CHAPTER 3 - WATER QUALITY OBJECTIVES

Section 13241, Division 7 of the California Water Code, specifies as follows:

> "Each regional board shall establish such water quality objectives in water quality control plans as in its judgement will ensure the reasonable protection of beneficial uses and the prevention of nuisance; however, it is recognized that it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses..."

"Water quality objectives", as defined in said Division 7 are "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". Water quality objectives contained herein are designed to be in accordance with all pertinent State and Federal requirements.

Existing Statewide Plans and Policies of the State Water Resources Control Board that must be considered in establishing and implementing water quality objectives in the Colorado River Basin Region are listed in Chapter 5. Some of these statewide plans contain water quality objectives that apply to waters in this Region. However, most statewide objectives are not listed in this chapter but can be obtained by referring to the text of the statewide plans. In the event that statewide and region wide objectives conflict the most stringent objective will apply.

The water quality objectives contained in this Plan supersede and replace those contained in the Water Quality Control Plan, dated May 1991, and any amendments thereto.

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, the controllable factors shall not cause further degradation of water quality. Controllable water quality factors are those actions, conditions, or circumstances resulting from people's activities which may influence the quality of the waters of the State and which may feasibly be controlled.

Actions to be taken by the Regional Board to achieve compliance with water quality objectives are described in the Implementation section of this Plan (see Chapter 4). Implementation actions directed toward nonpoint source discharges will be in conformance with the State Board's Nonpoint Source Management Plan, will be reasonable, and will consider economic and technical feasibility.

I. GENERAL OBJECTIVES

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

Wherever the existing quality of water is better than the quality established herein as objectives, such existing quality shall be maintained unless otherwise provided for 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".

II. GENERAL SURFACE WATER OBJECTIVES

Regarding controllable sources of discharge, in the absence of site specific objectives established herein, the following objectives apply to all surface waters of the Colorado River Basin Region:

A. AESTHETIC QUALITIES

The regulatory activities of the Regional Boards are the primary mechanism for water quality control. In view of All waters shall be free from substances attributable to wastewater of domestic or industrial origin or other discharges which adversely affect beneficial uses not limited to:

- Settling to form objectionable deposits;
- Floating as debris, scum, grease, oil, wax, or other matter that may cause nuisances; and
- Producing objectionable color, odor, taste, or turbidity.

B. TAINTING SUBSTANCES

Water shall be free of unnatural materials which individually or in combination produce undesirable flavors in the edible portions of aquatic organisms.

C. TOXICITY [1]

All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in human, plant, animal, or indigenous aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, 96-hour bioassay or bioassays of appropriate duration or other appropriate methods as specified by the Regional Board. Effluent limits based upon bioassays of effluent 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.

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 other control water which is consistent with the requirements for "experimental water" as described in Standards Methods for the Examination of Water and Wastewater, 18th Edition. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay.

As described in Chapter 6, the Regional Board will conduct toxic monitoring of the appropriate surface waters to gather baseline data as time and resources allow.

D. TEMPERATURE

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

E. pH

Since the regional waters are somewhat alkaline, pH shall range from 6.0-9.0. Discharges shall not cause any changes in pH detrimental to beneficial water uses.

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[1] Certain exceptions for herbicides apply to irrigation supply canals which are discussed under the heading "Irrigation Supply Canals" in this Chapter.

F. DISSOLVED OXYGEN

The dissolved oxygen concentration shall not be reduced below the following minimum levels at any time:

Waters designated:

WARM .....5.0 mg/l

COLD..... 8.0 mg/l

WARM and COLD.....8.0 mg/l

G. SUSPENDED SOLIDS AND SETTLEABLE SOLIDS

Discharges of wastes or wastewater shall not contain suspended or settleable solids in concentrations which increase the turbidity of receiving waters, unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in turbidity does not adversely affect beneficial uses.

H. TOTAL DISSOLVED SOLIDS

Discharges of wastes or wastewater shall not increase the total dissolved solids content of receiving waters, unless it can be demonstrated to the satisfaction of the Regional Board that such an increase in total dissolved solids does not adversely affect beneficial uses of receiving waters.

Additionally, any discharge, excepting discharges from agricultural sources, shall not cause concentration of total dissolved solids (TDS) in surface waters to exceed the following limits:

	TDS (mg/L)	
	Annual Average	Maximum
New River	4000	4500
Alamo River	4000	4500
Imperial Valley Drains	4000	4500
Coachella Valley Drains	2000	2500
Palo Verde Valley Drains	2000	2500

I. BACTERIA

In waters designated for water contact recreation (REC I) or noncontact water recreation (REC II), the following bacterial objectives apply. Although the objectives are expressed as fecal coliforms, E. coli, and enterococci bacteria, they address pathogenic microorganisms in general[1](e.g., bacteria, viruses, and fungi).

Based on a statistically sufficient number of samples (generally not less than five samples equally spaced over a 30-day period), the geometric mean of the indicated bacterial densities should not exceed one or the other of the following:

	REC I	REC II
E. coli	126 per 100 ml	630 per 100 ml
enterococci	33 per 100 ml	165 per 100 ml

[1] Fecal coliforms and E. coli bacteria are being used as the indicator microorganisms in the Region until better and similarly practical tests become readily available in the region to more specifically target pathogens.

nor shall any sample exceed the following maximum allowables:

	REC I	REC II
E. coli	400 per 100 ml	2000 per 100 ml
enterococci	100 per 100 ml	500 per 100 ml

except that for the Colorado River, the following maximum allowables shall apply:

	REC I	REC II
E. coli	235 per 100 ml	1175 per 100ml
enterococci	61 per 100 ml	305 per 100 ml

In addition to the objectives above, in waters designated for water contact recreation (REC I), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period, shall not exceed a log mean of 200 MPN per 100 ml, nor shall more than ten percent of total samples during any 30-day period exceed 400 MPN per 100 ml.

J. 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. Nitrate and phosphate limitations will be placed on industrial discharges to New and Alamo Rivers and irrigation basins on a case-by-case basis, taking into consideration the beneficial uses of these streams.

K. SEDIMENT

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

L. TURBIDITY

Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.

M. RADIOACTIVITY

Radionuclides shall not be present in waters in concentrations which are deleterious to human, plant, animal or aquatic life or that result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal or 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 Tables 64442 and 64443 of Sections 64442 and 64443, respectively, of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan. This incorporation by reference is prospective, including future revisions to the incorporated provisions as the revisions take effect.

Constituent	Maximum Contaminant Level, pCi/L
Combined Radium-226 and Radium-228	5
Gross Alpha Particle activity (excluding Radon and Uranium)	15
Tritium	20,000*
Strontium-90	8**

Beta / photon emitters……4 MREM***
Uranium.....20

* Equivalent to 4 millirem / year dose to total body
** Equivalent to 4 millirem / year dose to bone marrow
*** 4 millirem / year annual dose equivalent to the total body or any internal organ

N. CHEMICAL CONSTITUENTS

No individual chemical or combination of chemicals shall be present in concentrations that adversely affect beneficial uses. There shall be no increase in hazardous chemical concentrations found in bottom sediments or aquatic life. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) based upon drinking water standards specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Table 64431-A of Section 64431 (Inorganic Chemicals), Table 64444-A of Section 64444 (Organic Chemicals), and Table 64678-A of Section 64678 (Determination of Exceedances of Lead and Copper Action Levels). This incorporation is prospective, including future revisions to the incorporated provisions as the revisions take effect. The Regional Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To protect all beneficial uses, the Regional Board may apply limits more stringent than MCLs.

Maximum Contaminant Levels (MCLs) for Organic and Inorganic Chemicals

Inorganic Chemical Constituents:	MCL, mg/L
Arsenic	0.01
Barium	1.0
Cadmium	0.005
Chromium	0.05
Floride	2.0
Lead	0.015[1]
Mercury	0.002
Nitrate (as NO3)	45.0
Nitrate +Nitrite (sum of nitrogen)	10.0
Selenium	0.05
Silver	0.10

Organic Chemical Constituents	MCL, mg/L
(a) Chlorinated Hydrocarbons	
Endrin	0.002
Lindane	0.0002
Methoxychlor	0.03
Toxaphene	0.003
(b) Chlorophenoxys	
2,4-D	0.07
2,4,5-TP Silvex	0.05

[1] Limit given is "Action Level". USEPA's Lead and Copper Rule requires drinking water systems to monitor for lead from customer taps. If ten percent of the homes tested have lead levels greater than the action level of 15 ppb, the system must increase monitoring, undertake additional efforts to control corrosion, and inform the public. For each monitoring period, a system (or the state) must calculate the lead level at the 90th percentile of homes monitored.

O. PESTICIDE WASTES

The discharge of pesticidal wastes from pesticide manufacturing processing or cleaning operations to any surface water is prohibited.

III. SPECIFIC SURFACE WATER OBJECTIVES

A. COLORADO RIVER

1. Colorado River (Above Imperial Dam)

In response to requirements in Section 303 of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500), the Seven States Colorado River Salinity Control Forum developed water quality standards in 1975 for salinity consisting of numeric criteria and a basinwide plan of implementation for salinity control. The Forum recommended that each of the Basin States adopt the proposed standards. California along with the other Basin States adopted the Forum's recommended standards which were subsequently approved by the U.S. Environmental Protection Agency. The standards were reviewed in 1978, 1981, 1984, 1987, and 1990. While the numeric criteria have not changed, the plan of implementation was updated in those years to reflect changes in the salinity control program since 1975.

The flow-weighted average annual numeric criteria for salinity (total dissolved solids) were established at three locations on the lower Colorado River:

	Salinity in mg/l
Below Hoover Dam, AZ-NV	723
Below Parker Dam, AZ-CA	747
Imperial Dam, AZ-CA	879

The plan of implementation consists of a number of federal and non-federal measures throughout the Colorado River system to maintain the adopted numeric criteria while the Basin states continue to develop their compact apportioned waters. There are four areas of the implementation plan which have direct applicability to California. The first is the control of the discharge of total dissolved solids from point sources through the NPDES Permit program on industrial and municipal discharges. The plan's policy has as its primary objective no-salt return from industrial sources wherever practicable. Reasonable incremental increases of salinity from municipal sources shall be permitted so long as they do not exceed 400 mg/l above the flow-weighted average salinity of the supply water. The second recommends that each state encourage and promote the use of brackish and/or saline waters for industrial purposes. The third deals with an improved water delivery system and on-farm water management system. Finally, the plan encompasses those portions of the 208 Water Quality Management plans dealing with salinity control once adopted by the State and approved by USEPA.

2. Colorado River (Below Imperial Dam)

Below Imperial Dam, the River's salinity will be controlled to meet the terms of the agreement with Mexico on salinity in Minute No. 242 of the International Boundary and Water Commission, entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River". This agreement states that measures will be taken to assure that the waters delivered to Mexico upstream from Morelos Dam will have annual average salinity concentration of no more than 115 ppm (± 30 ppm) total dissolved solids greater than the annual average salinity concentration of Colorado River water arriving at Imperial Dam. Title I of Public Law 93-320 is the legislation which implements the provisions of Minute No. 242. Minute No. 242 and Title I constitute a federal numeric criterion and plan of implementation for the River below Imperial Dam.

B. NEW RIVER

Minute
No. 264 of the Mexican-American Water Treaty titled "Recommendations for Solution of the New River Border Sanitation Problem at Calexico, California - Mexicali, Baja California Norte" was approved by the Governments of the United States and Mexico effective on December 4, 1980. Minute No. 264 specifies qualitative and quantitative standards for the New River at the International Boundary and upstream of the International Boundary in Mexico.
The quantitative standards of Minute No. 264 are contained in Table 3-1. Following are the qualitative standards of Minute No. 264 for the New River at the locations specified below (interim solution).

1. The waters of the River shall be free of untreated domestic and industrial waste waters.

2. The waters shall be free from substances that may be discharged into the River as a result of human activity in concentrations which are toxic or harmful to human, animal or aquatic life or which may significantly impair the beneficial uses of such waters.

3. The waters of the River shall be essentially free from trash, oil, scum, or other floating materials resulting from human activity in amounts sufficient to be injurious, unsightly, or to cause adverse effects on human life, fish, and wildlife. Persistent foaming shall be avoided.

4. The waters of the River shall be free of pesticides in concentrations which could cause harmful effects to human life, fish, and wildlife.

5. The channel of the River shall be free of residual sludge deposits from domestic or industrial wastes.

TABLE 3-1: NEW RIVER AT INTERNATIONAL BOUNDARY

Quantitative Standards per Minute 264[1] of the Mexican/American Water Treaty
(Applicable at Indicated Sampling Location)

Parameters	New River at Boundary[2]	Lagoon Discharge Canal	New River Upstream of Discharge Canal
BOD_5	-	30 mg/l filtered (Monthly grab sample)	30 mg/l unfiltered (Monthly 12-hr. composite sample)[3]
COD	-	70 mg/l filtered	100 mg/l unfiltered (Monthly 12-hr. composite sample)[3]
pH	6.0 to 9.0 (Weekly grab sample)	-	-
DO	5.0 mg/l (Daily grab sample)	- (weekly grab sample)	-
Fecal Coliform Organisms	-	-	30,000 colonies per 100 ml, with no single sample to exceed 60,000 colonies per 100 ml.

Footnotes for Table 3-1

1. It is the intent of the Regional Board to pursue long-range quantitative water quality standards for New River at the International Boundary beyond those contained in Minute No. 264. Such standards are anticipated to include further reduction of fecal coliform organisms and of pesticidal and toxic discharges.

2. For necessary and adequate monitoring, samples should be taken of the New River waters at the International Boundary monthly or more frequently if necessary, and these should be analyzed for BOD_5, COD, pH, DO, and fecal coliform organisms. Samples should also be analyzed for toxic substances as considered necessary.

3. Twelve consecutive hourly samples once a month (24-hour composite to be taken as needed to establish correlation with 12-hour composite).

   Monitoring data collected by the Regional Board and the United States section of the International Boundary and Water Commission indicate that with the exception of pH, all quantitative and qualitative standards of Minute No. 264 have been violated since they were established. Moreover, with the exception of pH and DO, the standards do not protect or achieve the New River water quality given that: (1) they are inconsistent with the General Surface Water Objectives of this Basin Plan (p. 3-1), and (2) they are actually applicable to the New River in Mexico, not at the International Boundary. It is therefore appropriate for the Regional Board, as the agency responsible for protecting the quality of the waters in this region of the United States, to develop and enforce water quality objectives for the New River that are consistent with State and USEPA criteria for surface waters and that protect the waters of the region as follows:

Bacteria Water Quality Objectives

1. The bacterial standards identified in the General Surface Water Objectives section of this Basin Plan (p. 3-3) are applicable to the entire stretch of the New River in the United States.

2. The Pathogen Total Maximum Daily Load (TMDL) and associated implementation actions are described in Chapter 4, Section V(A). Compliance Monitoring activities for the TMDL are described in Chapter 6, Section II(B).

C. SALTON SEA

1. Total Dissolved Solids (Salinity)

The total dissolved solids concentration of Salton Sea in 1992 was approximately 44,000 mg/l.

The water quality objective for Salton Sea is to reduce the present level of salinity, and stabilize it at 35,000 mg/l unless it can be demonstrated that a different level of salinity is optimal for the sustenance of the Sea's wild and aquatic life (California Department of Fish and Game is attempting to make this determination). However, the achievement of this water quality objective shall be accomplished without adversely affecting the primary purpose of the Sea which is to receive and store agricultural drainage, seepage, and storm waters. Also, because of economic considerations, 35,000 mg/l may not be realistically achievable. In such case, any reduction in salinity which still allows for survival of the sea's aquatic life shall be deemed an acceptable alternative or interim objective. Because of the difficulty and predicted costliness of achieving salinity stabilization of Salton Sea, it is unreasonable for the Regional Board to assume responsibility for implementation of this objective. That responsibility must be shared jointly by all of the agencies which have direct influence on the Sea's fate. Additionally, there must be considerable public support for achieving this objective, without which it is unlikely that the necessary funding for Salton Sea salinity control will ever be realized.

2. Selenium

The beneficial use of the Salton Sea for recreation has been impaired due to elevated levels of selenium in tissues of resident wildlife and aquatic life (See page 4-10 for a more detailed discussion of this). The following objectives apply to all surface waters that are tributaries to the Salton Sea:

a. A four day average value of selenium shall not exceed .005 mg/L;

b. A one hour average value of selenium shall not exceed .02 mg/L.

These numerical limits are based on the United States Environmental Protection Agency's National Ambient Water Quality Criteria.

D. IRRIGATION SUPPLY CANALS

Herbicide spraying in irrigation canals must be conducted in coordination with the County Agricultural Commissioner, California Department of Fish and Game (DFG), and California Department of Health Services. In canals used for domestic supply, no herbicides shall be applied in concentrations which are toxic or otherwise harmful to humans; also no herbicides shall be applied in concentrations which are toxic or otherwise harmful to aquatic life, except that herbicides may be used in cases where the herbicide only impacts the targeted species, is a legally registered product, and is used in accordance with label requirements and in accordance with all applicable laws and regulations.

E. COACHELLA VALLEY STORM WATER CHANNEL

The following bacterial objectives apply to a limited section of the Coachella Valley Storm Water Channel (CVSC) where perennial flow exists specifically, that part of the channel that begins at the Valley Sanitary District Waste Water Treatment Plant in the City of Coachella, and extends to the south for approximately 17 miles, where it discharges into the Salton Sea at the northern shore. The bacterial water quality objectives for this reach of the CVSC are expected to protect human health against gastro-intestinal illness caused by exposure to pathogenic organisms present in surface waters. These objectives are based on several epidemiological studies sponsored by USEPA, which determined that Escherichia coli (E. coli) is the most reliable indicator bacteria for protecting human health, given that E. coli is more specifically intestinal in origin than fecal coliform. E. coli density limits for the CVSC are as follows:

Based on a minimum of five samples equally spaced over a 30 day period, the geometric mean of E. coli densities must not exceed the following:

	REC I	REC II
E. coli	126 MPN[1] per 100 ml	630 MPN per 100 ml

Nor shall any single sample exceed the following:

	REC I	REC II
E. coli	400 MPN[1] per 100 ml	2000 MPN per 100 ml

[1] MPN represents “Most Probable Number”, which is defined as an index of the number of bacteria that, more probably than any other number, will give the results shown by the laboratory examination (APHA, 2005).

IV. GROUND WATER OBJECTIVES

Establishment of numerical objectives for ground water involves complex considerations since the quality of ground water varies significantly with depth of well perforations, existing water levels, geology, hydrology and several other factors. Unavailability of adequate historical data compounds this problem. The Regional Board believes that detailed investigation of the ground water basins should be conducted before establishing specific ground water quality objectives.

Ideally the Regional Board's goal is to maintain the existing water quality of all nondegraded ground water basins. However, in most cases ground water that is pumped generally returns to the basin after use with an increase in mineral concentrations such as total dissolved solids (TDS), nitrate etc., that are picked up by water during its use. Under these circumstances, the Regional Board's objective is to minimize the quantities of contaminants reaching any ground water basin. This could be achieved by establishing management practices for major discharges to land. Until the Regional Board can complete investigations for the establishment of management practices, the objective will be to maintain the existing water quality where feasible.

A. TASTE AND ODORS

Ground waters for use as domestic or municipal supply shall not contain taste or odor-producing substances in concentrations that adversely affect beneficial uses as a result of human activity.

B. BACTERIOLOGICAL QUALITY

In ground waters designated for use as domestic or municipal supply (MUN), the concentration of coliform organisms shall not exceed the limits specified in Section 64426.1 of Title 22 of the California Code of Regulations.

C. CHEMICAL AND PHYSICAL QUALITY

Ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Table 64431-A of Section 64431 (Inorganic Chemicals), Table 64444-A of Section 64444 (Organic Chemicals), and Table 64678-A of Section 64678 (Determination of Exceedances of Lead and Copper Action Levels). This incorporation is prospective, including future revisions to the incorporated provisions as the revisions take effect. The Regional Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To protect all beneficial uses, the Regional Board may apply limits more stringent than MCLs.

D. BRINES

Discharges of water softener regeneration brines, other mineralized wastes, and toxic wastes to disposal facilities which ultimately discharge in areas where such wastes can percolate to ground waters usable for domestic and municipal purposes are prohibited.

E. RADIOACTIVITY

Ground waters designated for use as domestic or municipal supply (MUN) shall not contain radioactive material in excess of the maximum contaminant levels (MCLs) specified in Tables 64442 and 64443 of Sections 64442 and 64443, respectively, of Title 22 of the California Code of Regulations (CCR), which are incorporated by reference into this plan. This incorporation by reference is prospective, including future revisions to the incorporated provisions as the revisions take effect.

F. GROUND WATER OVERDRAFT

A number of ground water basins in the Region are in overdraft, and in some areas there have been indications of possible increase of mineral content of the ground water. Investigative studies will be conducted to develop ground water objectives and implementation plans for the following ground water basins:

- Indio Subarea of the Whitewater Hydrologic Unit
- Warren Subunit of the Joshua Tree Hydrologic Unit
- Twentynine Palms Subunit of the Dale Hydrologic Unit
- Borrego Subarea of the Anza-Borrego Hydrologic Unit
- Lucerne Hydrologic Unit
- Terwilliger Subarea of the Anza-Borrego Hydrologic Unit
- Ocotillo Subunit of the Anza-Borrego Hydrologic Unit