 26, 2012) and based on Regional Water Board staff recommendation(s) derived from the evaluation phase for tailwater management, the Regional Water Board shall adopt prohibitions, WDRs, waivers of WDRs, or any combination thereof, as appropriate. • Within ten years of EPA approval of the TMDL (by January 26, 2017), the discharge of all tailwater return flow shall be in compliance with water quality standards, the TMDLs, and the NPS Policy.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Water Use and Flow	• Water Diverters	**Water Diverter(s) Actions:** Water diverters should employ water management practices and activities that result in increased **dedicated cold water instream flow** in the Shasta River and its tributaries. Water diverters should participate in and implement applicable flow-related measures outlined in the following sources: • *Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy) (SWRCB 2004 or as amended). • *Shasta Watershed Restoration Plan* (November 1997). • *Shasta Valley Resource Conservation District Master Incidental Take Permit* (ITP) *Application* (Shasta RCD 2005). • Recovery *Strategy for California Coho Salmon* (Coho Recovery Strategy) (CDFG 2004). See Appendix C of this Action Plan for examples of flow related measures. In addition, landowners may develop and implement management measures suitable for their site-specific conditions. Within two years (by January 26, 2009), and again within four years of EPA approval of the TMDL (by January 26, 2011), water diverters shall report in writing to the Regional Water Board, either individually or through the Shasta Valley RCD and its CRMP, on the measures taken to increase the dedicated cold water instream flow in the Shasta River by 45 cfs or alternative flow regime that achieves the same temperature reductions from May 15 to October 15. Within five years of EPA approval of the TMDL (by January 26, 2012), water diverters shall provide a final report to the Regional Water Board, either individually or through the Shasta Valley RCD and its CRMP, on documenting dedicated cold water instream flow in the Shasta River in relation to the 45 cfs goal or alternative flow regime that achieves the same temperature reductions from May 15 to October 15. This recommended flow measure does not alter or reallocate water rights in the Shasta or Klamath River watersheds, nor bind the Regional Water Board in future TMDLs, the State Water Board's Division of Water Rights in any water rights decision, or state and federal courts.
	• Shasta Valley RCD • Shasta CRMP	**RCD Actions:** The Shasta Valley RCD and its CRMP should: • Assist water diverters in developing and implementing management practices that increase dedicated cold water instream flows in the Shasta River and tributaries. • Assist water diverters in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the actions taken to increase dedicated cold water instream flows in the Shasta River.
	• CDFG	**State Actions**: CDFG will: • Assist water diverters in developing and implementing management practices that increase dedicated cold water instream flows in the

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Water Use and Flow (cont.)	• CDFG (cont.)	Shasta River and tributaries. • Administer the Coho Recovery Strategy and the ITP (when approved). • Assist in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the actions taken by the water diverters to increase dedicated cold water instream flows in the Shasta River.
	• Department of Water Resources (DWR)	DWR should: • Coordinate and assist water diverters in developing and implementing a monitoring program through a watermaster service to evaluate and document implementation and effectiveness of the actions taken by the water diverters to increase dedicated cold water instream flows in the Shasta River.
	• Regional Water Board	The Regional Water Board will: • Work cooperatively with water diverters, the Shasta Valley RCD and its CRMP, CDFG and DWR, wholly or in part, to establish monitoring and reporting programs to gauge implementation and effectiveness of the actions taken by responsible parties. • If the Executive Officer receives credible evidence that the Shasta River flows are diminishing, the Executive Officer shall promptly report this to the Regional and State Water Board.
	• State Water Resources Control Board (State Water Board)	• If after five years, the Regional Water Board's Executive Officer finds that the above measures have failed to be implemented or are otherwise ineffective, the Regional Water Board may recommend that the State Water Board consider seeking modifications to the decree (*In re* Waters of Shasta River and its Tributaries, No. 7035 (Super. Ct. Siskiyou County Dec. 29, 1932)), conducting proceedings under the public trust doctrine and/or conducting proceedings under the waste and unreasonable use provisions of the California Constitution and the California Water Code.
Irrigation Control Structures, Flashboard Dams, and other Minor Impoundments (Collectively referred to as minor impoundments)	• Individual Irrigators • Irrigation Districts • DWR • Others owning, operating, managing, or anticipating construction of minor impoundments	**Irrigator(s) Actions**: Irrigation districts, individual irrigators, and others that own, operate, manage, or anticipate constructing instream minor impoundments or other structures capable of blocking, impounding, or otherwise impeding the free flow of water in the Shasta River system shall comply with one or more of the following measures: • Permanently remove minor impoundments in the Shasta River mainstem. • Re-engineer existing impoundments to decrease surface area of impoundment. • Not construct new impoundments unless they can be shown to have positive effects to the beneficial uses of water relative to water quality compliance and the support of beneficial uses, including the salmonid fishery, in the Shasta Valley. Within one year of EPA approval of the TMDL (by January 26, 2008), report in writing to the Regional Water Board methods and management practices they shall implement that will reduce sediment oxygen demand rates by 50% from baseline behind all minor impoundments.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Minor impoundments (cont.)	• Shasta Valley RCD • Shasta CRMP	**RCD Actions:** The Shasta Valley RCD and its CRMP should: • Assist in developing and implementing minor impoundment removal, re-engineering or initial design work for compliance with water quality standards, the TMDLs, and the NPS Policy. • Implement the recommended actions specified in the Shasta Watershed Restoration Plan and the ITP (when approved). • Assist in developing and implementing a monitoring program to evaluate and document implementation and effectiveness of the actions taken to remove, re-engineer or limit construction of minor impoundments on the mainstem Shasta River.
	• CDFG	**State Actions**: CDFG will: • Assist in developing and implementing the removal, re-engineering, or limitation on the construction of minor impoundments in the Shasta River mainstem. • Administer the Coho Recovery Strategy and the ITP (when approved). • Assist in the development and implementation of a monitoring program to evaluate and document the implementation and effectiveness of the actions taken to remove, re-engineer, or limit construction of minor impoundments on the mainstem Shasta River.
	• Regional Water Board	The Regional Water Board will: • Work with CDFG to establish monitoring and reporting elements of their programs in order to gage their effectiveness. • Work with the Shasta Valley RCD and its CRMP to establish monitoring and reporting programs to gage the implementation and effectiveness of the Shasta Watershed Restoration Plan. • Include appropriate conditions in Clean Water Act water quality certification permits for minor impoundment removal or re-engineering activities that comply with water quality standards, the TMDL, and the NPS Policy.
Lake Shastina	• MWCD • City of Weed • County of Siskiyou • Caltrans • Communities of Lake Shastina • U.S. Forest Service (USFS) • U.S. Bureau of Land Management (BLM) • Private timberland owners	Within 2 years of EPA approval of the TMDL(by January 26, 2009), the responsible parties shall complete a study of water quality conditions and factors affecting water quality conditions in Lake Shastina, and develop a plan for addressing factors affecting water quality conditions to bring Lake Shastina into compliance with water quality standards, the TMDLs, and the NPS Policy. The study and plan shall be submitted to the Regional Water Board Executive Officer for review, comment and approval. Within 5 years of EPA approval of the TMDL (by January 26, 2012), the responsible parties shall begin implementing the plan.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Dwinnell Dam	• Montague Water Conservation District (MWCD)	Within 2 years of EPA approval of the TMDL (by January 26, 2009), the MWCD shall report in writing to the Regional Water Board on a plan to bring the discharge from Dwinnell Dam into compliance with water quality standards, the TMDLs, and the NPS Policy.
City of Yreka Wastewater Treatment Facility (Yreka WWTF)	• City of Yreka • Regional Water Board	**Yreka Wastewater Treatment Facility Actions**: The Yreka WWTF shall comply with existing Regional Water Board Orders and Monitoring and Reporting Programs. **Regional Water Board Actions**: The Regional Water Board will: • Pursue aggressive compliance with Order No 96-69 and CAO No. R1-2004-0037. • Continue vigorous oversight and enforcement of Monitoring and Reporting Program No. R1-2003-0047 to ensure timely submittal of sampling and analytical results from the operators of the Yreka WWTF.
Urban and Suburban Runoff	• City of Yreka • City of Weed • City of Montague • Community of Edgewood • Communities of Lake Shastina • Other landowners with suburban runoff • Regional Water Board	**Actions:** The cities of Yreka, Weed, Montague, the communities of Lake Shastina, and other landowners with suburban runoff should identify possible pollutants, their sources, and volumes of polluted runoff from urban and suburban sources within their spheres of influence that may discharge, directly or indirectly, to waters of the Shasta River watershed. Cities and other landowners with suburban runoff should implement the applicable measures from the NPS Policy. See Appendix D of this Action Plan for examples of some of these applicable measures. Within two years of EPA approval of the TMDL (by Jan. 2009), cities and landowners with suburban runoff shall develop a plan to minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials and elevated temperature waste discharge from affecting waters of the Shasta River and its tributaries. The plan shall be submitted to the Regional Water Board's Executive Officer for review, comment and approval. Within 5 years of EPA approval of the TMDL (by Jan. 2012), cities and landowners with suburban runoff shall begin implementing the plan. **State Actions**: The Regional Water Board will: • Work cooperatively with responsible parties to implement their plan, including appropriate management measures and reasonable time schedules which minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials and elevated temperature waste discharge from affecting waters of the Shasta River and its tributaries.
Activities on Federal Lands	• USFS	**USFS Actions**: The USFS should consistently implement the best management practices for timber harvest activities, grazing, and other activities included in the: • Klamath *National Forest Land and Resource Management Plan* (USFS 1995) or as amended as long as equivalent or better water quality protections are required. • Shasta-Trinity National Forest Land and Resource Management Plan (USFS 1995) or as amended as long as equivalent or better water quality protections are required. • *Water Quality Management for Forest System Lands in California, Best Management Practices* (USFS 2000) or as amended as long as

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Activities on Federal Lands (cont.)	• USFS (cont.)	equivalent or better water quality protections are required. See Appendix E of this Action Plan for some examples of these measures.
	• Regional Water Board	**Regional Water Board Actions**: The Regional Water Board will: • Continue its involvement with the USFS to periodically reassess the mutually agreed upon goals of the 1981 Management Agency Agreement between the SWRCB and the USFS. • Work with the USFS to draft and finalize a Memorandum of Understanding (MOU). The MOU shall be drafted and ready for consideration by the appropriate decision-making body of the USFS within two years of EPA approval of the TMDL (by January 26, 2009). The MOU shall include, in part, buffer width requirements and other management practices as detailed in Appendix E.
	• BLM	**BLM Actions**: BLM shall implement best management grazing strategies that are detailed in a joint management agency document titled: • *Riparian Management, TR 1737-14, Grazing Management for Riparian*-Wetland *Areas, USDI-BLM, USDA-FS (1997).* See Appendix F of this Action Plan for some examples of these measures.
	• Regional Water Board	**Regional Water Board Actions**: The Regional Water Board will work with the BLM to draft and finalize a Memorandum of Understanding (MOU). The MOU shall be drafted and ready for consideration by the appropriate decision-making body of the BLM within two years of EPA approval of the TMDL (by January 26, 2009). The MOU shall include buffer width requirements and other management practices as detailed in Appendix F of this Action Plan.
Timber Harvest Activities on Non-Federal Lands	• Private Parties Conducting Timber Harvest Activities	**Timber Harvest Related Actions**: Parties conducting timber harvest activities should employ land stewardship practices that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials from affecting waters of the Shasta River and tributaries. Landowners should also employ land stewardship practices and activities that minimize, control, and preferably prevent elevated solar radiation loads from affecting waters of the Shasta River and its Class I and II tributaries.
	• California Department of Forestry (CDF)	**State Actions:** CDF will: • Ensure timber operations in the Shasta River watershed are in compliance with the water quality standards, the TMDLs, and NPS Policy.
	• Regional Water Board	Regional Water Board Actions: The Regional Water Board shall use appropriate permitting and enforcement tools to regulate discharges from timber harvest activities in the Shasta River watershed, including, but not limited to: • Participation in the CDF timber harvest review and approval process. • Use of general or specific WDRs and waivers of WDRs, if applicable, to regulate timber harvest activities on private lands in the Shasta River watershed.

Table 4-14 Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions (cont.)		
Source or Land Use Activity	**Responsible Parties**	**Actions to Address Dissolved Oxygen and Water Temperature Impairment**
Timber Harvest Activities on Non-Federal Lands (cont.)	• Regional Water Board (cont.)	• Timber harvest activities on private lands in the Shasta River watershed are not eligible for Categorical Waiver C included in the Categorical Waiver of *Waste Discharge Requirements for Discharges Related to Timber Harvest Activities on Non-Federal Lands in the North Coast Region* (Order No. R1-2004-0016) simply through the adoption of this TMDL Action Plan. However, timber harvest activities on private lands in the Shasta River watershed may be eligible for Categorical Waivers A, B, D, E, and F, as appropriate. • If the California Forest Practice Rules (Title 14 CCR Chapters 4, 4.5 and 10) are changed in a manner that reduces water quality protections, the Regional Water Board shall require plan submitters to maintain the level of water quality protection provided by the 2006 Forest Practice Rules. See Appendix G of this Action Plan for select examples of 2006 Forest Practice Rules.
California Department of Transportation Activities (Caltrans)	• Caltrans • Regional Water Board	**Caltrans Actions**: Caltrans shall implement the requirements of its stormwater program. **Regional Water Board Actions**: Regional Water Board shall: • Within two years of EPA approval of the TMDL (by January 26, 2009), complete an initial evaluation of the Caltrans Stormwater Program. • After the initial two-year evaluation is completed, the Regional Water Board shall continue periodic reviews of the program to assure ongoing compliance.

IX. Glossary

Adjusted Potential Effective Shade:
The percentage of direct beam solar radiation attenuated and scattered before reaching the ground or stream surface from the potential vegetation conditions, reduced by 10% to account for natural disturbance such as fire, windthrow, disease, and earth movements that reduce actual riparian vegetation below the site potential.

Biochemical Oxygen Demand (CBOD):
An analytical method used as an indicator for the concentration of biodegradable organic matter present in a sample of water. It measures the rate of uptake of oxygen by micro-organisms in the sample of water over a given period of time, and can be used to infer the general quality of the water and its degree of pollution.

Carbonaceous Deoxygenation:
Refers to the consumption of oxygen by bacteria during the breakdown of (decomposition) of organic (carbon-containing) material.

Class I Tributary:
This watercourse must have one of the following properties in order to be considered a Class I tributary, according to California Forest Practice Rules: (1) domestic supplies, including springs, on site and/or within 100 feet downstream of the operations area, and/or (2) fish are always or seasonally present onsite, includes habitat to sustain fish migration and spawning.

Class II Tributary:
This watercourse must have one of the following properties in order to be considered a Class II tributary, according to California Forest Practice Rules: (1) fish always or seasonally present offsite within 1000 feet downstream, (2) is an aquatic habitat for nonfish aquatic species, and/or (3) excludes Class III waters that are tributary to Class I waters.

Compliance and Trend Monitoring:
Monitoring intended to determine, on a watershed scale, if water quality standards are being met, and to track progress towards meeting water

quality standards.

Dedicated Cold Water Instream Flow:
Water remaining in the stream in a manner that that the diverter, either individually or as a group, can ensure will result in water quality benefits. Temperature, length, and timing are factors to consider when determining the water quality benefits of an instream flow.

Implementation Monitoring:
Monitoring used to assess whether activities and control practices were carried out as planned. This type of monitoring can be as simple as photographic documentation, provided that the photographs are adequate to represent and substantiate the implementation of control practices.

Instream Effectiveness Monitoring:
Monitoring of instream conditions to assess whether pollution control practices are effective at keeping waste from being discharged to a water body. Instream effectiveness monitoring may be conducted upstream and downstream of the discharge point or before, during, and after the implementation of pollution control practices.

Irrigation Return Flows:
See Tailwater Return Flow.

Natural Potential Vegetation Conditions:
The most advanced seral stage that nature is capable of developing and making actual at a site in the absence of human interference. Seral stages are the series of plant communities that develop during ecological succession from bare ground to the climax community (e.g., fully mature, old-growth).

Nitrification:
The oxidation of an ammonium (NH_4^+) compound to nitrite (NO_2^-) and nitrate (NO_3^-), a process that consumes oxygen.

Nitrogenous Deoxygenation:
The conversion of organic nitrogen to ammonium (NH_4^+) and the subsequent oxidation of ammonium to nitrite (NO_2^-) and then to nitrate (NO_3^-), a process that consumes oxygen

Nitrogenous Biochemical Oxygen Demand (NBOD):
A measure of the amount of oxygen consumed from the conversion of organic nitrogen to ammonium (NH_4^+) and the oxidation of ammonium to nitrite (NO_2^-) and subsequently (NO_3^-).

Nitrogenous Oxygen Demand:
The conversion of organic nitrogen to ammonium by bacteria, a process that consumes oxygen.

Potential Effective Riparian Shade:
That shade resulting from topography and natural potential vegetation that reduces the heat load reaching the stream. The difference between existing (baseline) and adjusted potential effective shade reflects the amount of effective riparian shade increase (i.e. reduced solar transmittance) that is necessary to achieve natural receiving water temperatures.

Potential Solar Radiation Transmittance:
Potential solar radiation transmittance is the amount of solar radiation that passes through the vegetation canopy and reaches the water surface, when natural potential vegetation conditions are achieved.

Reaeration:
The process whereby atmospheric oxygen is transferred to a waterbody.

Salmonids:
Fish species in the family Salmonidae, including but not limited to: salmon, trout, and char.

Sediment:
Any inorganic or organic earthen material, including, but not limited to: soil, silt, sand, clay, peat, and rock.

Sediment Oxygen Demand (SOD):
The consumption of oxygen by sediment and associated organisms (such as bacteria and invertebrates) through both the decomposition of organic matter and respiration by plants, bacteria, and invertebrates.

Solar Radiation Transmittance:
Solar radiation transmittance is defined as the amount of solar radiation that passes through the vegetation canopy and reaches the water surface. A value of 1.0 represents no shade; a value of 0.0 represents complete shade.

Tailwater Return Flow:
Water applied to a field for irrigation at rates that exceed soil infiltration and evaporation rates, resulting in runoff of irrigation water to a surface water body. Same as Irrigation Return Flows.

Water Quality Compliance Model Scenario:
A computer water quality model scenario developed by Regional Water Board staff that characterizes

Shasta River watershed conditions under which the Basin Plan narrative temperature objective and numeric dissolved oxygen are met in the Shasta River.

Shasta River TMDL Action Plan - Appendix A

Range and Riparian Land Management Measures
(1) Protect sensitive areas (including streambanks, lakes, wetlands, estuaries, and riparian zones) by (a) excluding livestock, (b) providing stream crossings or hardened access to watering areas, (c) providing alternative water locations away from surface water, (d) locating salt and additional shade, if needed, away from sensitive areas, or (e) use improved grazing management (e.g. herding) to reduce the physical disturbance and direct loading of animal waste and sediment caused by livestock; and (2) Achieve the following on range, pasture and other grazing lands not addressed under (1) above: implement the range and pasture components of a Resource Management Systems (RMS) as defined in the United States Department of Agriculture (USDA) Natural Resource CS Field Office Technical Guide applying the progressive planning approach of the USDA NRCS to reduce erosion. **NPS Policy (MM 1E) (SWRCB, 2004)**
On properties owned by participants in the ITP, livestock fencing shall be in place on at least 90% of that person's owned stream bank length where there is a potential to affect coho, or fencing shall be in active progress towards implementation along those streams with installation by January 1, 2008, and/or shall have CDFG approved livestock management measures in place that will provide similar protections to the streambanks and riparian zone. Livestock riparian exclusion fencing built after 3-30-05 needing to comply with the permit must be approved by SVRCD, will be expected to have a setback of at least 35 feet from normal high water line, and shall be maintained in good working order as long as the permit is in place and livestock are present. **Draft Shasta ITP (Minimization Measures B) (RCD, 2005)**
SVRCD will work with landowners and DFG on appropriate methodology and riparian species selection on a site by site basis. **Draft Shasta ITP (Minimization Measures C) (RCD, 2005)**
Grazing along the steam corridor may occur as a mechanism of riparian management and will be coordinated with the SVRCD, the landowners and CDFG staff. **Draft Shasta ITP (Table 1-1) (RCD, 2005)**
Planting of riparian vegetation along stream banks will be coordinated with the SVRCD, the landowners and CDFG staff. **Draft Shasta ITP (Table 1-1) (Table 1-1) (RCD, 2005)**
Address factors that contribute to high temperatures. **Coho Recovery Strategy (HM-5a, b) (CDFG, 2004)**
Promote coho salmon recovery by minimizing diversion entrainment, protecting riparian vegetation, and encouraging effective land use practices. **Coho Recovery Strategy (P-1 through P-7) (CDFG, 2004**)
Increase riparian vegetation. **Coho Recovery Strategy (HM-4a-d) (CDFG, 2004)**
Continue program of riparian fencing and native tree planting. **Shasta Watershed Restoration Plan (SRCRMP, 1997)**

Shasta River TMDL Action Plan - Appendix B

Tailwater Return Flow Management Measures
Develop and implement comprehensive nutrient management plans for areas where nutrient runoff is a problem affecting coastal waters and/or water bodies listed as impaired by nutrients. Such plans would include a plant tissue analysis to determine crop nutrient needs; crop nutrient budget; identification of the types, amounts, and timing of nutrients necessary to produce a crop based on realistic crop yield expectations; identification of hazards to the site and adjacent environment; soil sampling and tests to determine crop nutrient needs; and proper calibration of nutrient equipment. When manure from confined animal facilities is to be used as a soil amendment and/or is disposed of on land, the plan shall discuss steps to assure that subsequent irrigation of that land does not leach excess nutrients to surface or ground water. **NPS Policy (MM 1C) (SWRCB, 2004)**

Tail water Return Flow Management Measures (cont.)
Capture of additional tailwater from on-site or neighboring fields. **Draft Shasta ITP (Table 1-1) (RCD, 2005)**
The Shasta RCD will assist landowners/sub-permittees in designing and implementing tailwater capture systems that intercepts and reuses runoff from on-site and off-site properties in accordance to standards outlined by the NRCS. **Draft Shasta ITP (Table 1-1) (RCD, 2005)**
Conduct assessments of tailwater return flows, promote opportunities to eliminate, minimize, reclaim and reuse, where feasible. **Coho Recovery Strategy (WUE-7a-c) (CDFG, 2004)**
Manage tailwater return flows so that entrained constituents, such as fertilizers, fine sediment and suspended organic particles, and other oxygen consuming materials are not discharged to nearby watercourses. This could include modifications to irrigation systems that reuse tailwater by constructing off-stream retention basins, active (pumping) and or passive (gravity) tailwater recapture/redistribution systems. **(U.C. Davis 1998; NRCS 1997)**
Seek ways to reduce irrigation tailwater, or capture for reuse. **Shasta Watershed Restoration Plan (SRCRMP, 1997)**

Shasta River TMDL Action Plan - Appendix C

Instream Flow Management Measures
Promote effective irrigation while reducing pollutant delivery to surface and ground waters. Pursuant to this measure, irrigation water would be applied uniformly based on an accurate measurement of cropwater needs and the volume of irrigation water applied, considering limitations raised by such issues as water rights, pollutant concentrations, water delivery restrictions, salt control, wetland, water supply and frost/freeze temperature management. Additional precautions would apply when chemicals are applied through irrigation. **NPS Policy (MM 1F) (SWRCB, 2004)**
All persons covered by the permit and diverting water from within the Shasta River watershed will be expected to support ongoing watermaster services (either by DWR or by some other entity should DWR cease to provide service) and pay their proportionate cost of that service to provide watermaster service in the Shasta Valley between April 1 and October 1 when instream flows are likely to be most critical to coho. Individual proportional costs for this activity are expected to continue to be collected by the County of Siskiyou via annual property taxes. Those participants exercising riparian rights and not subject to watermaster control will cooperate with the watermaster in assuring they are within their legal rights and will inform the watermaster of any changes in the quantities of water they will be diverting. **Draft Shasta ITP (Avoidance Measures III. A. i.) (RCD, 2005)**
DFG, DWR and the SVRCD shall develop and implement a management plan to coordinate and monitor irrigation season start up so as to minimize rapid deductions in instream flows. A draft Ramped Diversion Plan will be submitted to DFG by January 1, 2007 with a finalized plan submitted by January 1, 2008. **Draft Shasta ITP (Avoidance Measures III. A. ii.) (RCD, 2005)**
All persons covered by the ITP shall endorse continued efforts by DWR or other private watermaster organizations, to assure that flows year round shall not be allowed to fall below 20 cfs at the Shasta River near Montague (SRM) gage, a quantity that has been historically the watermaster's minimum target for flow at that location, nor that flows at A-12 shall fall below 45 cfs at any time during the summer, a quantity that will assure that substantial cold water refugia areas are retained upstream of the point. **Draft Shasta ITP (Avoidance Measures III. A. iii.) (RCD, 2005)**
The SVRCD will develop a dry and critically dry year plan to assure that stranding, or elimination of needed cold water refugia areas does not occur during extremely dry years. The dry year plan will be developed by SVRCD and will insure that previously described flows at 50 cfs at A-12 and 20 cfs at Montague-Grenada Road are achieved. A draft Dry Year Plan will be completed by the SVRCD one year from the issuance of the permit. **Draft Shasta ITP (Avoidance Measures III. F) (RCD, 2005)**

Instream Flow Management Measures (cont.)
The SVRCD will work with those entities seeking coverage under the ITP to assist them in their efforts to upgrade overall irrigation efficiency. Potential projects that may be implemented to improve flows include upgrade of water delivery systems to reduce waste, upgrade of water application systems, monitoring crop water requirements vs. soil moisture, etc. **Draft Shasta ITP (Minimization Measures V. A. i.) (RCD, 2005)**
Encourage the Shasta CRMP to develop a dry year water plan for the Shasta River. **Shasta Coho Recovery Strategy (WM-1a) (CDFG, 2004)**
Add additional oversight and more people to verify water use and better manage water in current watermaster service areas. **Coho Recovery Strategy (WM-2a) (CDFG, 2004)**
Institute a cooperative agreement between diverters to stage/stagger their irrigation starts and completions (ramped flows) to gradually change flows over several days. **Coho Recovery Strategy (WM-3a) (CDFG, 2004**)
CRMP, CDFG, and voluntary landowner participation: agree to pull diversions for a limited time period to produce a pulsed flow downstream. **Coho Recovery Strategy (WM-4a)**
Determine unused diversion rights and approach those diverters about providing flows for instream use without affecting the water rights of others. **Coho Recovery Strategy (WM-5c) (CDFG, 2004)**
For critical streams/reaches, diverters could rotate irrigations so diversions do not coincide when increased flows are critical for fish. **Coho Recovery Strategy (WM-6a)**
Provide headgates and measuring devices for diversions located in riparian areas. **Coho Recovery Strategy (WM-7a) (CDFG, 2004)**
Study and forecast correlation of stream flow with other parameters to predict weekly flow rates. Can be based on snow surveys, precipitation, aquifer condition, etc. **Coho Recovery Strategy (WM-8b) (CDFG, 2004)**
Seek funding to conduct instream flow studies to determine flow-habitat relationships. **Coho Recovery Strategy (WM-9) (CDFG, 2004)**
Provide a structured process for willing participants to donate, sell, or lease water rights to provide improved stream flow. **Coho Recovery Strategy (WA-1b, c, d & WA-7a, b, c) (CDFG, 2004)**
Acquire water rights that shall be dedicated to instream flow. **Coho Recovery Strategy (WA-7) (CDFG, 2004)**
Support preparation of a water balance study. Apply study results to water management, augmentations, and Habitat enhancement recommendations. **Coho Recovery Strategy (WM-1b) (CDFG, 2004)**
Study feasibility of building storage reservoirs to capture excess winter runoff (solely) for the benefit of coho salmon, not for irrigation augmentation. **Coho Recovery Strategy (WA-2a & WA-3b) (CDFG, 2004)**
Identify and prioritize benefits and/or detriments to lining/piping surface ditch systems; promote ongoing diversion ditch maintenance. **Coho Recovery Strategy (WUE-3; WUE-4) (CDFG, 2004)**
Promote and/or retain water efficient irrigation practices. **Coho Recovery Strategy (WUE-5a-e) (CDFG, 2004)**

Instream Flow Management Measures (cont.)
Prepare a comprehensive groundwater study to determine the current status of groundwater in the Shasta Valley and its relationship to surface flows. **Coho Recovery Strategy (WM-10a) (CDFG, 2004)**
Continue pulsed flow program to flush salmonids downstream during lethal water temperature conditions. **Shasta Watershed Restoration Plan (I B-2) (SRCRMP, 1997)**
Support creation of dedicated instream flows for fish and wildlife. **Shasta Watershed Restoration Plan (I B-2) (SRCRMP, 1997)**
Contemplate the impacts of readjudication of both surface and ground water. **Shasta Watershed Restoration Plan (I B-9) (SRCRMP, 1997)**
Continue pulse flows until water quality is improved. **Shasta Watershed Restoration Plan (III B-3.e) (SRCRMP, 1997)**
Seek funding for purchase of water for instream flows from willing sellers. **Shasta Watershed Restoration Plan (III B-6) (SRCRMP, 1997)**
Where other means of adequate protection (for fish) are unlikely, support the purchase of key (property) areas from voluntary sellers whose sale would protect remaining land uses in the Shasta Valley. **Shasta Watershed Restoration Plan (III B-7) (SRCRMP, 1997)**

Urban and Suburban Runoff Management Measures
Develop a watershed protection program to 1. Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss; 2. Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; 3. Protect to the extent practicable the natural integrity of water bodies and natural drainage systems associated with site development – including roads, highways and bridges; 4. Limit increases of impervious surfaces; and 5. Provide education and outreach to address NPS pollution. **NPS Policy (MM 3.1A) (SWRCB, 2004)**
Plan, design and develop sites to: 1. Protect areas that provide important water quality benefits necessary to maintain riparian and aquatic biota, and/or are particularly susceptible to erosion or sediment loss; 2. Limit increase in impervious areas; 3. Limit land disturbance activities such as clearing and grading and cut and fill to reduce sediment loss; and 4. Limit disturbance of natural drainage features and vegetation. **NPS Policy (MM 3.1B) (SWRCB, 2004)**
By design or performance: 1. After construction has been completed and the site is permanently stabilized, reduce the average total suspended solids (TSS) loading by 80 percent (for purposes of this measure, an 80 percent TSS reduction is to be determined on an average annual basis); or 2. Reduce the post-development loading of TSS so that the average annual TSS loadings are no greater than pre-development loadings. 3. To the extent practicable, maintain post-development peak runoff rate and average volume at levels similar to pre-development levels. **NPS Policy (MM 3.1C) (SWRCB, 2004)**

Urban and Suburban Runoff Management Measures (cont.)
1. Limit application, generation, and mitigation of toxic substances; 2. Ensure the proper storage and disposal of toxic materials; 3. Apply nutrients at rates necessary to establish and maintain vegetation without causing nutrient runoff to surface waters; and 4. Prepare and implement, prior to the use or storage of toxic material on site, an effective, approved chemical control plan or similar administrative document that contains chemical control provisions (e.g. minimize use of toxic materials; ensure proper containment if toxic materials are to be used /stored on site). **NPS Policy (MM 3.2.B) (SWRCB, 2004)**
Develop and implement watershed management programs to reduce runoff pollutant concentrations and volumes from existing development: 1. Identify priority local and/or regional watershed pollutant reduction opportunities (e.g. improve existing urban runoff control structures); 2. Specify a schedule for implementing appropriate controls: 3. Limit destruction of natural conveyance systems; and 4. Where appropriate, preserve, enhance, or establish buffers along surface waters and their tributaries. **NPS Policy (MM 3.3A) (SWRCB, 2004)**

Shasta River TMDL Action Plan - Appendix E

Recommended Interim Riparian Reserve Widths for Klamath National Forest and Shasta-Trinity National Forest Lands in the Shasta River Watershed[1]

RIPARIAN RESERVE TYPE	**Riparian Reserve Widths**
Fish-bearing streams.	Include the stream and: area on each side from active channel edges to the top of inner gorge, or outer edge of 100 year flood plain, or to outer edge of riparian vegetation, or height of two site potential trees[2], or 300 feet slope distance, whichever is greatest.
Perennial, non-fish bearing streams	Include the stream and: area on each side from active channel edges to the top of inner gorge, or outer edge of 100 year flood plain, or outer edge of riparian vegetation, or height of one site potential tree[2], or 150 feet slope distance, whichever is greatest.
Lakes and natural ponds	Include the body of water and: area to the outer edge of riparian vegetation, or extent of seasonally saturated soil, or extent of unstable and potentially unstable areas, or height of one site potential tree[2], or 300 feet slope distance, whichever is greatest.
Constructed ponds, reservoirs and wetlands >1-acre in size	Include the body of water or wetland and: area to outer edges of riparian vegetation, or to seasonally saturated soil, or the extent of unstable and potentially unstable areas, or distance of one site potential tree, or 150 feet slope distance from wetland edge >1 acre, or the maximum pool elevation of constructed ponds, reservoirs, whichever is greatest.

[1] Information from the Land and Resource Management Plans for the Klamath and Shasta-Trinity National Forests, Klamath National Forest LRMP (1995), Shasta-Trinity National Forest LRMP (1995).

[2] Site potential tree, depending on site class, is an average maximum height of the tallest dominant tree, ≥ 200 years old.

Recommended Interim Riparian Reserve Widths for Klamath National Forest and Shasta-Trinity National Forest Lands in the Shasta River Watershed (cont.)

RIPARIAN RESERVE TYPE	Riparian Reserve Widths
Seasonally flowing or intermittent streams[3] wetlands <1-acre in size, and unstable or potentially unstable areas	At a minimum include: extent of unstable and potentially unstable areas (includes earthflows), stream channel and extend to top of inner gorge, stream channel or wetland and area from the edges of the stream channel or wetland to outer edges of riparian vegetation, and extension from edges of stream channel to height of one site potential tree[2], or 100 feet slope distance, whichever is greatest.

[3] Intermittent stream defined as any nonpermanent flowing drainage feature with a definable channel having evidence of annual scour or deposition, includes ephemeral streams meeting these physical criteria.

Grazing Standards and Guidelines for Shasta-Trinity and Klamath National Forests
Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing
Locate new livestock handling and/or management facilities outside Riparian Reserves. For existing livestock handling facilities inside the Riparian Reserve, ensure that Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.
Limit livestock trailing, bedding, watering, loading, and other handling efforts to those areas and times that will ensure Aquatic Conservation Strategy objectives are met.

From Shasta - Trinity LRMP

Shasta River TMDL Action Plan - Appendix F

BLM Grazing Management Measures
Grazing management must provide an adequate cover and height of vegetation on the banks and overflow zones to promote natural stream function (sediment filtering, bank building, flood energy dissipation, aquifer recharge and water storage).
Control the timing of grazing to prevent damage to streambanks when they are most vulnerable to trampling.
Ensure sufficient vegetation during periods of high flow to protect streambanks, dissipate energy, and trap sediment.
Techniques that restrict livestock from riparian areas, including fencing or fence relocation, barriers such as thickets or brush wind rows, water gaps in erosion-resistant stream reaches, hardened crossings or water access, and relocation of bed grounds and management facilities.

Riparian Management, TR 1737-14 1997, Grazing Management for Riparian-Wetland Areas, USDI-BLM, USDA-FS

Shasta River TMDL Action Plan - Appendix G

Examples of Select Management Measures for Timber Harvest Activities on Non-federal Lands from the 2006 California Forest Practice Rules
Every timber operation shall be planned and conducted to prevent deleterious interference with watershed conditions that primarily limit the values set forth in “the rules” (e.g. sediment load increase where sediment is the limiting factor, thermal load increase where water temperature is the primary limiting factor, etc). Section 916.9, 936.9 (a)
Comply with the terms of a Total Maximum Daily Load that has been adopted to address factors that may be affected by timber operations, if a TMDL has been adopted, or not result in any measurable sediment load increase to watercourses of lakes. Section 916.9, 936.9 (a) (1)
Not result in any measurable stream flow reduction during critical low water periods except as part of an approved water drafting plan. Section 916.9, 936.9 (a) (4)
Protect maintain and restore the quality and quantity of vegetative canopy needed to: (a) provide shade to the watercourse or lake, (b) minimize daily and seasonal temperature fluctuations, and (c) maintain daily and seasonal temperature within the preferred range for anadromous salmonids. Section 916.9, 936.9 (a) (6)
Any timber operations or silvicultural prescriptions within 150 feet of any Class I watercourse or lake transition line or 100 feet of any Class II watercourse or lake transition line shall have protection, maintenance, or restoration of beneficial uses of water or the populations and habitat of anadromous salmonids or listed aquatic or riparian-associated species as significant objectives. Section 916.9, 936.9 (c)
The minimum WLPZ width for Class I waters shall be 150 feet from the watercourse or lake transition line. Section 916.9, 936.9 (f)
Within a WLPZ for Class I waters, at least 85 percent overstory canopy shall be retained within 75 feet of the watercourse or lake transition line. Section 916.9, 936.9 (g)

5. PLANS AND POLICIES

INTRODUCTION

The Regional Water Board is required to implement the provisions of several statewide plans and policies. These are listed below, and full copies are included in the Appendix Section of this Plan, unless otherwise indicated.

STATE WATER BOARD PLANS

Thermal Plan

The "Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" adopted by the State Water Resources Control Board on May 18, 1972, specifies water quality objectives, effluent quality limits, and discharge prohibitions related to thermal characteristics of interstate waters and waste discharges.

Ocean Plan

The "Water Quality Control Plan for Ocean Waters of California" was adopted by the State Water Board on July 6, 1972 and revised in 1978, 1983, 1988, and 1990. This plan establishes beneficial uses and water quality objectives for waters of the Pacific Ocean adjacent to the California Coast outside of enclosed bays, estuaries, and coastal lagoons. Also, the Ocean Plan prescribes effluent quality requirements and management principles for waste discharges and specifies certain waste discharge prohibitions.

The Ocean Plan also provides that the State Water Board shall designate Areas of Special Biological Significance and requires wastes to be discharged at locations which will assure maintenance of natural water quality conditions in these areas.

Nonpoint Source Management Plan

On November 15, 1988, the State Water Board adopted the Nonpoint Source Management Plan pursuant to Section 319 of the Clean Water Act. This plan establishes the framework for statewide nonpoint source activities. The plan identifies nonpoint source control programs and milestones for their accomplishment. The plan emphasizes cooperation

with local governments and other agencies to promote the voluntary implementation of Best Management Practices and remedial projects in a three-tiered approach: 1) voluntary implementation, 2) regulatory-based encouragement, and 3) effluent limitations. A copy of the Nonpoint Source Management Plan is not included in the Appendix Section of this Plan. A copy of the Nonpoint Source Management Plan may be requested by contacting the North Coast Regional Water Quality Control Board.

STATE WATER BOARD POLICIES

Policy With Respect to Maintaining High Quality Waters in California (Resolution No. 68-16)

On October 28, 1968, the State Water Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California". While requiring the continued maintenance of existing high quality waters, the policy provides conditions under which a change in water quality is allowable. A change must:

- be consistent with maximum benefit to the people of the state;
- not unreasonably affect present and anticipated beneficial uses of water; and
- not result in water quality less than that prescribed in water quality control plans or policies.

Sources of Drinking Water Policy (Resolution No. 88-63)

On May 19, 1988, the State Water Board adopted Resolution No. 88-63, a Policy Entitled "Sources of Drinking Water". This policy was set forth to provide full protection of current and potential sources of drinking water as well as realistic standards for the waters of the State. The policy states that all surface

waters and ground waters are to be considered suitable or potentially suitable, for municipal or domestic water supply, and should be so designated by the regional water boards, with specific exceptions. The policy affirms the authority of the regional water boards to amend the use designations contained in their basin plans, as long as consistency with all applicable regulations adopted by the U.S. Environmental Protection Agency is maintained.

Bays and Estuaries Policy

The "Water Quality Control Policy for the Enclosed Bays and Estuaries of California" adopted by the State Water Board on May 16, 1974, provides water quality principles and guidelines for the prevention of water quality degradation and to protect the beneficial uses of waters. Decisions by the Regional Water Board are required to be consistent with the provisions of this policy. This policy does not apply to wastes from vessels or land runoff except as specifically indicated for siltation and combined sewer flows.

Power Plant Cooling Policy

The "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling" was adopted by the State Water Board on June 19, 1975. This policy describes the State Water Board's position on power plant cooling, specifying that fresh inland waters should be used for cooling only when other alternatives are environmentally undesirable or economically unsound.

Reclamation Policy

On January 6, 1977, the State Water Board adopted Resolution No. 77-1, "Policy with Respect to Water Reclamation in California". This policy requires the regional water boards to conduct reclamation surveys and specifies reclamation actions to be implemented by the State and regional water boards as well as other agencies.

Shredder Waste Disposal Policy

On March 19, 1987, the State Water Board adopted Resolution No. 87-22, "Policy on the Disposal of Shredder Waste". This policy describes specific conditions to be enforced by the Regional Water Board with regards to disposal of mechanically destructed car bodies, old appliances, or other similar castoffs at landfills.

6. SURVEILLANCE AND MONITORING

The effectiveness of a water quality control plan cannot be judged without the information supplied by a strong and systematic surveillance and monitoring program. The overall objectives of an adequate water quality surveillance and monitoring program are:

1. To measure achievement of the plan's water quality objectives.

2. To measure effects of water quality changes on beneficial uses.

3. To measure water quality background conditions and long-term trends.

4. To locate and identify sources of water pollution that pose a threat to the environment.

5. To help relate receiving water quality to mass emissions of pollutants by waste dischargers.

6. To provide data for determining waste discharger compliance with permit conditions.

7. To measure waste loads discharged to a receiving water body and identify the limits of their effect as a necessary step in the development of waste load allocations.

8. To provide documentation to support enforcement of permit conditions required of waste dischargers.

9. To provide data needed to carry on the continuing planning process.

10. To measure the effects of water rights decisions on water quality to guide the State Water Board in its responsibility to regulate unappropriated water for the control of quality.

11. To provide a clearinghouse for water quality data gathered by other agencies and private parties cooperating in the program.

12. To report on water quality conditions as required by federal and state regulations or requested by others.

STATEWIDE MONITORING PROGRAMS

Toxic Substances Monitoring Program

The Toxic Substances Monitoring Program (TSMP) was initiated in 1976 by the State Water Board to provide a uniform statewide approach to the detection and evaluation of toxic substances in organisms found in fresh, estuarine, and marine waters of the State. The California Department of Fish and Game (DFG) carries out the statewide TSMP for the State Water Board under an interagency agreement by collecting and analyzing fish and other aquatic organisms from selected sampling stations. Station selection is based primarily on requests from the regional water boards, but requests from other agencies are also considered. In many instances, the regional water boards request that stations be monitored to meet specific monitoring needs. If no problems are found, or if a problem has been sufficiently studied, that station is dropped to make way for new stations elsewhere. In this way the program can monitor as many locations as possible over time. In addition, a number of stations are sampled on a regular basis to monitor trends or changes in the levels of toxic substances over time.

In the North Coast Region, sampling under TSMP has led to information indicating potential threats to human health and wildlife. Sampling priorities are directed towards areas of immediate concern.

State Mussel Watch Program

The California State Mussel Watch (SMW) Program is a long-term monitoring program administered by the State Water Board. Actual sampling and analysis are performed by the Department of Fish and Game. SMW provides the State Water Board and the six coastal regional water boards with an indication of geographical and temporal (year-to-year) trends in toxic pollutants along the California coast.

Mussels (the common bay mussel, *Mytilus edulis*, and the California mussel, *M. californianus*) have been shown to be efficient bioaccumulators of many toxic substances in their water environment. Further, the sedentary nature of mussels, whether native or transplanted, permits a time integrated sampling of

toxic pollutants at one location. The merits of employing mussels as water quality indicators are well established in the scientific literature, previous SMW reports, and other scientific publications. The North Coast Region will continue to participate in existing SMW monitoring and the development of freshwater applications.

The North Coast Region has been involved in developing freshwater applications of SMW methodology, using freshwater clams, *Corbicula sp*. The North Coast Region has required that some discharges be monitored using these techniques. There are current plans to expand the use of these organisms as indicators in sensitive areas.

In the North Coast Region sampling under the SMW program has led to the detection and mitigation of controllable releases of toxic substances. Sampling priorities are directed toward areas of immediate concern.

Bay Protection and Toxic Cleanup Program

The Bay Protection and Toxic Cleanup Program (BPTCP) is a statewide program for the investigation of coastal waters. Specific goals of the BPTCP include: (1) protection of existing and future beneficial uses of bay and estuarine waters; (2) identification and characterization of toxic hot spots; (3) planning for the prevention of further pollution and the remediation of existing hot spots; and (4) development and maintenance of a comprehensive information source (database) to provide for future assessment and regulatory efforts, accessible public information, and to facilitate management decisions.

In the North Coast Region, monitoring under BPTCP is directed toward areas of known or potential contamination.

Water Quality Assessment

The Water Quality Assessment (WQA) is a catalog of the state's water bodies and their water quality condition. The WQA identifies the water quality condition as good, intermediate, impaired, or unknown. The data used to categorize water bodies in the WQA are obtained from the various monitoring programs described in this section. All regional water boards adopt their regional WQA at public meetings and submit them to the State Water Board for inclusion in the state WQA. In addition, for impaired and high priority waters, fact sheets are prepared to provide additional detail. The State Water Board intends the WQA to be updated on a regular basis, generally every two years.

The WQA serves many different purposes. The WQA, a public document, reports the condition of the state's water bodies in a summary format. The lists of impaired water bodies included in the WQA satisfy several Clean Water Act listing requirements.

Water Quality Inventory

The 305(b) Report, also known as the National Water Quality Inventory Report, is a summary of all states' water quality reports compiled by the U.S. Environmental Protection Agency. The report is prepared biennially from information the states are required to submit pursuant to Section 305(b)(1) of the Clean Water Act.

The State Water Board prepares the state report using information taken from the WQA. The state 305(b) Report includes: (a) a description of the water quality of major navigable waters in the state during the preceding years; (b) an analysis of the extent to which significant navigable waters provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water; (c) an analysis of the extent to which elimination of the discharge of pollutants has been achieved; and (d) an estimate of the environmental impact, the economic and social costs necessary to achieve the "no pollutant discharge" objective of the CWA, the economic and social benefits of such achievement, and the date of such achievement; and (e) a description of the nature and extent of nonpoint sources of pollutants and recommendations as to the programs which must be taken to control them, with estimates of cost.

Inland Surface Waters Toxicity Testing Program

This program was started in 1990, the most recent program to be initiated by the State Water Board. The goal of the program is to evaluate the extent,

magnitude, nature, and sources of toxicity in surface waters. Emphasis is on those waters where toxicity is associated with unregulated discharges such as runoff from agriculture, mining, or urban areas. As part of this program a toxicity testing facility at the University of California, Davis, was established to conduct State and Regional Water Board studies. The Regional Water Board performs the sampling of the water bodies in the Region and supplies the testing facility with the samples.

The toxicity testing measures the combined effects of toxicants in the water and is not used to separate and identify a specific toxic substance. Toxicity is determined by using water column samples from a water body under lab conditions. Appropriate test organisms are observed for their response by using growth, reproduction, or mortality as indicators in both acute and chronic tests.

REGIONAL MONITORING PROGRAMS

Surface Water Monitoring

The Surface Water Monitoring Network was a program of surface water monitoring at selected locations throughout the Region. It included analyses for physical, chemical, and biological parameters such as minerals, heavy metals, turbidity, coliform bacteria, phytoplankton, zooplankton, and biochemical oxygen demand. The results of the sampling provided the basis for data summaries and baseline information which was coordinated by the State Water Resources Control Board to comply with federal regulations.

The State Water Board and the Monitoring Coordinating Committee (MCC) have discontinued the Surface Water Monitoring Network as a formal program. However, the North Coast Region is committed to the development of a comprehensive and rigorous surface water monitoring program, concentrating especially on investigations and monitoring of water bodies with important or threatened beneficial uses, and where data is not sufficient for sound regulatory decision making.

Discharger Self-Monitoring

All self-monitoring information generated as a result of National Pollutant Discharge Elimination System (NPDES) permits and waste discharge requirements is collected and screened for overall assessment of operations and instances of compliance and noncompliance. Self-monitoring reports are submitted by the discharger as required by the permit conditions.

Compliance Monitoring

Compliance monitoring is carried out by the Regional Water Board staff to check the discharger self-monitoring work and to provide data for enforcement actions. Its scope depends on the number and complexity of waste discharge requirements (NPDES and other permits) issued by the Regional Water Board. Waste discharge requirements may or may not include specific discharger self-monitoring and reporting requirements.

Each discharger is periodically visited by Regional Water Board personnel on both announced and unannounced "facility inspections". The intent of announced visits is to work with the discharger through personal contact and communication to review his procedures in order to assure quality control. The intent of the unannounced inspections is to survey the operation, inspect the waste facilities, discharge area, and collect check or reference samples.

Complaint Investigations

Complaint investigations are carried out by Regional Water Board staff in response to complaints of citizens and public or governmental agencies regarding the discharge of pollutants or creation of nuisance conditions. Regional Water Board responsibilities may include field and telephone investigations, documentation of observed conditions (reports, letters, photographs), and enforcement actions as appropriate.

Special Studies/Intensive Surveys

Special studies and intensive surveys are usually performed to obtain detailed information about a specific water quality problem. They usually involve localized, intermittent sampling at a higher than normal frequency. Special situations requiring

intensive monitoring range from studies of industrial discharges to watershed-wide inventories to characterize water quality conditions. Special studies and intensive surveys are conducted on an as-needed basis and often involve coordination with other regulatory and governmental agencies.

Aerial Surveillance

Aerial surveillance is used primarily to gather photographic records of discharges and water quality conditions. Aerial surveillance is particularly effective because of the overall view of a watershed or facility that is obtained and because many facilities can be observed in a short period of time.

Water Quality Models

Water quality models are useful tools to:

- provide a framework for organizing knowledge about a water body;
- reveal gaps in the knowledge and data on a water body;
- formulate baseline and trend monitoring programs;
- simulate water quality changes in response to point and nonpoint discharges to receiving waters; and
- assess potential conformance to proposed and existing water quality objectives.

Water quality models currently available to the staff of the North Coast Region include: a Water Quality Model for the Russian River, prepared by the Center for Environmental and Water Resources Engineering, Department of Civil Engineering, University of California, Davis, and; a Santa Rosa Plains Ground Water Model, prepared by the California Department of Water Resources.

Groundwater Monitoring

Regional Water Board staff investigate the quality of groundwater in response to complaints, as a part of the Well Investigation Program, and through other specifically-funded groundwater quality investigations.

Most of the groundwater investigations in the Region are performed by dischargers, by order of the Regional Water Board. This type of discharger-funded groundwater investigation falls within discharger self-monitoring addressed earlier in this section.

Groundwater has been impaired at various locations regionwide particularly as a result of agricultural, industrial, and commercial chemical handling, storage, and disposal practices. Particular problems are known to exist in several groundwater basins within the Region, including the Santa Rosa Plains, Smith River Plain, and Eureka Plain. Monitoring contract funds have been requested in recent years for the acquisition of data with which to more effectively understand and address the impairment of these and other groundwater basins. Very little funding has been available for this purpose, and data is suggestive of more extensive problems. Further groundwater data will continue to be sought by the North Coast Region through all avenues to address problems resulting from contamination by pesticides, nitrates, solvents, fuel, and other chemicals.

Nonpoint Source Investigations

Nonpoint source investigations are conducted on an as-needed basis and as funding allows. Typical sources of funding include Clean Water Act 205(j), 208, and 319(h) funds. The objectives of nonpoint source investigations are to identify the location(s) of the nonpoint source pollutant sources; develop information on the quantity, strength, character and variability of nonpoint source pollutants; evaluate the impact on receiving water quality and biota; provide information useful in management of nonpoint source pollutants; and to monitor the results of any control plan. Investigations are typically undertaken on a statewide priority basis.

Laboratory Support and Quality Assurance

In response to federal requirements, the State Water Board has developed a Quality Assurance Program to ensure that data generated from environmental measurement studies are technically sound and legally defensible. The State Water Board Quality Assurance Program Plan (QAPP) summarizes procedures to be followed by the State Water Board and Regional Water Boards in administering state and federally funded programs that involve measurement

of environmental parameters. The QAPP applies to special water quality studies involving surface, ground, or marine waters, State Mussel Watch Program, State Toxic Substances Monitoring Program, as well as to surveillance and compliance monitoring of discharges.

Dischargers must use laboratories approved by the Regional Water Board's Executive Officer and/or certified by the State Department of Health Services. The Regional Water Board's contract laboratories have approved quality assurance/quality control programs, and Regional Water Board staff follow a standard chain of custody process in the collection, transport, and handling of samples.

The methods employed for sample collection, handling, preservation, transport, analysis, and results reporting must be such that the results of the analyzed sample accurately represent the conditions in the sampled water body. Federal regulations require the establishment of criteria and standard methods to assure that quality is maintained throughout the work from sample collection to reporting of the results.

Briefly, these regulations require that (a) physical and professional capabilities be adequate to perform the analysis for all parameters in the sampling plan; (b) sample collection, handling, and preservation be conducted according to U.S. EPA manuals; (c) time-sensitive samples be transported and analyzed within specific holding times; (d) sample integrity be provided for a legal chain of custody of samples collected for support of enforcement actions; (e) analytical methods be in accordance with standardized methods; and (f) analytical quality control procedures be established for intra-laboratory checking of reference samples. Laboratory records including reference sample results, are to be available for U.S. EPA review.

APPENDIX SECTION

Not Currently Available on the Web

APPENDIX 1

Summary of Basin Plan Amendments

SUMMARY OF BASIN PLAN AMENDMENTS
NORTH COAST REGION

Order No.	Action
75-2	Approve Part 1 of Draft Basin Plan and Abstract for Klamath River Basin. March 20, 1975. Approved by State Board Res. No. 75-28 on April 17, 1975.
75-3	Approve Part 1 of Draft Basin Plan and Abstract for North Coastal Basin. March 20. 1975. Approved by State Board Res. No. 75-28 on April 17, 1975.
	Amendment
76-93	Modifying the Klamath River Basin Water Quality Control Plan. March 26, 1976. Approved by State Board Res. No. 76-049.
76-94	Modifying the North Coastal Water Quality Control Plan. March 25, 1976. Approved by State Board Res. No. 76-049.
77-124	Modifying the North Coastal Water Quality Control Plan - Individual Treatment and Disposal System Prohibition, Geyserville, Sonoma County. June 23, 1977. Approved by State Board Res. No. 77-084. Notified of approval by EPA on January 9, 1980.
Resolution No.	
79-3	Recognizing the U.S. Forest Service as the Management Agency for Implementing Best Management Practices for Water Quality on U.S. Forest Service Lands, and Amending the Water Quality Control Plans for the Klamath River Basin (1A) and the North Coastal Basin (1B). June 21, 1979. Approved by State Board Res. No. 79-69 on Aug. 16, 1979.
79-5	Modifying the Water Quality Control Plans for the Klamath River Basin (1A) and the North Coastal Basin (1B). June 21, 1979. Approved by State Board Res. No. 79-69 on Aug. 16, 1979.
79-7	Amending the North Coast Basin Plan to Include a Waiver Prohibition Regarding the Policy Governing the Use of Individual Water Treatment and Disposal Systems in the Jacoby Creek and Old Arcata Road Areas. September 28., 1979. Approved by State Board Res. No. 79-101 on Nov. 15, 1979.
80-17	Amending the Water Quality Control Plans for the Klamath River Basin (1A) and the North Coastal Basin (1B) to Incorporate Water Conservation into the Policy on the Control of Water Quality with Respect to Individual Waste Treatment and Disposal Practices. Dec. 4, 1980 Approved by State Board Res. No. 81-018 on Feb. 19, 1981.
80-20	Amending the Water Quality Control Plan for the Klamath River Basin (1A) to Prohibit the Discharge of Waste from Individual Disposal Systems in the Campbell Tract Area, Siskiyou County. Dec. 4, 1980. Approved by State Board Res. No. 81-023.
80-21	Amending the Water Quality Control Plan for the North Coastal Basin (1B) to Revise the Action Plan for Point source Discharges to Humboldt Bay and Mad River. Dec. 4, 1990. Approved by State Board Res. No. 81-054 on May 21, 1981.
81-2	Amending the Water Quality Control Plan for the North Coastal Basin (1A) and the North Coastal Basin (1B) to Incorporate New Policy for the Utilization of Mounds for Individual Wastewater Disposal. May 28, 1981. Approved by State Board Res. No. 81-085 on Aug. 20, 1981.

Resolution No.

81-10 Amending the Water Quality Control Plans for the Klamath River Basin and the North Coastal Basin, Policy and Action Plan for Control of Discharges of Herbicide Waste from Silvicultural Applications. Sept. 3, 1981. Approved by State Board Res. No. 81-094.

81-13 Amending the Water Quality Control Plan for the North Coastal Basin (1B) to Prohibit the Discharge of Waste from Individual Disposal Systems in the Curtis Heights Area of Arcata and the Community of Bayside in Humboldt County. Aug. 27, 1981. Approved by State Board Res. No. 81-028.

82-13 Amending the Water Quality Control Plans for the Klamath River Basin and North Coastal Basin, Policy and Action Plan for Control of Discharges of Herbicide Wastes from Silvicultural Applications. Dec. 2, 1982. Approved by State board Res. No. 83-017.

83-3 Amending the Policy on the Control of Water Quality with Respect to Individual Waste Treatment and Disposal Practices which is Contained in the Water Quality Control Plans for the Klamath River Basin (1A) and the North Coastal Basin (1B). April 28, 1983. Approved by State Board Res. No. 83-061.

83-8 Amending the Policy on the Control of Water Quality with Respect to Individual Waste Treatment and Disposal Practices which is contained in the Water Quality Control Plans for the Klamath River Basin (1A) and the North Coastal Basin (1B). July 28, 1983. Approved by State Board Res. No. 83-061.

83-10 Amending the Water Quality Control Plans for the Klamath River Basin and the North Coastal Basin, Policy and Action Plan for Control of Discharge of Herbicide Wastes from Silvicultural Applications. July 28, 1983. Approved by State Board Res. No. 83-092.

84-2 Amending the Water Quality Control Plans for the Klamath River Basin and the North "Coastal Basin, Policy and Action Plan for Control of Herbicide Wastes from Silvicultural Applications. May 31, 1984. Approved by State Board Res. No. 85-079.

86-73 Modifying the Water Quality Control Plan, North Coastal Basin (1B), Individual Waste Treatment and Disposal System Prohibition, Willowside Estates Area. April 10, 1986. Approved by State Board Res. No. 87-034.

86-121 Amending the Water Quality Control Plan for the North Coastal Basin (1B) with Respect to the Point Source Measures, Waste Discharge Prohibitions for the Russian River, the Action Plan for the Santa Rosa Area, and Addition of an Interim Action Plan for the Russian River. June 27, 1986. Partially approved by State Board Res. No. 86-76 on Oct. 14, 1986. Section 2(b) remanded back to the Regional Board.

87-58 Amending the Water Quality Control Plan for the North Coastal Basin (1B) with Respect to the Point source Measures, Waste Discharge Prohibitions and the Action Plan for the Russian River and the Santa Rosa Plains. May 28, 1987, Approved by State Board Res. No. 87-99 on Nov. 17, 1987. Approved by EPA on April 19, 1988.

87-59 Amending the Water Quality Control Plan for the North Coastal Basin (1B) to Revise Section 3, Point Source Measures, the Policy on the Control of Water Quality with Respect to On-Site Waste Treatment and Disposal. Section VIIII, Individual Systems Prohibitions, to Include the Willowside Estates Area in Sonoma County. May 28, 1987. Approved by State Board Res. No. 87-100 on Nov. 17, 1987. Approved by EPA on April 19, 1988.

Resolution No.

88-62 Combining the Water Quality Control Plans and Abstracts for the Klamath River Basin (1A) and the North Coastal Basin (1B). April 28, 1988. Approved by State Board Res. No. 88-121 on Nov. 15, 1988.

89-37 Amending Section 2, Beneficial Uses, Section 5, Statewide Plans and Policies, and the Appendix Section of the Water Quality Control Plan for the North Coast Region to include State Water Resources Control Board Resolution No. 88-63, a Policy Entitled "Sources of Drinking Water.": March 30, 1989. Approved by State Board Res. No. 89-75 on Aug. 17, 1989.

89-46 Amending Point Source Measures in Section 4 of the Water Quality Control Plan for the North Coast Region to include an Interim Action Plan for Cleanup of Groundwaters Polluted with Petroleum Products. April 26, 1989. Approved by State Board Res. No. 89-84 on Sept. 21, 1989.

89-69 Amending Point Source Measures in Section 4 of the Water Quality Control Plan for the North Coast Region to Incorporate a Policy on the Regulation of Fish Hatcheries, Fish Rearing Facilities, and Aquaculture Operations. May 24, 1989. Approved by State Board Resolution No. 89-61 on July 20, 1989.

91-61 Amending Section 3 Table 5 and Section 4 of the Water Quality Control Plan for the North Coast Region to Include a Site-Specific Temperature Objective and an Interim Action Plan for the Trinity River. Approved by State Board Res. No. 91-94 on Sepstember 26, 1991.

92-2 Amending the Water Quality Control Plan for the North Coast Region Interim Action Plan for Cleanup of Groundwaters Polluted with Petroleum Products to Include Cleanup of Groundwaters Polluted with Halogenated Volatile Hydrocarbons. Approved by State Board Res. No. 92-35 on May 18, 1992.

93-59 Amending Section 4 of the Water Quality Control Plan for the North Coast Region to Include an Interim Policy in the Regulation of Waste Discharges from Underground Fuel Tank System. May 27, 1993. Approved by the State Board Res. No. 94-29 on March 21, 1994. Approved by the State Office of Administrative Law on August 18, 1994.

93-89 Amending the Water Quality Control Plan for the North Coast Region to Update Descriptions and Correct Inaccuracies. December 9, 1993. Approved by State Board Res. No. 94-29 on March 21, 1994. Approved by the State Office of Administrative Law on August 18, 1994.

94-49 Amending the Water Quality Control Plan for the North Coast Region, Section IV, Implementation Plans, Point Source Measures, Waste Discharge Prohibitions for the North Coastal Basin. March 24, 1994. Approved by the State Board Res. No. 94-52 on June 16, 1994. Approved by the State Office of Administrative Law on August 30, 1994.

95-53 Amending Point Source Measures in Section IV of the Water Quality Control Plan for the North Coast Region to Include an Action Plan for Storm Water Discharges. Approved by the State Board Res. No. 95-87 on November 16, 1995. Approved by the State Office of Administrative Law on February 21, 1996.

96-16 Amending the Water Quality Control Plan for the North Coast Region, Section 4, Implementation Plans, Point Source Measures, Policy on the Control of Water Quality with Respect to On-Site Waste Treatment and Disposal Practices. Approved by the State Board Res. No. 96-061 on August 15, 1996. Approved by the State Office of Administrative Law on November 20, 1996.

Resolution No.	
98-66	Amending the Water Quality Control Plan for the North Coast Region to Include Relevant Portions of the Water Quality Attainment Strategy (Total Maximum Daily Load) for Sediment for the Garcia River Watershed. Approved by the Regional Board on May 28, 1998, and revised by the Regional Board on December 10, 1998. Approved by the State Board Res. No. 2000-070 on September 21, 2000. Withdrawn from the State Office of Administrative Law review on February 15, 2001.
R1-2001-072	Revision to the Garcia River Watershed Water Quality Attainment Action Plan for Sediment, Including the Total Maximum Daily Load, Implementation Plan, and Monitoring Plan for Inclusion as an Amendment into the Water Quality Control Plan for the North Coast Region. Approved by the Regional Board on June 28, 2001. Approved by the State Board Res. No. 2001-126 on November 15, 2001. Approved by the State Office of Administrative Law on January 3, 2002. Approved by the United States Environmental Protection Agency on March 7, 2002.
R1-2003-0052	Update to Chapter 2, Beneficial Uses for inclusion as an Amendment into the Water Quality Control Plan for the North Coast Region. Approved by the Regional Board on June 26, 2003. Approved by the State Board Res. No. 2004-0040 on June 17, 2004. Approved by the State Office of Administrative Law on September 27, 2004. Approved by the United States Environmental Protection Agency on March 4, 2005.
R1-2004-0092	Update to Chapter 3, Water Quality Objectives, Summary of Antidegradation Policies, for inclusion as an Amendment into the Water Quality Control Plan for the North Coast Region. Approved by the Regional Board on November 29, 2004. Approved by the State Board Resolution No. 2005-0025 on March 16, 2005. Approved by the State Office of Administrative Law in October 2005.
R1-2005-0113	Amending the Water Quality Control Plan for the North Coast Region to (1) include introductory language on Total Maximum Daily Loads and to (2) include the Action Plan for the Scott River Sediment and Temperature Total Maximum Daily Loads. Adopted by the Regional Water Board on December 7, 2006, in Resolution No. R1-2005-0013. Adopted by State Water Board Resolution No. 2006-0046 on June 21, 2006. Approved by the State Office of Administrative Law on August 11, 2006. Approved by the United States Environmental Protection Agency on September 8, 2006.
R1-2004-0011	Update to Chapters 3 and 4 of Water Quality Control Plan for the North Coast Region to include the Schedule of Compliance Amendment. Adopted by the Regional Water Board on March 24, 2004. Adopted by the State Water Board with minor changes on November 18, 2004. Approved by the State Office of Administrative Law on August 18, 2005. A portion of the Amendment was approved by the United States Environmental Protection Agency (USEPA) on February 27, 2006. Additional portions of the Amendment approved by the USEPA on November 29, 2006.
R1-2006-0052	Amending the Water Quality Control Plan for the North Coast Region to include the Action Plan for the Shasta River Watershed Temperature and Dissolved Oxygen Total Maximum Daily Loads. Adopted by the Regional Water Board on June 29, 2006, in Resolution No. R1-2006-0052. Adopted by State Water Board Resolution No. 2006-0093 on November 15, 2006. Approved by the State Office of Administrative Law on January 9, 2007. Approved by the United States Environmental Protection Agency on January 26, 2007.

State Water Resources Control Board

WATER QUALITY CONTROL PLAN FOR CONTROL OF TEMPERATURE IN THE COASTAL AND INTERSTATE WATERS AND ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA[1]

DEFINITION OF TERMS

1. Thermal Waste - Cooling water and industrial process water used for the purpose of transporting waste heat.

2. Elevated Temperature Waste - Liquid, solid, or gaseous material including thermal waste discharged at a temperature higher than the natural temperature of receiving water. Irrigation return water is not considered elevated temperature waste for the purpose of this plan.

3. Natural Receiving Water Temperature - The temperature of the receiving water at locations, depths, and times which represent conditions unaffected by any elevated temperature waste discharge or irrigation return waters.

4. Interstate Waters - All rivers, lakes, artificial impoundments, and other waters that flow across or form a part of the boundary with other states or Mexico.

5. Coastal Waters - Waters of the Pacific Ocean outside of enclosed bays and estuaries which are within the territorial limits of California.

6. Enclosed Bays - Indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays will include all bays where the narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to the following: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

7. Estuaries and Coastal Lagoons - Waters at the mouths of streams which serve as mixing zones for fresh and ocean water during a major portion of the year. Mouths of streams which are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to

[1] This plan revises and supersedes the policy adopted by the State Board on January 7, 1971, and revised October 13, 1971, and June 5, 1972.

extend seaward if significant mixing of fresh and saltwater occurs in the open coastal waters. The waters decribed by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge and appropriate areas of Smith River, Klamath River, Mad River, Eel River, Noyo River, and Russian River.

8. Cold Interstate Waters - Streams and lakes having a range of temperatures generally suitable for trout and salmon including but not limited to the following: Lake Tahoe, Truckee River, West Fork Carson River, East Fork Carson River, West Walker River and Lake Topaz, East Walker River, Minor California-Nevada Interstate Waters, Klamath River, Smith River, Goose Lake, and Colorado River from the California-Nevada stateline to the Needles-Topoc Highway Bridge.

9. Warm Interstate Waters - Interstate streams and lakes having a range of temperature generally suitable for warm water fishes such as bass and catfish. This definition includes but is not limited to the following: Colorado River from the Needles-Topoc Highway Bridge to the northerly international boundary of Mexico, Tijuana River, New River, and Alamo River.

10. Existing Discharge - Any discharge (a) which is presently taking place, or (b) for which waste discharge requirements have been established and construction commenced prior to the adoption of this plan, or (c) any material change in an existing discharge for which construction has commenced prior to the adoption of this plan. Commencement of construction shall include execution of a contract for onsite construction or for major equipment which is related to the condenser cooling system.

    Major thermal discharges under construction which are included within this definition are:

    A. Diablo Canyon Units 1 and 2, Pacific Gas and Electric Company.

    B. Ormond Beach Generating Station Units 1 and 2, Southern California Edison Company.

    C. Pittsburg No. 7 Generating Plant, Pacific Gas and Electric Company.

    D. South Bay Generating Plant Unit 4 and Encina Unit 4, San Diego Gas and Electric Company.

11. New Discharge - Any discharge (a) which is not presently taking place unless waste discharge requirements have been established and construction as defined in Paragraph 10 has commenced prior to adoption of this plan or (b) which is presently

taking place and for which a material change is proposed but no construction as defined in Paragraph 10 has commenced prior to adoption of this plan.

12. Planktonic Organism - Phytoplankton, zooplankton and the larvae and eggs of worms, molluscs, and arthropods, and the eggs and larval forms of fishes.

13. Limitations or Additional Limitations - Restrictions on the temperature, location, or volume of a discharge, or restrictions on the temperature of receiving water in addition to those specifically required by this plan.

SPECIFIC WATER QUALITY OBJECTIVES

1. Cold Interstate Waters

   A. Elevated temperature waste discharges into cold interstate waters are prohibited.

2. Warm Interstate Waters

   A. Thermal waste discharges having a maximum temperature greater than 5°F above natural receiving water temperature are prohibited.

   B. Elevated temperature wastes shall not cause the temperature of warm interstate waters to increase by more than 5°F above natural temperature at any time or place.

   C. Colorado River - Elevated temperature wastes shall not cause the temperature of the Colorado River to increase above the natural temperature by more than 5°F or the temperature of Lake Havasu to increase by more than 3°F provided that such increases shall not cause the maximum monthly temperature of the Colorado River to exceed the following:

January	60°F	July	90°F
February	65°F	August	90°F
March	70°F	September	90°F
April	75°F	October	82°F
May	82°F	November	72°F
June	86°F	December	65°F

   D. Lost River - Elevated temperature wastes discharged to the Lost River shall not cause the temperature of the receiving water to increase by more than 2°F

when the receiving water temperature is less than 62°F, and 0°F when the receiving water temperature exceeds 62°F.

E. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

3. Coastal Waters

A. Existing discharges

(1) Elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance.

B. New discharges

(1) Elevated temperature wastes shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.

(2) Elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of natural temperature in these areas.

(3) The maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F.

(4) The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.

(5) Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

4. Enclosed Bays

A. Existing discharges

(1) Elevated temperature waste discharges shall comply with limitations necessary to assure protection of beneficial uses.

B. New discharges

(1) Elevated temperature waste discharges shall comply with limitations necessary to assure protection of beneficial uses. The maximum temperature of waste discharges shall not exceed the natural temperature of the receiving waters by more than 20°F.

(2) Thermal waste discharges having a maximum temperature greater than 4°F above the natural temperature of the receiving water are prohibited.

5. Estuaries

A. Existing discharges

(1) Elevated temperature waste discharges shall comply with the following:

a. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

b. Elevated temperature waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.

c. No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving waters at any time or place.

d. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

(2) Thermal waste discharges shall comply with the provisions of 5A (1) above and, in addition, the maximum temperature of thermal waste discharges shall not exceed 86°F.

B. New discharges

(1) Elevated temperature waste discharges shall comply with item 5A(1) above.

(2) Thermal waste discharges having a maximum temperature greater than 4°F above the natural temperature of the receiving water are prohibited.

(3) Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

GENERAL WATER QUALITY PROVISIONS

1. Additional limitations shall be imposed in individual cases if necessary for the protection of specific beneficial uses and areas of special biological significance. When additional limitations are established, the extent of surface heat dispersion will be delineated by a calculated 1 1/2°F isotherm which encloses an appropriate dispersion area. The extent of the dispersion area shall be:

   A. Minimized to achieve dispersion through the vertical water column rather than at the surface or in shallow water.

   B. Defined by the Regional Board for each existing and proposed discharge after receipt of a report prepared in accordance with the implementation section of this plan.

2. The cumulative effects of elevated temperature waste discharges shall not cause temperatures to be increased except as provided in specific water quality objectives contained herein.

3. Areas of special biological significance shall be designated by the State Board after public hearing by the Regional Board and review of its recommendations.

4. Regional Boards may, in accordance with Section 316(a) of the Federal Water Pollution Control Act of 1972, and subsequent federal regulations including 40 CFR 122, grant an exception to Specific Water Quality Objectives in this Plan. Prior to becoming effective, such exceptions and alternative less stringent requirements must receive the concurrence of the State Board.

5. Natural water temperature will be compared with waste discharge temperature by near-simultaneous measurements accurate to within 1°F. In lieu of near-simultaneous measurements, measurements may be made under calculated conditions of constant waste discharge and receiving water characteristics.

IMPLEMENTATION

1. The State Water Resources Control Board and the California Regional Water Quality Control Boards will administer this plan by establishing waste discharge requirements for discharges of elevated temperature wastes.

2. This plan is effective as of the date of adoption by the State Water Resources Control Board and the sections pertaining to temperature control in each of the policies and plans for the individual interstate and coastal waters shall be void and superseded by all applicable provisions of this plan.

3. Existing and future dischargers of thermal waste shall conduct a study to define the effect of the discharge on beneficial uses and, for existing discharges, determine design and operating changes which would be necessary to achieve compliance with the provisions of this plan.

4. Waste discharge requirements for existing elevated temperature wastes shall be reviewed to determine the need for studies of the effect of the discharge on beneficial uses, changes in monitoring programs and revision of waste discharge requirements.

5. All waste discharge requirements shall include a time schedule which assures compliance with water quality objectives by July 1, 1977, unless the discharger can demonstrate that a longer time schedule is required to complete construction of necessary facilities; or, in accordance with any time schedule contained in guidelines promulgated pursuant to Section 304(b) of the Federal Water Pollution Control Act.

6. Proposed dischargers of elevated temperature wastes may be required by the Regional Board to submit such studies prior to the establishment of waste discharge requirements. The Regional Board shall include in its requirements appropriate postdischarge studies by the discharger.

7. The scope of any necessary studies shall be as outlined by the Regional Board and shall be designed to include the following as applicable to an individual discharge:

    A. Existing conditions in the aquatic environment.

    B. Effects of the existing discharge on beneficial uses.

    C. Predicted conditions in the aquatic environment with waste discharge facilities designed and operated in compliance with the provisions of this plan.

    D. Predicted effects of the proposed discharge on beneficial uses.

    E. An analysis of costs and benefits of various design alternatives.

F. The extent to which intake and outfall structures are located and designed so that the intake of planktonic organisms is at a minimum, waste plumes are prevented from touching the ocean substrate or shorelines, and the waste is dispersed into an area of pronounced along-shore or offshore currents.

8. All waste discharge requirements adopted for discharges of elevated temperature wastes shall be monitored in order to determine compliance with effluent or receiving water temperature (or heat) requirements.

Furthermore, for significant thermal discharges as determined by the Regional Board or State, Regional Boards shall require expanded monitoring programs, to be carried out either on a continuous or periodic basis, designed to assess whether the source continues to provide adequate protection to beneficial uses (including the protection and propagation of a balanced indigenous community of fish, shellfish, and wildlife, in and on the body of water into which the discharge is made). When periodic expanded monitoring programs are specified, the frequency of the program shall reflect the probable impact of the discharge.

9. The State Board or Regional Board may require a discharger(s) to pay a public agency or other appropriate person an amount sufficient to carry out the expanded monitoring program required pursuant to paragraph 8 above if:

A. The discharger has previously failed to carry out monitoring programs in a manner satisfactory to the State Board or Regional Board, or;

B. More than a single facility, under separate ownerships, may significantly affect the thermal characteristics of the body of water, and the owners of such facilities are unable to reach agreement on a cooperative program within a reasonable time period specified by the State Board or Regional Board.

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WATER QUALITY CONTROL POLICY

FOR THE

ENCLOSED BAYS AND ESTUARIES

OF CALIFORNIA

AS ADOPTED BY RESOLUTION NO. 95-84

ON NOVEMBER 16, 1995

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
(Amendments shown on page 2, Chapter 1.B, 1.b in underscore)

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 95-84

ADOPTION OF AN AMENDMENT TO THE
WATER QUALITY CONTROL POLICY FOR THE ENCLOSED BAYS
AND ESTUARIES OF CALIFORNIA

WHEREAS:

1. The Water Quality Control Policy for the Enclosed Bays and Estuaries of California (Policy) was adopted by the State Water Resources Control Board (SWRCB) in 1974.

2. Section 13143 of the California Water Code provides that State policy for water quality control may be revised.

3. The San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) proposed that the Policy be amended to allow discharges from ground water cleanup projects to San Francisco Bay south of the Dumbarton Bridge when reclamation or other disposal methods are unavailable or not appropriate and when other SWRCB and SFBRWQCB plans, policies, and regulations are met.

4. At the time of SWRCB adoption of the Policy, ground water cleanup projects were not widely undertaken and, there is no evidence that discharges from these projects were considered in the development of the Policy.

5. Appropriate ground water cleanup projects should be encouraged.

6. The discharges from ground water cleanup projects could be allowed where reclamation is not feasible and the need to dispose of treated ground water outweighs the need to prohibit the discharge south of the Dumbarton Bridge.

7. SWRCB staff prepared public notices and documents and followed procedures satisfying environmental documentation requirements in accordance with the California Environmental Quality Act (Public Resources Code 21000 et seq.) and other State and Federal statutes and regulations.

8 The SWRCB held a public hearing regarding the proposed amendments on November 2, 1995.

9 Amendments to SWRCB policies do not become effective until regulatory provisions are approved by the Office of Administrative Law (OAL).

THEREFORE BE IT RESOLVED THAT

The SWRCB:

1. Approves the following amendment to the Policy:

   Add to the end of Chapter I.B., 1b.:
   Exceptions to this provision may be granted to allow discharges south of the Dumbarton Bridge of treated ground water from ground water cleanup projects. Prior to allowing such a discharge, the Regional Board must make the following findings:

   1 That the discharge will comply with all applicable State and Regional Board plans, policies and regulations.

   2. That the reclamation or other reuse of the treated ground water prior to discharge is not practicable.

   3. That there is no other feasible location to discharge the treated ground water.

   4. That the need to dispose of treated ground water outweighs the need to prohibit the discharge south of the Dumbarton Bridge.

2 The SFBRWQCB shall continue to implement provisions of existing State and Federal laws regarding the discharge of toxic pollutants. In particular, the SFBRWQCB shall issue National Pollutant Discharge Elimination System permits in compliance with the Porter-Cologne Water Quality Control Act and applicable State and Federal regulation, including, but not limited to, 40 CFR, Section 122.44(d).

3 Within three years after Department of Fish and Game (DFG) notifies the SFBRWQCB that specific water bodies support threatened or endangered species and that scientific evidence indicates that certain existing water quality objectives for these water bodies do not adequately protect such species, the SFBRWQCB shall determine, in consultation with DFG, whether these objectives are adequately protective. In cases where such existing objectives do not provide adequate protection for threatened and endangered species, the SFBRWQCB shall develop and adopt adequately protective site-specific objectives for these constituents.

4 Has determined after careful consideration of all comments testimony, and written reports, that while the proposed amendment may have some impacts on the environment, those impacts are not significant and will not result in degradation of water quality.

5. Authorizes the SWRCB staff to submit the approved amendment to the U.S. Environmental Protection Agency and regulatory provisions to OAL for approval.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on November 16, 1995.

Maureen Marché
Administrative Assistant to the Board

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WATER QUALITY CONTROL POLICY FOR THE ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA[1/]

INTRODUCTION

The purpose of this policy is to provide water quality principles and guidelines to prevent water quality degradation and to protect the beneficial uses of waters of enclosed bays and estuaries. Decisions on water quality control plans, waste discharge requirements, construction grant projects, water rights permits, and other specific water quality control implementing actions of the State and Regional Boards shall be consistent with the provisions of this policy.

The Board declares its intent to determine from time to time the need for revision this policy.

This policy does not apply to wastes from vessels or land runoff except as specifically indicated for siltation (Chapter III 4.) and combined sewer flows (Chapter III 7.)

CHAPTER I.
PRINCIPLES FOR MANAGEMENT OF WATER QUALITY IN ENCLOSED BAYS AND ESTUARIES

A. It is the policy of the State Board that the discharge of municipal wastewaters and industrial process waters [2/] (exclusive of cooling waste discharges) to enclosed bays and estuaries, other than the San Francisco Bay-Delta system, shall be phased out at the earliest practicable date. Exceptions to this provision may be granted by a Regional Board only when the Regional Board finds that the wastewater in question would consistently be treated and discharged in such a manner that it would enhance the quality of receiving waters above that which would occur in the absence of the discharge.[3/]

B. With regard to the waters of the San Francisco Bay-Delta system, the State Board finds and directs as follows:

1.a. There is a considerable body of scientific evidence and opinion which suggests the existence of biological degradation due to long-term exposure to toxicants which have been discharged to the San Francisco Bay-Delta system. Therefore, implementation of a program which controls toxic effects through a combination of source control for toxic materials, upgraded wastewater treatment, and improved dilution of wastewaters shall proceed as rapidly as is practicable with the objective of providing full protection to the biota and the beneficial uses of Bay-Delta waters in a cost-effective manner.

1.b A comprehensive understanding of the biological effects of wastewater discharge on San Francisco Bay, as a whole, must await the results of further scientific study. There is, however, sufficient evidence at this time to indicate that the continuation of wastewater discharges to the southern reach of San Francisco Bay, south of the Dumbarton Bridge, is an unacceptable condition. The State Board and the San Francisco Bay Regional Board shall take such action as is necessary to assure the elimination of wastewater discharges to waters of the San Francisco Bay, south of Dumbarton Bridge, at the earliest practicable date. Exceptions to this provision may be granted to allow discharges south of the Dumbarton Bridge of treated ground water from ground water cleanup projects. Prior to allowing such a discharge, the Regional Board must make the following findings:

1. That the discharge will comply with all applicable State and Regional Board plans, policies and regulations.

2. That the reclamation or other reuse of the treated ground water prior to discharge is not practicable.

3. That there is no other feasible location to discharge the treated ground water.

4. That the need to dispose of treated ground water outweighs the need to prohibit the discharge south of the Dumbarton Bridge.

1.c In order to prevent excessive investment which would unduly impact the limited funds available to California for construction of publicly owned treatment works, construction of such works shall proceed in a staged fashion, and each stage shall be fully evaluated by the State and Regional Boards to determine the necessity for additional expenditures. Monitoring requirements shall be established to evaluate any effects on water quality, particularly changes in species diversity and abundance, which may result from the operation of each stage of planned facilities and source control programs. Such a staged construction program, in combination with an increased monitoring effort, will result in the most cost-effective and rapid progress toward a goal of maintaining and enhancing water quality in the San Francisco Bay-Delta system.

2. Where a waste discharger has an alternative of in-bay or ocean disposal and where both alternatives offer a similar degree of environmental and public health protection, prime consideration shall be given to the alternative which offers the greater degree of flexibility for the implementation of economically feasible wastewater reclamation options.

C. The following policies apply to all of California's enclosed bays and estuaries:

1. Persistent or cumulative toxic substances shall be removed from the waste to the maximum extent practicable through source control or adequate treatment prior to discharge.

2 Bay or estuarine outfall and diffuser systems shall be designed to achieve the most rapid initial dilution[4/] practicable to minimize concentrations of substances not removed by source control or treatment.

3. Wastes shall not be discharged into or adjacent to areas where the protection of beneficial uses requires spatial separation from waste fields.

4. Waste discharges shall not cause a blockage of zones of passage required for the migration of anadromous fish.

5. Nonpoint sources of pollutants shall be controlled to the maximum practicable extent.

CHAPTER II.
QUALITY REQUIREMENTS FOR WASTE DISCHARGES

1. In addition to any requirements of this policy, effluent limitations shall be as specified pursuant to Chapter 5.5 of the Porter-Cologne Water Quality Control Act, and Regional Boards shall limit the mass emissions of substances as necessary to meet such limitations. Regional Boards may set more restrictive mass emission rates and concentration standards than those which are referenced in this policy to reflect dissimilar tolerances to wastewater constituents among different receiving water bodies.

2. All dischargers of thermal wastes or elevated temperature wastes to enclosed bays and estuaries which are permitted pursuant to this policy shall comply with the "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California", State Water Resources Control Board, 1972, and with amendments and supplements thereto.

3. Radiological limits for waste discharges (for which regulatory responsibility is not preempted by the Federal Government) shall be at least as restrictive as limitations indicated in Section 30269, and Section 30355, Appendix A, Table II of the California Administrative Code.

4. Dredge spoils to be disposed of in bay and estuarine waters must comply with federal criteria for determining the acceptability of dredged spoils to marine waters, and must be certified by the State Board of Regional Boards as in compliance with State Plans and Policies.

CHAPTER III.
DISCHARGE PROHIBITIONS

New discharges[5/] of municipal wastewaters and industrial process waters[2/] (exclusive of cooling water discharges) to enclosed bays and estuaries, other than the San Francisco Bay-Delta system, which are not consistently treated and discharged in a manner that would enhance the quality of receiving waters above that which would occur in the absence of the discharge, shall be prohibited.

The discharge of municipal and industrial waste sludge and untreated sludge digester supernatant, centrate, or filtrate to enclosed bays and estuaries shall be prohibited.

3 The deposition of rubbish or refuse into surface waters or at any place where they would be eventually transported to enclosed bays or estuaries shall be prohibited.[6/]

4 The direct or indirect discharge of silt, sand, soil clay, or other earthen materials from onshore operations including mining, construction, agriculture, and lumbering, in quantities which unreasonably affect or threaten to affect beneficial uses shall be prohibited.

5 The discharge of materials of petroleum origin in sufficient quantities to be visible or in violation of waste discharge requirements shall be prohibited, except when such discharges are conducted for scientific purposes. Such testing must be approved by the Executive Officer of the Regional Board and the Department of Fish and Game.

6 The discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste shall be prohibited.

7 The discharge or by-passing of untreated waste to bays and estuaries shall be prohibited. [7/]

CHAPTER IV.
GENERAL PROVISIONS

A. Effective Date

This policy is in effect as of the date of adoption by the State Water Resources Control Board.

B. Review and Revision of Plans, Policies and Waste Discharge Requirements

Provisions of existing or proposed policies or water qualify control plans adopted by the State or Regional Boards for enclosed bays or estuaries shall be amended to conform with the applicable provisions of this policy.

Each appropriate Regional Board shall review and revise the waste discharge requirements with appropriate time schedules for existing discharges to achieve compliance with this policy and applicable water quality objectives. Each Regional Board affected by this policy shall set forth for each discharge allowable mass emission rates for each applicable effluent characteristic included in waste discharge requirements.

Regional Boards shall finalize waste discharge requirements as rapidly as is consistent with the National Pollutant Discharge Elimination System Permit Program.

C. Administration of Clean Water Grants Program

The Clean Water Grants Program shall require that the environmental impact report for any existing or proposed wastewater discharge to enclosed bays and estuaries, other than the San Francisco Bay-Delta system, shall evaluate whether or not the discharge would enhance the quality of receiving waters above that which would occur in the absence of the discharge.

The Clean Water Grants Program shall require that each study plan and project report (beginning with F.Y. 1974-75 projects) for a proposed wastewater treatment or conveyance facility within the San Francisco Bay-Delta system shall contain an evaluation of the degree to which the proposed project represents a necessary and cost-effective stage in a program leading to compliance with an objective of full protection of the biota and beneficial uses of Bay-Delta waters.

D. Administration of Water Rights

Any applicant for a permit to appropriate from a water course which is tributary to an enclosed by or estuary may be required to present to the State Board an analysis of the anticipated effects of the proposed appropriation on water quality and beneficial uses of the effected bay or estuary.

E. Monitoring Program

The Regional Board shall require dischargers to conduct self-monitoring programs and submit reports as necessary to determine compliance with waste discharge requirements and to evaluate the effectiveness of wastewater control programs. Such monitoring programs shall comply with applicable sections of the State Board's Administrative Procedures, and any additional guidelines which may be issued by the Executive Officer of the State Board.

FOOTNOTES

1/ Enclosed bays are indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between headlands or outer most harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes, but is not limited to: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

Estuaries, including coastal lagoons, are waters at the mouths of streams which serve as mixing zones for fresh and ocean waters. Mouths of streams which are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters shall be considered to extend seaward if significant mixing of fresh and saltwater occurs in the open coastal waters. Estuarine waters include, but are not limited to, the Sacramento-San Joaquin Delta, as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

2/ For the purpose of this policy, treated ballast waters and innocuous nonmunicipal wastewater such as clear brines, washwater, and pool drains are not necessarily considered industrial process wastes, and may be allowed by Regional Boards under discharge requirements that provide protection to the beneficial uses of the receiving water.

3/ Undiluted wastewaters covered under this exception provision shall not produce less than 90 percent survival, 50 percent of the time, and not less than 70 percent survival, 10 percent of the time of a standard test species in a 96-hour static or continuous flow bioassay test using undiluted waste. Maintenance of these levels of survival shall not by themselves constitute sufficient evidence that the discharge satisfies the criteria of enhancing the quality of the receiving water above that which occur in the absence of the discharge. Full and uninterrupted protection for the beneficial uses of the receiving water must be maintained. A Regional Board may require physical, chemical, bioassay, and bacteriological assessment of treated wastewater quality prior to authorizing release to the bay or estuary of concern.

4/ Initial dilution zone is defined as the volume of water near the point of discharge within which the waste immediately mixes with the bay or estuarine water due to the momentum of the waste discharge and the difference in density between the waste and receiving water.

5/ A new discharge is a discharge for which a Regional Board has not received a report of waste discharge prior to the date of adoption of this policy, and which was not in existence prior to the date of adoption of this policy.

6/ Rubbish and refuse include any cans, bottles, paper, plastic, vegetable matter, or dead animals or dead fish deposited or caused to be deposited by man.

7/ The prohibition does not apply to cooling water streams which comply with the "Water Quality Control Plan for the Control of Temperature in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" - State Water Resources Control Board.

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 74-43

WATER QUALITY CONTROL POLICY FOR THE ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA

WHEREAS:

1. The Board finds it necessary to promulgate water quality principles, guidelines, effluent quality requirements, and prohibitions to govern the disposal of waste into the enclosed bays and estuaries of California;

2. The Board, after review and analysis of testimony received at public hearings, has determined that it is both feasible and desirable to require that the discharge of municipal wastewaters and industrial process waters to enclosed bays and estuaries (other than the San Francisco Bay-Delta system) should only be allowed when a discharge enhances the quality of the receiving water above that which would occur in the absence of the discharge;

3. The Board has previously promulgated requirements for the discharge of thermal and elevated temperature wastes to enclosed bays and estuaries (Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California - SWRCB, 1972);

4. The Board, after review and analysis of testimony received at public hearings, has determined that implementation of a program which controls toxic effects through a combination of source control for toxic materials, upgraded waste treatment, and improved dilution of wastewaters, will result in timely and cost-effective progress toward an objective of providing full protection to the biota and beneficial uses of San Francisco Bay-Delta waters;

5. The Board intends to implement monitoring programs to determine the effects of source control programs, upgraded treatment, and improved dispersion of wastewaters on the condition of the biota and beneficial uses of San Francisco Bay-Delta waters.

THEREFORE, BE IT RESOLVED, that

1. The Board hereby adopts the "Water Quality Control Policy for the Enclosed Bays and Estuaries of California".

2. The Board hereby directs all affected California Regional Water Quality Control Boards to implement the provisions of the policy.

3. The Board hereby declares its intent to determine from time to time the need for revising the policy to assure that it reflects current knowledge of water quality objectives necessary to protect beneficial uses of bay and estuarine waters and that it is based on latest technological improvements.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 16, 1974.

Bill B. Dendy

Bill B. Dendy
Executive Officer

STATE WATER RESOURCES CONTROL BOARD

RESOLUTION NO. 68-16

STATEMENT OF POLICY WITH RESPECT TO
MAINTAINING HIGH QUALITY OF WATERS IN CALIFORNIA

WHEREAS the California Legislature has declared that it is the policy of the State that the granting of permits and licenses for unappropriated water and the disposal of wastes into the waters of the State shall be so regulated as to achieve highest water quality consistent with maximum benefit to the people of the State and shall be controlled so as to promote the peace, health, safety and welfare of the people of the State; and

WHEREAS water quality control policies have been and are being adopted for waters of the State; and

WHEREAS the quality of some waters of the State is higher than that established by the adopted policies and it is the intent and purpose of this Board that such higher quality shall be maintained to the maximum extent possible consistent with the declaration of the Legislature;

NOW, THEREFORE, BE IT RESOLVED:

1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.

2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

3. In implementing this policy, the Secretary of the Interior will be kept advised and will be provided with such information as he will need to discharge his responsibilities under the Federal Water Pollution Control Act.

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the Secretary of the Interior as part of California's water quality control policy submission.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 24, 1968.

Dated: October 28, 1968

Kerry W. Mulligan
Executive Officer
State Water Resources
Control Board

APPENDIX 6-B

Federal Antidegradation Policy

[Code of Federal Regulations]
[Title 40, Volume 20]
[Revised as of July 1, 2004]
From the U.S. Government Printing Office via GPO Access
[CITE: 40CFR131.12]

TITLE 40--PROTECTION OF ENVIRONMENT

CHAPTER I--ENVIRONMENTAL PROTECTION AGENCY (CONTINUED)

PART 131_WATER QUALITY STANDARDS--Table of Contents

Subpart B_Establishment of Water Quality Standards

Sec. 131.12 Antidegradation policy.

(a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:

(1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act.

STATE WATER RESOURCES CONTROL BOARD

RESOLUTION NO. 88-63

ADOPTION OF POLICY ENTITLED

"SOURCES OF DRINKING WATER"

WHEREAS

1. California Water Code Section 13140 provides that the State Board shall formulate and adopt State Policy for Water Quality Control; and,

2. California Water Code Section 13240 provides that Water Quality Plans "shall conform" to any State Policy for Water Quality Control; and,

3. The Regional Boards can conform the Water Quality Control Plans to this policy by amending the plans to incorporate the policy; and,

4. The State Board must approve any conforming amendments pursuant to Water Code Section 13245; and,

5. "Sources of drinking water" shall be defined in the Water Quality Control Plans as those water bodies with beneficial uses designated as suitable, or potentially suitable, for municipal or domestic water supply (MUN); and,

6. The Water Quality Control Plans do not provide sufficient detail in the description of water bodies designated MUN to judge clearly what is, or is not, a source of drinking water for various purposes.

THEREFORE BE IT RESOLVED:

All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards[1] with the exception of:

1. Surface and ground waters where:

a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or

b. There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically

achievable treatment practices, or

c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

2. Surface Waters Where:

a. The water is in systems designed or modified to collect or treat municipal or industrial wastewaters, process waters, mining wastewaters, or storm water runoff, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards; or,

b. The water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards.

3. Ground water where:

The aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to 40 Code of Federal Regulations, Section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 CFR, Section 261.3.

4. Regional Board Authority to Amend Use Designations:

Any body of water which has a current specific designation previously assigned to it by a Regional Board in Water Quality Control Plans may retain that designation at the Regional Board's discretion. Where a body of water is not currently designated as MUN but, in the opinion of a Regional Board, is presently or potentially suitable for MUN, the Regional Board shall include MUN in the beneficial use designation.

The Regional Boards shall also assure that the beneficial uses of municipal and domestic supply are designated for protection wherever those uses are presently being attained, and assure that any changes in beneficial use designations for waters of the State are consistent with all applicable regulations adopted by the Environmental Protection Agency.

The Regional Boards shall review and revise the Water Quality Control Plans to incorporate this policy.

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1 This policy does not affect any determination of what is a potential source of drinking water for the limited purposes of maintaining a surface impoundment after June 30, 1988, pursuant to Section 25208.4 of the Health and Safety Code.

CERTIFICATION

The undersigned, Administrative assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a policy duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 19, 1988.

/s/

Maureen Marché

Administrative Assistant to the Board

WATER QUALITY CONTROL POLICY

on the

USE and DISPOSAL of INLAND WATERS

USED for POWERPLANT COOLING

ADOPTED JUNE 19, 1975

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CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 75-58

WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING

WHEREAS:

1. Basin Planning conducted by the State Board has shown that there is presently no available water for new allocations in some basins.

2. Projected future water demands, when compared to existing developed water supplies, indicate that general freshwater shortages will occur in many areas of the State prior to the year 2000.

3. The improper disposal of powerplant cooling waters may have an adverse impact on the quality of inland surface and groundwaters.

4. It is believed that further development of water in the Central Valley will reduce the quantity of water available to meet Delta outflow requirements and protect Delta water quality standards.

THEREFORE, BE IT RESOLVED, that

1. The Board hereby adopts the "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling".

2. The Board hereby directs all affected California Regional Water Quality Control Boards to implement the applicable provisions of the policy.

3. The Board hereby directs staff to coordinate closely with the State Energy Resources Conservation and Development Commission and other involved state and local agencies as this policy is implemented.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the forgoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 19, 1975.

Bill B. Dendy
Executive Officer

WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWERPLANT COOLING

Introduction

The purpose of this policy is to provide consistent statewide water quality principles and guidance for adoption of discharge requirements, and implementation actions for powerplants which depend upon inland waters for cooling. In addition, this policy should be particularly useful in guiding planning of new power generating facilities so as to protect beneficial uses of the State's water resources and to keep the consumptive use of freshwater for powerplant cooling to that minimally essential for the welfare of the citizens of the State.

This policy has been prepared to be consistent with federal, state, and local planning and regulatory statutes, the Warren-Alquist State Energy Resources Conservation and Development Act, Water Code Section 237 and the Waste Water Reuse Law of 1974.

Section 25216.3 of the Warren-Alquist Act states:

"(a) The commission shall compile relevant local, regional, state, and federal land use, public safety, environmental, and other standards to be met in designing, siting, and operating facilities in the State: except as provided in subdivision (d) of Section 25402, adopt standards, except for air and water quality,…."

Water Code Section 237 and Section 462 of the Waste Water Reuse Law, direct the Department of Water Resources to:

237. "…either independently or in cooperation with any person or any county, state, federal, or orhter agency, including, but not limited to, the State Energy Resources Conservation and Development Commission, shall conduct studies and investigations on the need and availability of water for thermal electric powerplant cooling purposes, and shall report thereon to the Legislature from time to time…."

462. "…conduct studies and investigations on the availability and quality of waste water and uses of reclaimed waste water for beneficial purposes including, but not limited to … and cooling for thermal electric powerplants."

Decisions on waste discharge requirements, water rights permits, water quality control plans, and other specific water quality control implementing actions by the State and Regional Boards shall be consistent with provisions of this policy.

The Board declares its intent to determine from time to time the need for revising this policy.

Definitions

1. Inland Water – all waters within the territorial limits of California exclusive of the waters of the Pacific Ocean outside of enclosed bays, estuaries, and coastal lagoons.

2. Fresh Inland Waters – those inland waters which are suitable for use as a source of domestic, municipal, or agricultural water supply and which provide habitat for fish and wildlife.

3. Salt Sinks – areas designated by the Regional Water Quality Control Boards to receive saline waste discharges.

4. Brackish Waters – includes all waters with a salinity range of 1,000 to 30,000 mg/l and a chloride concentration range of 250 to 12,000 mg/l. The application of the term "brackish" to a water is not intended to imply that such water is no longer suitable for industrial or agricultural purposes.

5. Steam-Electric Power Generating Facilities – electric power generating facilities utilizing fossil or nuclear-type fuel or solar heating in conjunction with a thermal cycle employing the steam-water system as the thermodynamic medium and for the purposes of this policy is synonomous with the word "powerplant".

6. Blowdown – the minimum discharge of either boiler water or recirculating cooling water for the purpose of limiting the buildup of concentrations of materials in excess of desirable limits established by best engineering practice.

7. Closed Cycle Systems – a cooling water system from which there is no discharge of wastewater other than blowdown.

8. Once-Through Cooling – a cooling water system in which there is no recirculation of the cooling water after its initial use.

9. Evaporative Cooling Facilities – evaporative towers, cooling ponds, or cooling canals, which utilize evaporation as a means of wasting rejected heat to the atmosphere.

10. Thermal Plan – "Water Quality Control Plan for Control of Temperature In the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California".

11. Ocean Plan – "Water Quality Control Plan for Ocean Waters of California".

Basis of Policy

1. The State Board believes it is essential that every reasonable effort be made to conserve energy supplies and reduce energy demands to minimize adverse effects on water supply and water quality and at the same time satisfy the State's energy requirements.

2. The increasing concern to limit changes to the coastal environment and the potential hazards of earthquake activity along the coast has led the electric utility industry to consider siting steam-electric generating plants inland as an alternative to proposed coastal locations.

3. Although many of the impacts of coastal powerplants on the marine environmental are still not well understood, it appears the coastal marine environment is less susceptible than inland waters to the water quality impacts associated with powerplant cooling. Operation of existing coastal powerplants indicate that these facilities either meet the standards of the State's Thermal Plan and Ocean Plan or could do so readily with appropriate technological modifications. Furthermore, coastal locations provide for application of a wide range of cooling technologies which do not require the consumptive use of inland waters and therefore would not place an additional burden on the State's limited supply of inland waters. These technologies include once-through cooling which is appropriate for most coastal sites, potential use of saltwater cooling towers, or use of brackish water where more stringent controls are required for environmental considerations at specific sites.

4. There is a limited supply of inland water resources in California. Basin planning conducted by the State Board has shown that there is no available water for new allocations in some basins. Projected future water demands when compared to existing developed water supplies indicate that general fresh-water shortages will occur in many areas of the State prior to the year 2000. The use of inland waters for powerplant cooling needs to be carefully evaluated to assure proper future allocation of inland waters considering all other beneficial uses. The loss of inland waters considering all other beneficial uses. The loss of inland waters through evaporation in powerplant cooling facilities may be considered an unreasonable use of inland waters when general shortages occur.

5. The Regional Boards have adopted water quality objectives including temperature objectives including temperature objectives for all surface waters in the State.

6. Disposal of once-through cooling waters from powerplants to inland water is incompatible with maintaining the water quality objectives of the State Board's "Thermal Plan" and "Water Quality Control Plans."

7. The improper disposal of blowdown from evaporative cooling facilities may have an adverse impact on the quality of inland surface and ground waters and on fish and wildlife.

8. An important consideration in the increased use of inland water for powerplant cooling or for any other purpose in the Central Valley Region is the reduction in the available quantity of water to meet the Delta outflow requirements necessary to protect Delta water quality objectives and standards. Additionally, existing contractual agreements to provide future water supplies to the Central Valley, the South Coastal Basin, and other areas using supplemental water supplies are threatening to further reduce the Central Valley outflow necessary to protect the Delta environment.

9. The California Constitution and the California Water Code declare that the right to use water from a natural stream or watercourse is limited to such water as shall be reasonably required for beneficial use and does not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion. Section 761, Article 17.2, Subchapter 2, Chapter 3, Title 23, California Administrative Code provides that permits or licenses for the appropriation of water will contain a term which will subject the permit or license to the continuing authority of the State Board to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

10. The Water Code authorizes the State Board to prohibit the discharge of wastes to surface and ground waters of the State.

Principles

1. It is the Board's position that from a water quantity and quality standpoint the source of powerplant cooling water should come from the following sources in this order of priority depending on site specifics such as environmental, technical and economic feasibility consideration: (1) wastewater being discharged to the ocean, (2) ocean, (3) brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low TDS, and (5) other inland waters.

2. Where the Board has jurisdiction, use of fresh inland waters for powerplant cooling will be approved by the Board only when it is demonstrated that the use of other water supply sources or other methods of cooling would be environmentally undesirable or economically unsound.

3. In considering issuance of a permit or license to appropriate water for powerplant cooling, the Board will consider the reasonableness of the proposed water use when compared with other present and future needs for the water source and when viewed in the context of alternative water sources that could be used for the purpose. The Board will give great weight to the results of studies made pursuant to the Warren-Alquist State Energy Resources Conservation and Development Act and carefully evaluate studies by the Department of Water Resources made pursuant to Sections 237 and 462, Division 1 of the California Water Code.

4. The discharge of blowdown water from cooling towers or return flows from once-through cooling shall not cause a violation of water quality objectives or waste discharge requirements established by the Regional Boards.

5. The use of unlined evaporation ponds to concentrate salts from blowdown waters will be permitted only at salt sinks approved by the Regional and State Boards. Proposals to utilize unlined evaporation ponds for final disposal of blowdown waters must include studies of alternative methods of disposal. These studies must show that the geologic strata underlying the proposed ponds or salt sink will protect usable groundwater.

6. Studies of availability of inland waters for use in powerplant cooling facilities to be constructed in Central Valley basins, the South Coastal Basins or other areas which receive supplemental water from Central Valley streams as for all major new uses must include an analysis of the impact of such use on Delta outflow and Delta water quality objectives. The studies associated with powerplants should include an analysis of the cost and water use associated with the use of alternative cooling facilities employing dry, or wet/dry modes of operation.

7. The State Board encourages water supply agencies and power generating utilities and agencies to study the feasibility of using wastewater for powerplant cooling. The State Board encourages the use of wastewater for powerplant cooling where it is appropriate. Furthermore, Section 25601(d) of the Warren-Alquist Energy Resources Conservation and Development Act directs the Commission to study, "expanded use of wastewater as cooling water and other advances in powerplant cooling" and Section 462 of the Waste Water Reuse Law directs the Department of Water Resources to "…conduct studies and investigations on the availability and quality of waste water and uses of reclaimed waste water for beneficial purposes including, but not limited to… and cooling for thermal electric powerplants."

Discharge Prohibitions

1. The discharge to land disposal sites of blowdown waters from inland powerplant cooling facilities shall be prohibited except to salt sinks or to lined facilities approved by the Regional and State Boards for the reception of such wastes.

2. The discharge of wastewaters from once-through inland powerplant cooling facilities shall be prohibited unless the discharger can show that such a practice will maintain the existing water quality and aquatic environment of the State's water resources.

3. The Regional Boards may grant exceptions to these discharge prohibitions on a case-by-case basis in accordance with exception procedures included in the "Water Quality Control Plan for Control of Temperature In the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California.

Implementation

1. Regional Water Quality Control Boards will adopt waste discharge requirements for discharges from powerplant cooling facilities which specify allowable mass emission rates and/or concentrations of effluent constituents for the blowdown waters. Waste discharge requirements for powerplant cooling facilities will also specify the water quality conditions to be maintained in the receiving waters.

2. The discharge requirements shall contain a monitoring program to be conducted by the discharger to determine compliance with waste discharge requirements.

3. When adopting waste discharge requirements for powerplant cooling facilities the Regional Boards shall consider other environmental factors and may require an environmental impact report, and shall condition the requirement in accordance with Section 2718, Subchapter 17, Chapter 3, Title 23, California Administrative Code.

4. The State Board shall include a term in all permits and licenses for appropriation of water for use in powerplant cooling that requires the permittee or licensee to conduct ongoing studies of the environmental desirability and economic feasibility of changing facility operations to minimize the use of fresh inland waters. Study results will be submitted to the State Board at intervals as specified in the permit term.

5. Petitions by the appropriator to change the nature of the use of appropriated water in an existing permit or license to allow the use of inland water for powerplant cooling may have an impact on the quality of the environment and as such require the preparation of an environmental impact statement or a supplement to an existing statement regarding, among other factors, an analysis of the reasonableness of the proposed use.

6. Applications to appropriate inland waters for powerplant cooling purpose shall include results of studies comparing the environmental impact of alternative inland sites as well as alternative water supplies and cooling facilities. Studies of alternative coastal sites must be included in the environmental impact report. Alternatives to be considered in the environmental impact report, including but not limited to sites, water supply, and cooling facilities, shall be mutually agreed upon by the prospective appropriator and the State Board staff. These studies should include comparisons of environmental impact and economic and social benefits and costs in conformance with the Warren-Alquist State Energy Resources Conservation and Development Act, the California Coastal Zone Plan, the California Environmental Quality Act and the National Environmental Policy Act.

STATE WATER RESOURCES CONTROL BOARD

RESOLUTION NO. 77-1

POLICY WITH RESPECT TO WATER RECLAMATION IN CALIFORNIA

WHEREAS:

1. The California Constitution provides that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that waste or unreasonable use or unreasonable method of use of water be prevented, and that conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare;

2. The California Legislature has declared that the State Water Resources Control Board and each Regional Water Quality Control Board shall be the principal state agencies with primary responsibility for the coordination and control of water quality;

3. The California Legislature has declared that the people of the State have a primary interest in the development of facilities to reclaim water containing waste to supplement existing surface and underground water supplies;

4. The California Legislature has declared that the State shall undertake all possible steps to encourage the development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water requirements of the State;

5. The Board has reviewed the document entitled "Policy and Action Plan for Water Reclamation in California", dated December 1976. This document recommends a variety of actions to encourage the development of water reclamation facilities and the use of reclaimed water. Some of these actions require direct implementation by the Board; others require implementation by the Executive Officer and the Regional Boards. In addition, this document recognizes that action by many other state, local, and federal agencies and the California State Legislature would also encourage construction of water reclamation facilities and the use of reclaimed water. Accordingly, the Board recommends for its consideration a number of actions intended to coordinate with the program of this Board;

6. The Board must concentrate its efforts to encourage and promote reclamation in water-short areas of the State where reclaimed water can supplement or replace other water supplies without interfering with water rights or instream beneficial uses or placing an unreasonable burden on present water supply systems; and

7. In order to coordinate the development of reclamation potential in California, the Board must develop a data collection, research, planning, and implementation program for water reclamation and reclaimed water uses.

THEREFORE, BE IT RESOLVED:

1. That the State Board adopt the following Principles:

I. The State Board and the Regional Boards shall encourage, and consider or recommend for funding, water reclamation projects which meet Condition l, 2, or 3 below and which do not adversely impact vested water rights or unreasonably impair instream beneficial uses or place an unreasonable burden on present water supply systems;

(1) Beneficial use will be made of wastewaters that would otherwise be discharged to marine or brackish receiving waters or evaporation ponds,

(2) Reclaimed water will replace or supplement the use of fresh water or better quality water,

(3) Reclaimed water will be used to preserve, restore, or enhance instream beneficial uses which include, but are not limited to, fish, wildlife, recreation and esthetics associated with any surface water or wetlands.

II. The State Board and the Regional Boards shall (1) encourage reclamation and reuse of water in water-short areas of the State, (2) encourage water conservation measures which further extend the water resources of the State, and (3) encourage other agencies, in particular the Department of Water Resources, to assist in implementing this policy.

III. The State Board and the Regional Boards recognize the need to protect the public health including potential vector problems and the environment in the implementation of reclamation projects.

IV. In implementing the foregoing Principles, the State Board or the Regional Boards, as the case may be, shall take appropriate actions, recommend legislation, and recommend actions by other agencies in the areas of (1) planning, (2) project funding, (3) water rights, (4) regulation and enforcement, (5) research and demonstration, and (6) public involvement and information.

2. That, in order to implement the foregoing Principles, the State Board:

(a) Approves Planning Program Guidance Memorandum No. 9, "PLANNING FOR WASTEWATER RECLAMATION",

(b) Adopts amendments and additions to Title 23, California Administrative Code Sections 654.4, 761, 764.9, 783, 2101, 2102, 2107, 2109, 2109.1, 2109.2, 2119, 2121, 2133(b)(2), and 2133(b)(3),

(c) Approves Grants Management Memorandum No. 9.01, "WASTEWATER

RECLAMATION",

(d) Approves the Division of Planning and Research, Procedures and Criteria for the Selection of Wastewater Reclamation Research and Demonstration Projects,

(e) Approves "GUIDELINES FOR REGULATION OF WATER RECLAMATION",

(f) Approves the Plan of Action contained in Part III of the document identified in Finding Five above,

(g) Directs the Executive Officer to establish an Interagency Water Reclamation Policy Advisory Committee. Such Committee shall examine trends, analyze implementation problems, and report annually to the Board the results of the implementation of this policy, and

(h) Authorizes the Chairperson of the Board and directs the Executive Officer to implement the foregoing Principles and the Plan of Action contained in Part III of the document identified in Finding Five above, as appropriate.

3. That not later than July 1, 1978, the Board shall review this policy and actions taken to implement it, along with the report prepared by the Interagency Water Reclamation Policy Advisory Committee, to determine whether modifications to this policy are appropriate to more effectively encourage water reclamation in California.

4. That the Chairperson of the Board shall transmit to the California Legislature a complete copy of the "Policy and Action Plan for Water Reclamation in California".

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a special meeting of the State Water Resources Control Board held on January 6, 1977.

Dated: January 6, 1977

/signed/

Bill B. Dendy

Executive Officer