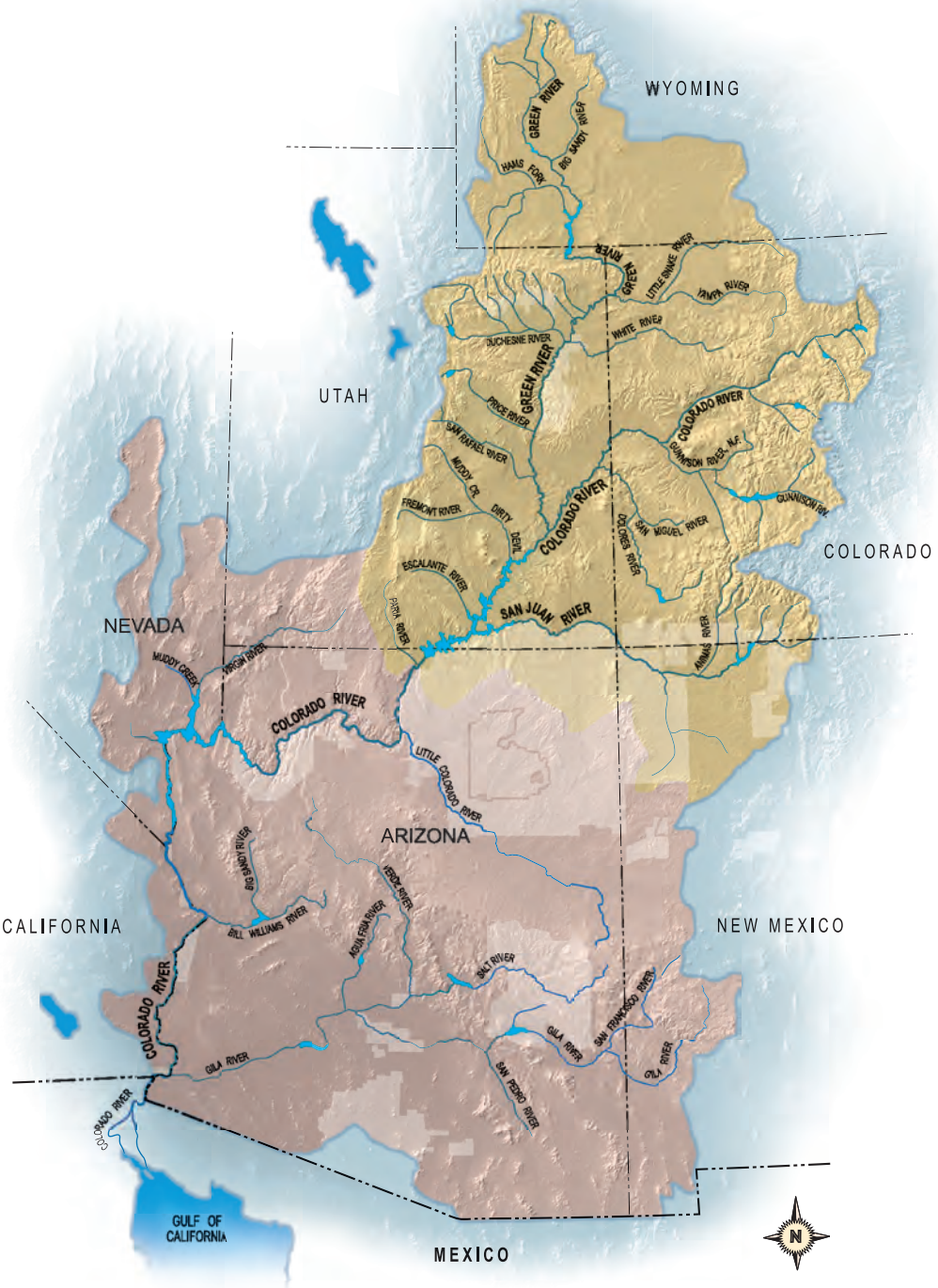
2005 Review

Water Quality Standards For Salinity Colorado River System



October 2005

Colorado River Basin Salinity Control Forum

2005 REVIEW

WATER QUALITY STANDARDS FOR SALINITY
COLORADO RIVER SYSTEM

October 2005

Prepared by

Colorado River Basin Salinity Control Forum

COLORADO RIVER BASIN SALINITY CONTROL FORUM

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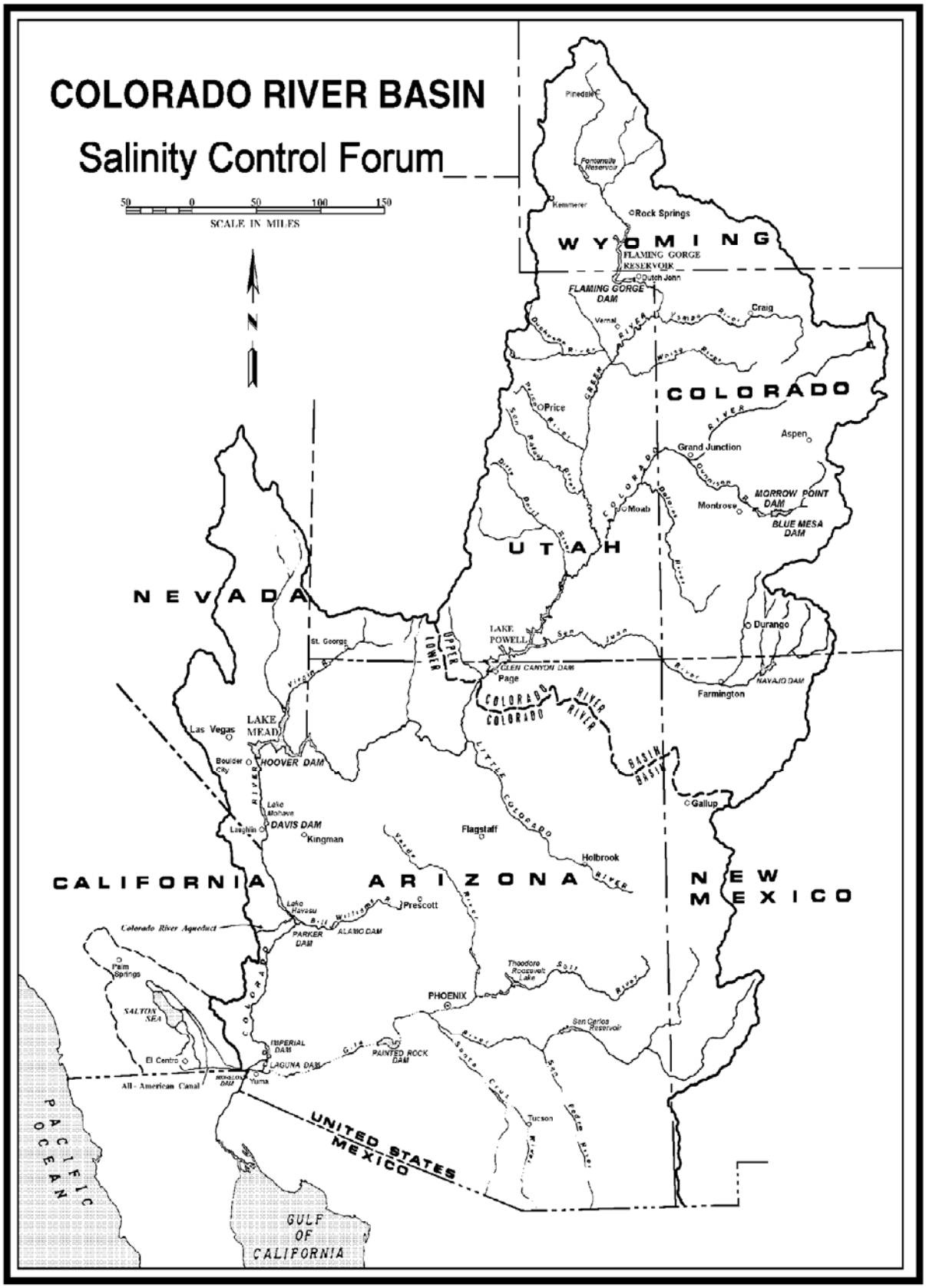
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San Carlos Reservoir
Tucson
UNITED STATES
MEXICO
PACIFIC OCEAN
GULF OF CALIFORNIA

TRANSMITTAL LETTERS

The Federal Water Pollution Control Act requires that at least once every three years the Colorado River Basin states review water quality standards relating to the salinity of the waters of the Colorado River. The states collectively initiated this review under the auspices of the Colorado River Basin Salinity Control Forum, prepared a proposed Review; and after holding public meetings, the Forum prepared this final Review.

Upon the Forum's adoption of the final Review, it is transmitted by letter to the governors of the individual states for their independent action. The following governors in each of the seven Colorado River Basin states shall receive this Review:

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SUMMARY

This Review, the 2005 Review, Water Quality Standards for Salinity, Colorado River System (Review), is a review of the water quality standards for salinity for the Colorado River. It summarizes the Colorado River Basin Salinity Control Program (Program) and its proposed plan of implementation for continued salinity control. Economic damages due to elevated salinity levels have been significantly reduced through the Program at very modest costs. In Arizona, California and Nevada, economic damages have been reduced to about $300 million per year, accomplished at a funding level of about $24 million per year from federal sources and $10 million from Colorado River Basin state funds. The Program is a unique cooperative watershed effort between several federal agencies and seven states designated to meet national, international and state water quality objectives.

Section 303 of the Clean Water Act requires that water quality standards be reviewed from time to time, but at least once during each three-year period. Accordingly, the seven-state Colorado River Basin Salinity Control Forum (Forum) has reviewed the existing state-adopted and United States Environmental Protection Agency (USEPA)-approved water quality standards for salinity consisting of numeric criteria and a plan of implementation for salinity control for the Colorado River System. Since the issuance of the 2002 Review, the United States Bureau of Reclamation (Reclamation) has enhanced a new model to analyze the Colorado River System, including salinity. The model has been used to make new salinity projections for this Review. The Forum's recommendations as found in this report will be submitted to each of the Colorado River Basin states for consideration as each state proceeds with its three-year water quality review process.

The Forum recommends no change in the numeric salinity criteria at the three stations located on the lower main stem of the Colorado River. The numeric criteria at these stations will remain:

Station	**Salinity in mg/L**[1]
Below Hoover Dam	723
Below Parker Dam	747
At Imperial Dam	879

The plan of implementation as set forth in this Review is designed to meet the objective of maintaining the salinity concentrations at or below the numeric criteria while the Colorado River Basin states continue to develop their compact-apportioned waters. The Forum recommends that the plan of implementation described in this Review be carried out. The plan of implementation includes:

[1]Flow-weighted average annual salinity.

1. Completion of Reclamation, United States Bureau of Land Management (BLM), and United States Department of Agriculture (USDA) salinity control measures to the extent that each unit remains viable and appropriately cost-effective.

2. Implementation of the Forum's recommended and adopted policies for effluent limitations, principally under the National Pollutant Discharge Elimination System (NPDES) permit program established by Section 402 of the Clean Water Act as amended. The implemented policies (included in Appendix A of this Review) are the following:

   Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program;

   NPDES Permit Program for Implementation of Colorado River Salinity Standards;

   Policy for Use of Brackish and/or Saline Waters for Industrial Purposes;

   Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Intercepted Ground Water; and

   Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Fish Hatcheries.

3. Implementation of nonpoint source management plans developed by the states and approved by USEPA.

Item 1 of the plan listed above is to be implemented by federal agencies in conjunction with state, local, and private participants. The Forum works jointly with federal agencies on developing measures to be implemented. The Forum also urges the United States Congress (Congress) to ensure that the funds necessary to successfully fulfill this plan of implementation are appropriated as needed. Items 2 and 3 above are primarily implemented by each of the Colorado River Basin states.

The probability of exceeding the numeric criteria is low as determined by Reclamation with the use of its computer model. The low probability of exceedance was an important factor in the Forum's decision that the plan of implementation is acceptable and that the numeric criteria does not need to be changed.

The plan of implementation is designed to control enough salt to maintain the numeric criteria under a long-term mean water supply of 15 million acre-feet per year. It is recognized that the river system is subject to highly variable flows. Consequently, salinity will vary from year to year and may temporarily exceed the adopted numeric criteria in some years and remain well below the criteria in others.

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CHAPTER 1 - INTRODUCTION

Purpose of Review

This Review, the 2005 Review, Water Quality Standards for Salinity, Colorado River System (Review), is prepared and submitted in response to Section 303(c) of the Clean Water Act[1] by the seven-state Colorado River Basin Salinity Control Forum (Forum), on behalf of the governors of their respective states. This Review of the water quality standards includes the numeric criteria and the plan of implementation developed and adopted by the Forum. It also includes modifications to previous reviews that have become necessary as a result of changed conditions and the availability of additional information. This is the tenth triennial review conducted by the Forum. Section 303(c)(1) of the Clean Water Act requires that:

> *The governor of a state or the state water pollution control agency of such state shall from time to time (but at least once each three-year period beginning with the date of enactment of the Federal Water Pollution Control Act Amendments of 1972) hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards. Results of such review shall be made available to the Administrator.*

This Review is consistent with the United States Environmental Protection Agency (USEPA)-approved 1975 standards and deals only with that portion of the Colorado River Basin above Imperial Dam. This Review utilizes data collected since 2002 to evaluate the appropriateness of the standards, and focuses on the 2005 to 2008 period. Background information and activities regarding historical actions relative to the development and adoption of salinity standards is contained in the Forum report, Water Quality Standards for Salinity, Including Numeric Criteria and Plan of Implementation for Salinity Control, Colorado River System, Colorado River Basin Salinity Control Forum, June 1975.

Below Imperial Dam, salinity is controlled as a federal responsibility to meet the terms of the agreement with Mexico contained within Minute No. 242 of the International Boundary and Water Commission (IBWC), entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River." Minute No. 242 requires that measures be taken to assure that Colorado River (River) water delivered to Mexico upstream from Morelos Dam will have an average annual salinity concentration of no more than 115 ± 30 parts per million (ppm) total dissolved solids (TDS) higher than the average annual salinity concentration of Colorado River water arriving at Imperial Dam.

Nothing in this Review shall be construed to alter, amend, repeal, interpret, modify, or be in conflict with the provisions of the Boulder Canyon Project Act (45 Stat. 1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774), the Colorado River Basin Project Act (82 Stat. 885), the Colorado River

[1] Public Law [P.L.] 92-500 as amended by P.L. 95-217 and P.L. 100-4.

Compact, the Colorado River Storage Project Act (70 Stat. 105), the Upper Colorado River Basin Compact, or the Treaty with the United Mexican States (Treaty Series 994).

History and Background

The Colorado River drains 246,000 square miles[2] (approximately 155 million acres) of the western United States and a small portion of northern Mexico. Its waters serve some 7.5 million people within the United States' portion of the Colorado River Basin, and through export provides full or supplemental water supply to another 25.4 million people outside the basin. The regional economy is based on irrigated agriculture, livestock grazing, mining, forestry, manufacturing, oil and gas production, recreation and tourism. About 2.3 million acres are irrigated within the Colorado River Basin and hundreds of thousands of additional acres are irrigated by waters exported from the Colorado River Basin. Hydroelectric power facilities along the Colorado River and its tributaries generate approximately 12 billion kilowatt-hours annually which is used both inside and outside of the Colorado River Basin. The Colorado River also serves about 2.6 million people and 500,000 irrigated acres in Mexico.

Salinity has long been recognized as one of the major problems of the river. The salinity in the Colorado River increases as it flows downstream. The river carries an average salt load of approximately nine million tons annually past Hoover Dam, the uppermost location at which numeric criteria have been established.

The salts in the Colorado River system are naturally occurring and pervasive. Many of the saline sediments of the Colorado River Basin were deposited in prehistoric marine environments. Salts contained within the sedimentary rocks are easily eroded, dissolved, and transported into the river system.

In the 1960's and early 1970's, the seven Colorado River Basin states[3] and representatives of the federal government discussed the problem of salinity concentrations increasing in the lower reaches of the Colorado River. In a 1971 study[4], the USEPA analyzed salt loading in the Colorado River Basin and divided it into two categories, naturally occurring and human-caused. The USEPA concluded that about half (47 percent) of the salinity concentration measured in water arriving at Hoover Dam is from natural causes including salt contributions from saline springs, ground water discharge into the river system (excluding irrigation return flows), erosion and dissolution of sediments, and the concentrating effects of evaporation and transpiration. The natural causes category also included salt contributions from non-point (excluding irrigated agriculture) or unidentified sources or from the vast, sparsely-populated regions of the drainage, much of which is administered by the United States Bureau of Land Management (BLM) or other governmental agencies. Of the land within the Colorado River Basin, about 75 percent is owned and

[2]Colorado River System, Consumptive Uses and Losses Report, 1996-2000, Bureau of Reclamation

[3]The seven Colorado River Basin states (Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming) are referred herein as the "Basin states."

[4]The Mineral Quality Problem in the Colorado River, Summary Report, Environmental Protection Agency, Regions VIII and IX, 65 pp., 1971.

administered by the federal government or held in trust for Indian tribes. The greatest portion of the naturally-occurring salt load originates on these federally-owned and administered lands. Human activities can influence the rate of natural salt movement from rock formations and soils to the river system and include: livestock grazing, wildlife management, logging, mining, oil exploration, road building, recreation and urbanization.

Approximately 53 percent of the salinity concentration in the water arriving at Hoover Dam, as identified by USEPA, results from various human activities. USEPA estimated that out-of-Basin exports account for about 3 percent of the salt concentration at Hoover Dam, with irrigation accounting for 37 percent, reservoir evaporation and phreatophyte use accounting for about 12 percent, and about 1 percent attributed to municipal and industrial uses. Much of the salt load contribution from irrigated agriculture is from federally-developed irrigation projects. In 1972, the federal government enacted the Clean Water Act which mandated efforts to maintain water quality standards in the United States. At the same time, Mexico and the United States were discussing the increasing salinity of Colorado River water being delivered to Mexico.

The Colorado River Basin states established the Colorado River Basin Salinity Control Forum in 1973. The Forum is composed of representatives from each of the seven Basin states appointed by the governors of the respective states. The Forum was created for interstate cooperation and to provide the states with the information necessary to comply with Section 303(a) and (b) of the Clean Water Act.

The USEPA promulgated a regulation in December 1974, which set forth a basinwide salinity control policy for the Colorado River Basin. The regulation specifically stated that salinity control was to be implemented while the Colorado River Basin states continue to develop their compact-apportioned water. This regulation also established a standards procedure, and required the Colorado River Basin states to adopt and submit for approval to the USEPA water quality standards for salinity, including numeric criteria and a plan of implementation, consistent with the policy stated in the regulation.

In 1975, the Forum proposed, the states adopted, and the USEPA approved water quality standards, which included numeric criteria and a plan of implementation to control salinity increases in the Colorado River. The plan was designed to maintain the flow-weighted average annual salinity concentrations at or below the 1972 levels while the Colorado River Basin states continued to develop their compact-apportioned water supply. Average annual salinity concentrations and salt loads were determined on a flow-weighted basis. The flow-weighted average annual salinity concentration is determined by dividing the flow-weighted average annual salt load passing a measuring station by the total annual volume of water passing the same point during a calendar year. The flow-weighted average annual salt load is calculated by first multiplying the daily salinity concentration values by the daily flow rates. These values are then summed over a calendar year. The total annual volume of water is calculated by calculating the sum of the daily flow rate.

The Forum selected three numeric criteria stations on the main stem of the lower Colorado River as being appropriate points to measure the salinity concentrations of the river. These stations are located at the following points: (1) below Hoover Dam; (2) below Parker Dam; and (3) at Imperial Dam.

The plan of implementation was designed to ensure compliance with the numeric criteria for salinity. The numeric criteria and plan of implementation are further described in Chapter 3 of this Review.

Since the states' initial adoption, the water quality standards have been reviewed every three years[5] as required by Section 303(c)(1) of the Clean Water Act. During each review, the numeric criteria are reviewed and the plan of implementation is evaluated to ensure continuing compliance with the standards. The Forum relies on the Colorado River Basin states' projections of use of compact-apportioned waters. The salinity projections are based on the long-term mean natural flow of 15 million acre-feet (maf) per year at Lee Ferry, Arizona. Natural flow represents the flow at a point absent operation of reservoirs and human use of water. The Colorado River water quality standards for salinity, and the approach taken by the Colorado River Basin states in complying with the standards, are unique. The numeric criteria portion of the water quality standards were established to protect against increases in economic damages to infrastructure and crop production. The program is a basinwide coordinated effort among federal, state, and local agencies and participants to control salt loading.

[5]1978, 1981, 1984, 1987, 1990, 1993, 1996, 1999 and 2002

CHAPTER 2 – UNDERSTANDING THE SALINITY OF THE COLORADO RIVER

Many federal and state agencies, as well as academic researchers, have studied the Colorado River and its salt load. The United States Geological Survey (USGS) has been a lead technical agency and the United States Bureau of Reclamation (Reclamation) has advanced major efforts to better understand the Colorado River through significant modeling efforts. The most recent modeling effort uses the Colorado River Simulation System (CRSS) as a base to assist in the preparation of this review.

As with most large rivers, the natural flow of the Colorado River increases from its headwaters to its terminus. Starting at Hoover Dam and moving downstream, today the Colorado River flow is reduced by diversions and in normal years only 1.5 million acre-feet is scheduled to pass Imperial Dam. In general, the salinity concentration of the water in the river increases from the headwaters to the terminus. Much of the salt is picked up in the Upper Basin and some of the tributary streams average higher concentrations of salt. A map of the Colorado River Basin reflecting the relative flows and the corresponding salinity concentrations of the water across the Colorado River Basin in the 2003 water year is provided for general illustrative purposes in Figure 2-1. The average flow of the river and its important tributaries is indicated by the width of the line and the salinity concentrations are illustrated by colors coded to ranges in TDS.

Figure 2-2 illustrates how the concentration of the salt varies with the volume of inflow into Lake Powell. Inflow into Lake Powell is determined as a sum of the four key USGS gages immediately upstream of Powell (Colorado River near Cisco, UT; Green River near Green River, UT; San Juan near Bluff, UT; and San Rafael near Green River, UT). In general, the figure illustrates that 1) as the flow increases, the salt concentration decreases, 2) as the flow decreases, the concentration increases.

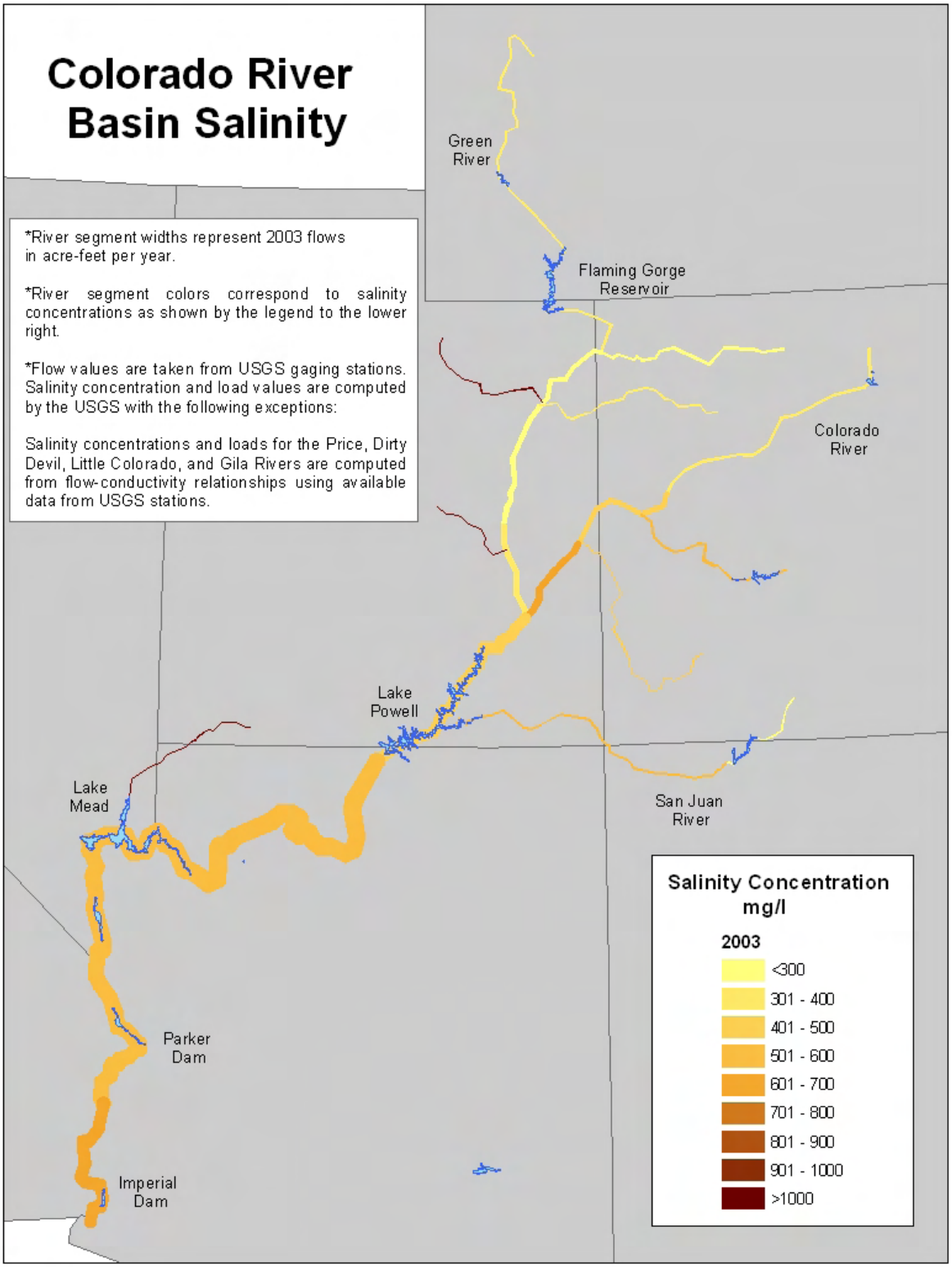

Figure 2-1 – Water Year 2003 Generalized Flow and Salinity Concentrations Across the Colorado River Basin

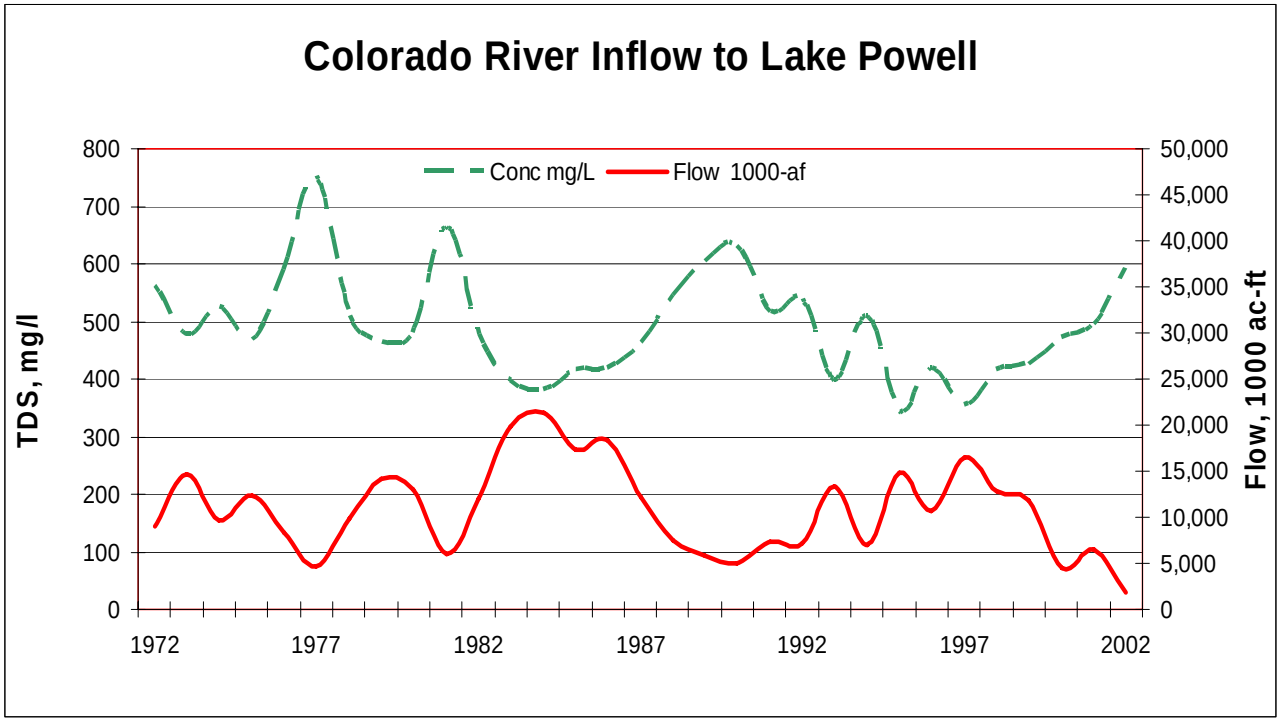

Figure 2-2 – Colorado River Inflow to Lake Powell

In general, over the last thirty years, the salinity concentrations have decreased at all three of the numeric criteria stations (see Table 2-1 and Figure 2-3). In 1970, the concentrations of all three stations were at or above the numeric criteria for those stations. Now the concentrations are well below the numeric criteria. One factor is the influence flow in the river has on concentrations. Note how the concentrations dropped in the mid 1980's when the river flow was at historic high levels. Another example of this relationship is the last four years when salinity concentrations have increased during a period of record drought. A second factor is implementation of the salinity control program.

The CRSS model will now be used to investigate these relationships further but it does appear that salinity concentrations are lower than in the 1970's. It is believed that the salinity control program has been an important factor in the reduction of salts. Perhaps up to a million tons of salt load per year has been reduced by the effort. This has resulted in the concentrations being lower at the numeric criteria stations by perhaps as much as 100 mg/L.

The concentration of salts measured at the three numeric criteria stations has been increasing over the last few years as a result of very significant drought. The concentrations, however, remain below the numeric criteria. As this fact is analyzed, it must be remembered that it is estimated that the Salinity Control Program has reduced the concentrations by about 100 mg/L. During the winter of 2004-2005, the approximate total dissolved solid concentrations at the three points have been observed to be 660 mg/L below Hoover Dam, 635 mg/L below Parker Dam and 795 mg/L at Imperial Dam. Without the salinity control measures in place, it can be estimated that the concentrations would be 760 mg/L below Hoover Dam, 735 mg/L below Parker Dam and 895 mg/L at Imperial Dam. These concentrations would be similar to those observed in 1972 when the numeric criteria were selected and, in fact, the concentration today would be about 37 mg/L over the numeric criterion below Hoover Dam, 12 mg/L under the numeric criterion below Parker Dam and 16 mg/L over the numeric criterion at Imperial Dam.

Table 2-1
Observed Flow-Weighted Average Salinity
at the Numeric Criteria Stations
(Total Dissolved Solids in mg/L)[1]

Calendar Year (Numeric Criteria)	Below Hoover Dam (723 mg/L)	Below Parker Dam (747 mg/L)	At Imperial Dam (879 mg/L)
1970	743	760	896
1971	748	758	892
1972	724	734	861
1973	675	709	843
1974	681	702	834
1975	680	702	829
1976	674	690	822
1977	665	687	819
1978	678	688	812
1979	688	701	802
1980	691	712	760
1981	681	716	821
1982	679	713	827
1983	659	678	727
1984	598	611	675
1985	556	561	615
1986	517	535	577
1987	519	538	612
1988	529	540	648
1989	564	559	683
1990	587	600	702
1991	629	624	749
1992	657	651	767
1993	665	631	785
1994	667	673	796
1995	654	671	803
1996	618	648	768
1997	585	612	710
1998	559	559	655
1999	549	550	670
2000	539	549	661
2001	550	549	680
2002	564	569	691
2003	583	589	697
2004 provisional	655	649	737

[1] Determined by the U.S. Geological Survey (USGS) from data collected by the U.S. Bureau of Reclamation and USGS and published in *Quality of Water, Colorado River Basin, Progress Report No. 22*, 2005.

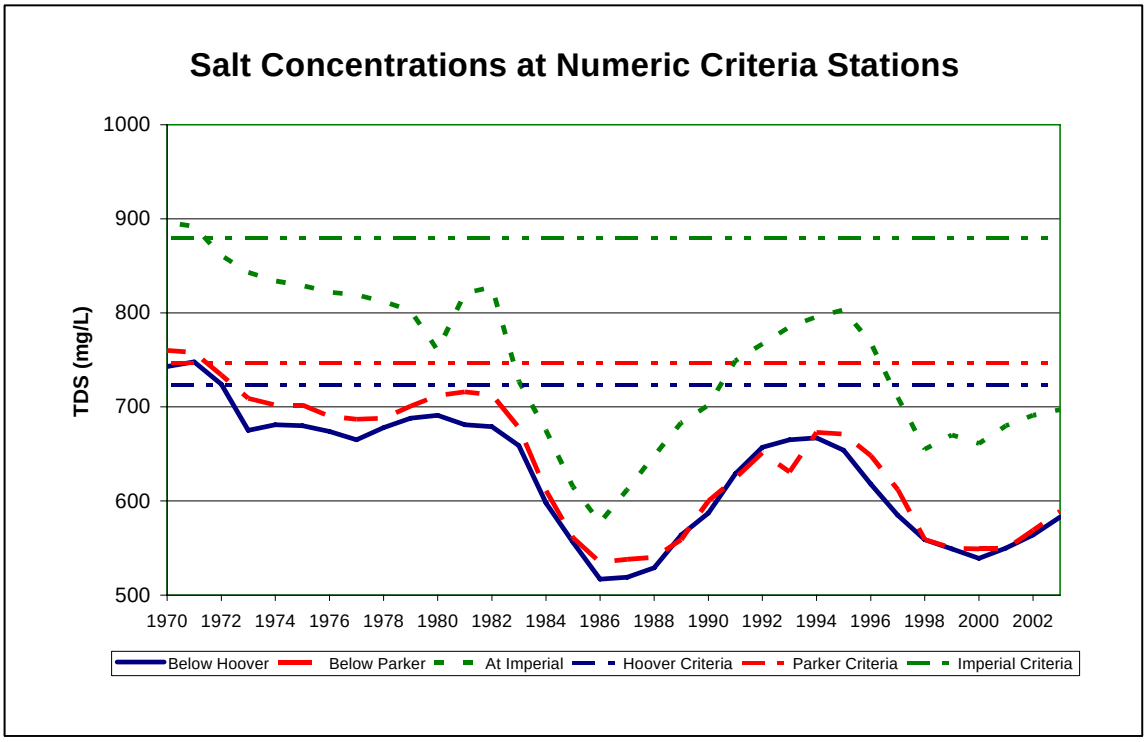

Figure 2-3 – Salt Concentrations at Numeric Criteria Stations

Salinity control activities necessarily include a water quality monitoring and analysis component that provides basinwide information for program evaluation. The monitoring and analysis component provides an essential database for future studies, supports state and regional planning activities, and provides an objective basis for evaluating the effectiveness of salinity control measures.

Continuing evaluations of the salinity of the Colorado River are made by Reclamation, the USGS and the BLM. The results of several studies have been published by the agencies since the last Review (1999-2001). To evaluate changes in salinity, water quality and stream flow data are obtained on a daily, weekly, monthly, and/or quarterly basis at various points on streams throughout the Colorado River Basin by the USGS in cooperation (through financial and/or direct services) with private entities, the states and other federal agencies.

Salinity data are based on TDS as the sum of constituents, whenever possible. The sum of constituents values are defined to include calcium, magnesium, sodium, chloride, sulfate, a measure of the carbonate equivalent of alkalinity and, if measured, silica and potassium. If a sum of constituents value could not be computed, TDS as residue on evaporation (at 180 degrees Celsius) is substituted. Further, some reported salinity values are based on correlation with specific conductance measurements. In this Review, the terms "salinity," "TDS" and "concentration" in mg/L are used interchangeably.

CHAPTER 3 – REVIEW OF STANDARDS AND PLAN OF IMPLEMENTATION

Provision for Reviewing and Revising Standards

The Forum, in its statement of Principles and Assumptions for Development of Colorado River Salinity Standards and Implementation Plan, approved by the Forum on September 20, 1974, stated, under Principle 7:

> The Plan of Implementation shall be reviewed and modified as appropriate from time to time, but at least once every three years. At the same time, the (numeric) standards, as required by Section 303 (c) (1) of P.L. 92-500 shall be reviewed for the purpose of modifying and adopting standards consistent with the plan so that the Basin states may continue to develop their compact-apportioned waters while providing the best practicable water quality in the Colorado River Basin.

Considerable knowledge has been gained through a wide range of research, and technical studies since the Forum took this position. Procedures for reducing the volume of saline irrigation return flows have been developed. Reclamation and the United States Department of Agriculture (USDA) are implementing cost-sharing programs with irrigation districts, canal companies and individual farmers to accomplish salt loading reductions to the river system by improving off-farm and on-farm water delivery systems and water management practices.

Numeric Criteria

Overview

As discussed earlier in this Review, the USEPA promulgated a regulation which set forth a basinwide salinity control policy for the Colorado River Basin. This policy required that the flow-weighted average annual salinity in the lower main stem of the Colorado River be maintained at or below the 1972 levels. The Colorado River Basin states, acting through the Forum, addressed this requirement in its Review entitled Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control - Colorado River System dated June 1975. The Forum proposed three stations as appropriate points in the lower main stem of the Colorado River at which to measure the flow-weighted average annual salinity. These stations are located at the following points: (1) below Hoover Dam; (2) below Parker Dam; and (3) at Imperial Dam. The basis for selecting these stations is their proximity to key diversion facilities on the lower Colorado River. Nevada diverts Colorado River main stem water from Lake Mead for use in the Las Vegas area. The Metropolitan Water District of Southern California and the Central Arizona Project divert water from Lake Havasu, impounded behind Parker Dam, for millions of water users in southern California and central Arizona, respectively. The large agricultural areas in the Imperial and Coachella Valleys in California and the Yuma area in Arizona are served by diversions at Imperial Dam.

The flow-weighted average annual salinity for these stations was determined by Reclamation from daily flow and salinity data collected in 1972 by USGS and Reclamation and became the numeric criteria. The fact that 1972 was chosen as the basis for establishing the numeric criteria creates no inference that 1972 represented a typical or average year from either a hydrologic or water quality perspective. The numeric criteria for each of those stations is as follows:

Below Hoover Dam	723 mg/L
Below Parker Dam	747 mg/L
At Imperial Dam	879 mg/L

The salinity concentrations that are anticipated in the future, even without salinity control efforts, have not been shown to have adverse effects on human health or wildlife. Thus, the Colorado River Salinity Control Program is different from most other water quality standards compliance programs.

Natural Variations

The standards require that a plan be developed which will maintain the flow-weighted average annual salinity at or below the 1972 levels while the Colorado River Basin states continue to develop their compact-apportioned water supply. The plan is not, however, intended to offset the salinity fluctuations that are a result of the Colorado River's highly variable annual flows (natural variations in the hydrologic cycle). Analyses have shown that the impact of natural variations in the hydrologic cycle can have a significant impact on salinity. These natural variations in runoff can cause a fluctuation in average annual salinity concentration of as much as 350 mg/L TDS at Imperial Dam. Recognizing the variability of the Colorado River, the plan for maintaining the criteria is developed using a long-term mean water supply of 15 maf. When Colorado River flows are at or above the long-term mean, and reservoirs are full, concentrations are expected and have been observed to be below the numeric criteria. Conversely, when flows are dramatically below the long-term mean, and reservoirs are depleted, salinities may increase above the numeric criteria.

Temporary Increases

The federal regulations provide for temporary increases above the 1972 levels if sufficient control measures are included in the plan of implementation. Should additional water development projects take place beyond those anticipated to occur before control measures are brought on line, temporary increases above the numeric criteria could result. However, these increases will be deemed to conform with the standards if appropriate salinity control measures are included in the plan and are in the process of being implemented. During the next three years, or the period of this review, no increases above the 1972 levels are anticipated.

Review of the Numeric Criteria

Based on the Forum's statement quoted above, this document is the appropriate setting to review the numeric criteria and recommend any changes if necessary.

The existing numeric criteria were adopted nearly 30 years ago. Since then, the Forum has seen a shift in the water use patterns in the lower main stem of the Colorado River. While agriculture still remains the predominant user there has been a shift within this sector from growing mostly low value salt tolerant crops to growing higher value, less salt tolerant crops. Current trends and discussions among the Colorado River Basin states indicate there will be a continued shift in the use by the agricultural sector to the municipal and industrial sector. Because of this shift, the need for water conservation and efficiency within the agricultural sector continues to put an emphasis on reducing salinity. As this shift continues, there will likely be more pressure to remove additional salt from the water and more emphasis on maintaining the salinity below the current numeric criteria.

Because uses are changing over time, it is appropriate to review the numeric criteria to determine if they still adequately protect water uses in the Lower Colorado River Basin (Lower Basin). Further research is still needed to better estimate the salinity damages in the Lower Basin. Commercial damages in the Las Vegas/Clark County, Nevada area are not accurately estimated at this time. This area has a very large commercial sector that is made up primarily by the hotel/casino industry. Currently, there is little information as to the costs related to salinity management for this industry. As damage estimates are refined, it will continue to be appropriate to revisit the numeric criteria associated with the water quality standards for salinity in the Colorado River system.

The plan of implementation is designed to keep the salinity concentrations at or below the 1972 numeric criteria levels based on a long-term mean flow of 15 million acre-feet per year. Assuming the long-term mean flow, the numeric criteria will not be exceeded any time in the next 20 years. However, recognizing the variability in the flow of the river, there is some probability, even with the full development of the plan of implementation, that the numeric criteria will be exceeded during periods of reduced flow. The following table (Table 3-1) provides the probability of exceeding the numeric criteria at the three numeric criteria stations when considering a full range of hydrologic conditions.

Table 3-1
Exceedance Probability
At Numeric Criteria Stations

Station (Numeric Criteria)	2005	2008	2025
Below Hoover Dam (723 mg/L)	18%	26%	16%
Below Parker Dam (747 mg/L)	8%	27%	16%
At Imperial Dam (879 mg/L)	7%	19%	14%

Ninety different flow scenarios were evaluated and the probability of exceeding the numeric criteria in a given year was calculated by dividing the number of scenarios that exceeded the criteria in a given year by ninety. The probabilities are shown for the current year, the year of the next Review and the last year of the period considered by this Review. Probabilities are very sensitive to the initial starting conditions of the model run. The increased salinity levels currently being experienced because of a five-year drought results in higher starting conditions and increased probabilities of exceedance.

Based on the current use patterns in the Lower Basin and the ongoing progress toward accomplishing all measures identified in the plan of implementation as described in this Review, the Forum finds the current numeric criteria are adequate for the next three years and recommends no changes at this time.

Plan of Implementation

Overview

The purpose of the plan of implementation is to offset the effects of water resource development and human activities in the Colorado River Basin after 1972. The plan of implementation is not intended to address the salinity of the River caused by human activity prior to 1972, nor salinity caused by natural variations in river flows.

Historically, the Forum designed the plan of implementation to maintain the numeric criteria for a period of 15-20 years (e.g., the 2002 Review contained a plan of implementation through the year 2020). For this Review, the plan of implementation maintains the salinities of the Colorado River at or below the numeric criterion below Hoover Dam through the year 2025. The Hoover Dam station was chosen because this point requires the most salinity control to accommodate the numeric criteria through this time period. The plan of implementation includes projects that remove the required salt tonnage. This will principally be accomplished by reducing the salt contributions to the Colorado River from existing sources and minimizing future increases in salt load caused by human activities.

The plan of implementation is composed of many actions contemplated by the federal government and many of its agencies, and by each of the seven Colorado River Basin states and many of their agencies. For this Review, the plan of implementation can be briefly summarized as follows:

1. Completion of Reclamation, USDA, and BLM salinity control measures to the extent that the measures remain viable and appropriately cost-effective.

2. Implementation of the following Forum recommended and adopted policies (the text of policies are included in Appendix A of this Review).

    Policy for Implementation of Colorado River Salinity Standards Through the NPDES Permit Program

    NPDES Permit Program for Implementation of Colorado River Salinity Standards

    Policy for Use of Brackish and/or Saline Waters for Industrial Purposes

    Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Intercepted Ground Water

Policy for Implementation of the Colorado River Salinity Standards Through the NPDES Permit Program for Fish Hatcheries

3. Implementation of nonpoint source management plans developed by the states and approved by USEPA.

Item 1 of the list above is to be implemented by federal agencies in conjunction with state, local and private participants. The Forum participates with federal agencies in developing the measures to be implemented. The Forum also urges Congress to appropriate the funds needed for implementation, and recommends legislative changes when necessary. Items 2 and 3 above are primarily implemented by each of the Basin states.

Federal Programs

Congress enacted the Colorado River Basin Salinity Control Act (Public Law (P.L. 93-320) (the Act) in June of 1974 with the Forum's support. Title I of the Act addresses the United States' commitment to Mexico and provided the means for the United States to comply with the provisions of Minute No. 242. Title II of the Act created a water quality program for salinity control in the United States. Primary responsibility for the federal program was given to the Secretary of the Interior, with Reclamation being instructed to investigate and build several salinity control units. The Secretary of Agriculture was instructed to support the effort within existing authorities (see Chapter 4 for more detail regarding these authorities).

The Act was amended in 1984 by P.L. 98-569 to authorize two additional units for construction by Reclamation and directed the BLM to implement a comprehensive program to minimize salt loading in the Colorado River Basin. The amendments directed the Secretary of the Interior and the Secretary of Agriculture to give preference to the salinity control units with the least cost per unit of salinity reduction. The Act was also amended to establish a voluntary on-farm salinity control program to be implemented by the USDA and provided for voluntary replacement of incidental fish and wildlife values foregone on account of the on-farm measures. Many cost-effective salt-load reducing activities were accomplished in the decade following that authorization.

Table 3-2 gives a brief summary of the program accomplishments to date and identifies potential future measures. It is estimated that there has been a reduction in salt loading of 983,645 tons to date and opportunities for a total of 1,900,000 tons of salinity control has been identified.

Table 3-2
Summary of Federal Salinity Control Programs

UNIT	TONS PER YEAR REMOVED
MEASURES IN PLACE BY Reclamation (2004)	
Basinwide Program	213,400
Meeker Dome	48,000
Las Vegas Wash Pittman	3,800
Grand Valley	127,500
Paradox Valley	112,000
Lower Gunnison Winter Water (USBR)	41,400
Dolores	23,000
SUBTOTAL	569,100
MEASURES IN PLACE BY USDA (2004)[1]	
Grand Valley	90,425
Price-San Rafael	35,441
Uinta Basin	142,788
Big Sandy River	42,964
Lower Gunnison	69,245
McElmo Creek	24,082
SUBTOTAL(rounded)	404,945
MEASURES IN PLACE BY BLM	
Nonpoint Sources [2]	Unknown
Well-Plugging	9,600
TOTAL	983,645
POTENTIAL NEW MEASURES	
Reclamation Basinwide Progran (not including P-SR)	400,000
Price San Rafael (Reclamation/USDA)	183,900
Grand Valley (USDA)	41,575
Uinta Basin (USDA)	34,500
Big Sandy River (USDA)	9,936
Lower Gunnison (USDA)	116,755
McElmo Creek (USDA)	21,918
Mancos River (USDA)	11,940
Muddy Creek (USDA)	11,677
USDA unidentified	41,700
Other Unidentified	63,000
New Well Plugging and Nonpoint Source (BLM)	Unknown
SUBTOTAL (rounded)	937,000
TOTAL	1,900,000

[1] As reported in Federal Accomplishment Report for Fiscal Year 2004
[2] BLM non-point source estimates are not currently well known

The following sections briefly describe the activities of Reclamation, USDA, BLM and USEPA which constitute the federal portion of the recommended plan of implementation. The Reclamation and USDA programs have purposely been designed to be highly integrated. This has improved the overall performance of the Program beyond what either agency might have done individually.

Reclamation Program

Reclamation may implement any type of effective salinity control, but most projects concentrate on improving the efficiency of irrigation delivery systems. The Act was amended by P.L. 104-20 to authorize the Basinwide Salinity Control Program. The Basinwide Salinity Control Program opened the program to competition through a request for proposal process and has greatly increased the federal cost effectiveness of salinity control. P.L. 106-459, increased the authorization ceiling for the Basinwide Salinity Control Program from $75 million to $175 million.

USDA Program

The USDA program generally concentrates on improving on-farm systems. The Federal Agriculture Improvement and Reform Act (FAIRA) of 1996 (P.L. 104-127) changed how the USDA participates in the salinity control program by creating a new conservation program known as the Environmental Quality Incentives Program (EQIP) which combined four conservation programs, including the USDA's Colorado River Salinity Control Program. The Farm Security and Rural Investment Act (FSRIA) of 2002 (P.L. 107-171) reauthorized the EQIP through 2007 at significantly increased funding levels. The Act, as amended, required the states to cost-share in on-farm salinity control from the Colorado River Basin funds. The cost share is based on federal funds expended for salinity control activities under EQIP.

BLM Program

The goal of the BLM's program is to reduce the contribution of salts to the Colorado River from BLM-administered public lands. Salt reduction is achieved by controlling both point and nonpoint sources of salt contributions, however, the majority of salt derived from public lands is of nonpoint-source origin.

The collective efforts of Reclamation, the USDA and the BLM are identified and summarized in Table 3-2.

USEPA

National Pollutant Discharge Elimination System (NPDES) permits are issued by the USEPA for New Mexico. USEPA also issues NPDES permits for Indian tribes in the Basin. Salinity requirements for these permits are reviewed and added where needed during the permit re-issuance process.

State Programs

Overview

A major element of the state programs is the ability of the Colorado River Basin states to cost-share in the Reclamation and the USDA programs. This allows, for additional funds to be made available from the Colorado River Basin states' funds through up-front cost-sharing to move the salinity control effort ahead. At current federal funding levels, the Colorado River Basin states contribute about $8 million each year. Colorado River Basin states' funds are available to cost-share in a larger program if federal dollars were to be increased.

The states' portion of the plan of implementation, as set forth in this and earlier Forum Reviews, also includes effluent limitations on industrial point source discharges with the objective of no-salt return whenever practicable, as well as a program which parallels Reclamation and USDA efforts and which is funded from the Colorado River Basin states' funds.

Forum's NPDES Policies

In 1977, the Forum adopted its Policy for Implementation of Colorado River Salinity Standards Through the National Pollution Discharge Elimination System (NPDES) Permit Program. This policy provides guidance for the regulation of municipal and industrial point source discharges of saline water. In 1980, the Forum adopted a policy to encourage the use of brackish and/or saline waters for industrial purposes where it is environmentally sound, and economically feasible. A third policy dealing with intercepted ground water was adopted by the Forum in 1982. In 1988, the Forum adopted a fourth policy which addresses the salinity of water discharges from fish hatcheries.

Important components of the plan of implementation for salinity control are the Basin states' activities associated with the control of total dissolved solids through the NPDES program, and the water quality management plans. The Forum approved needed changes to its NPDES policy on October 30, 2002. The original policy allowed for a waiver to be granted by the permitting agency if the proposed discharge of water contained less than a ton of salt per day. In recent years, concern has been expressed where new development of resources, most likely in the energy industry, could result in many point discharges that would total much more than a ton a day but would not total more than a ton at any one discharge point. An example of this type of development is the growing coal bed methane industry where in discrete areas hundreds of wells are proposed.

The Forum created a Policy Committee and that committee presented to the Forum on June 5, 2002 proposed policy changes. After undergoing public review, various revisions were made to the policy by the committee. The Forum accepted the committee's report and approved the policy on NPDES discharges at its October 30, 2002 meeting. In the printing of the 2002 Review and the approved policies, the section relating to municipal discharges and an additional appendix entitled "Guidance on New Construction Determination" were inadvertently omitted. Both errors have been corrected in this printing and the Forum reaffirms the validity of all of the policies as they appear in this document. The corrected adopted policy is included in Appendix A.

Each of the states has adopted the Forum policies presented in Appendix A. A listing of the NPDES permits in force within the Colorado River Basin is presented in Appendix B. During the period of this review, the status of implementation of the NPDES permits and the water quality management plans in each of the states is as follows:

Arizona

Scope

The Colorado River enters Arizona (and the Lower Basin) near Page, travels through the Grand Canyon before turning southward at Lake Mead (Hoover Dam) and flowing to the Gulf of California. There are four major drainages entering the river as it passes through Arizona: (1) the Little Colorado River which drains east-central Arizona, crosses the Navajo Reservation before emptying into the Colorado River approximately 50 miles south of the Utah border; (2) the Virgin River which cuts across the northwest corner of Arizona from Utah before entering Lake Mead; (3) the Bill Williams River, formed by the Big Sandy and the Santa Maria Rivers at Alamo Lake, which empties into the Colorado River above Parker Dam, and (4) the Gila River, which drains central and southern Arizona and joins the Colorado River near Yuma, below Imperial Dam.

NPDES Permitting

Since December 2002, when Arizona received delegation of the NPDES permitting program from the USEPA, the Water Quality Division of the Arizona Department of Environmental Quality (ADEQ), has administered the AZPDES program on non-Indian county lands. All major permits for municipal and industrial discharges, with direct river discharges, are written in conformance with the associated Forum policies. The agency continues to evaluate and revise other discharge permits as information becomes available.

Currently, there are 34 active Arizona discharge permits in the non-tribal portion of the Colorado River system. Of these, 9 are for industrial discharges related to mining, power plants, fueling stations and one federal fish hatchery. There are 25 permits associated with municipal water treatment and/or wastewater discharges. These facilities serve a total population of approximately 65,000 people. A specific listing of the individual permits and the status of compliance with Forum policy is contained in Appendix B.

Of the 21 federally recognized tribes in Arizona, seven tribes have lands within the drainage of the Colorado River Basin and 4 tribes currently hold a total of 18 NPDES permits. These permits are issued and administered by USEPA, Region 9 in San Francisco. The majority of these permits are for domestic wastewater discharges from boarding schools. One permit is for a large coal mining operation; two others are for municipal water and wastewater discharges.

Water Quality Assessments and TMDLs (Total Maximum Daily Loads)

In general, water quality in the Arizona portion of the Colorado Basin is good to very good. There are currently only 15 stream segments in the basin that are listed in the state's 2004 Section 303(d) report as

either impaired *(4 – Bill Williams; 5 – Colorado River Mainstem; 6 – Little Colorado River).* No waters are currently listed for salinity related impacts. The primary causes of impairment (a waterbody may be impaired for more than one pollutant) are sediment (9), selenium (4), pathogens (1) and trace metals (4), including mercury. Complete assessment information can be found on the agency's website at: http://www.azdeq.gov/environ/water/assessment/assess.html

Watershed Planning

Most of the water quality issues mentioned above are currently being addressed through locally-led watershed management efforts funded through the Arizona's 319 grant program. The ADEQ is in the process of finalizing comprehensive watershed-based plans for several watersheds in the state, including the Bill Williams watershed. These plans will contain USEPA's required nine elements to achieve the highest ranking for possible funding under the Clean Water Act 319 program. In addition, the plans contain implementation strategies for many of the impaired waters as well as Best Management Practices to address existing and potential issues in the watershed.

California

NPDES Permits

The California Regional Water Quality Control Board, Colorado River Basin Region (Regional Board), issues the NPDES permits for navigable waters and Waste Discharge Requirements for land discharges within the Colorado River drainage portion of the state. In issuing and reissuing waste discharge requirements, the Regional Board complies with all Forum policies. In addition, the Regional Board has included in the discharge permit requirements for land discharges, a prohibition against brine backwash from water softeners into evapo-percolation ponds which overlie ground waters which are in hydraulic continuity with the Colorado River System. Industrial discharges are to be confined in impervious evaporation basins.

Water Quality Management Planning

The Water Quality Control Plan for the Colorado River Basin was adopted by the Regional Board in November 1993. Following public hearings, the updated plan was adopted by the Regional Board and approved by the State Water Resources Control Board in February 1994. The revised plan became effective upon approval of the Office of Administrative Law in August 1994. The salinity control component of the Water Quality Control Plan is consistent with the Forum's plan of implementation for salinity control. The Regional Board is working with local entities and the Colorado River Board of California to ensure that implementation of the water quality plan is achieved.

In May 2005, the Regional Board completed the 2004 Triennial Review of the Water Quality Control Plan. The purpose of this review is to reaffirm and/or revise water quality objectives and beneficial uses for ground and surface waters, and evaluate the adequacy of the Basin Plan for protecting water quality. Several projects that require Basin Plan amendments are underway and include TMDL for the Salton Sea, New River, and the Palo Verde Outfall Drain. Recently adopted amendments include localized septic tank prohibitions in Cathedral City and Desert Hot Springs.

Other Activities

State Water Resources Control Board Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling, Resolution No. 75-58 establishes priorities for the use of poor quality waters for cooling of inland power plants, and has been in effect since 1975. The State Water Resources Control Board has included salinity control in the Colorado River among its top priority items.

Colorado

Scope

Colorado's portion of the Colorado River Basin is comprised of six major drainages: 1) the main stem of the Colorado River from the continental divide to the Utah border; 2) the Roaring Fork River Basin; 3) the Yampa/White River Basin which flows to the Green River in Utah; 4) the Gunnison River Basin; 5) the Dolores River which flows to the main stem in Utah; and 6) the San Juan Basin which flows into New Mexico and then to the main stem in Utah.

NPDES Permitting

The Colorado Department of Public Health and Environment, Water Quality Control Division administers the NPDES permitting program in the in Colorado River Basin, with the exception that USEPA issues permits for point source discharges on the Southern Ute and Ute Mountain Ute Reservations. Permits for industrial and municipal discharges are written in conformance with the associated Forum policies.

Currently there are 361 active discharge permits in the Colorado portion of the Colorado River Basin. Of these, 11 are for industrial discharges related to bituminous coal, 4 for crude petroleum and natural gas, 1 for gold ores, 1 for lead and zinc ores, and 1 for uranium, radium vanadium ores. A specific listing of the individual permits and compliance status is contained in Appendix B.

Water Quality Assessments and TMDLs

The waters in Colorado's portion of the Colorado River Basin are generally of good quality. 15 stream segments in the lower portion of the system (9 - Gunnison; 5 - main stem Colorado; and 1 – White) are impacted for selenium, caused by both natural sources and irrigation of land that sits on marine shale, primarily the Mancos. 49 stream segments in the mountainous portions of the basin (17 – Gunnison; 4 – San Miguel; 4 – Dolores; 4- Blue; 14 – Snake; and Eagle – 5) are impaired for metals, primarily caused by the remnants of historic mining activities. No waters are currently listed for salinity related impacts.

Watershed Planning

The Upper Colorado Basin in Colorado has several watershed planning projects in progress. The potential water quality impacts of headwater diversions to Colorado's Eastern Slope are being examined. There are two environmental impact statements in preparation relative to projects that would affect the Fraser River. The Upper Yampa River Basin has received funding to further define water quality improvement projects that are recommended by the 208-water quality management plan, revised in 2002.

The Blue River and Eagle River watersheds are working on TMDL plans to address metals concentrations that exceed water quality standards. Some reductions in metals load and improvement in fisheries have been achieved, but the adoption of site-specific standards is anticipated. There is an on-going study of stream flows and their impact upon water quality in the Roaring Fork watershed. Each of the towns and cities in the Roaring Fork watershed also has been making improvements in their stormwater management programs, even though they are not currently required to obtain the Phase II municipal stormwater permit.

Development of coal bed methane has become a major activity in the Colorado River Basin. More of these oil and gas development projects are obtaining a discharge permit for process water discharges under section 402 of the Clean Water Act. The Colorado Water Quality Control Commission recently ruled that oil and gas development sites of one to five acres of disturbance are required to obtain stormwater permit coverage for construction activities from the state, even though USEPA recently extended the federal exemption for such sites from the stormwater permit requirements.

Several watershed planning efforts are underway, or already exist in the lower portions of the Colorado River Basin in Colorado. Most of these are associated with the Clean Water Act Section 319 grant program requirements.

The Gunnison River Basin Selenium Task Force and the Grand Valley Selenium Task Force are working on watershed plans, which focus upon the need to address water quality impacts from selenium. The Animas River Stakeholders Group has prepared a watershed plan for the upper Animas River, which has been severely impacted from historic mining operations. A Nutrients Work Group on the lower Animas River is attempting to acquire the funds necessary to develop a watershed plan that will address the suspected nutrient impacts to the lower Animas River. These plans are designed to meet the nine required elements for a nonpoint source watershed based plan as described by the USEPA.

Nevada

Scope

The Colorado River Basin within Nevada consists of 12,376 square miles with the major tributaries being the Virgin and Muddy Rivers and the Las Vegas Wash. All of these tributaries flow into Lake Mead and provide nearly all of the inflow to the Colorado River from Nevada.

NPDES Permits

The USEPA has delegated the Nevada Division of Environmental Protection (NDEP) the authority to issue NPDES Permits. Currently there are 42 active discharge permits in the Nevada portion of the Colorado River System. The largest dischargers, the City of Las Vegas (CLV) and the Clark County Sanitation District (CCSD), and the City of Henderson (COH) were issued new discharge permits in July, 2001. The permits allow a flow up to 91 million gallons per day (MGD) for the CLV, 110 MGD for the CCSD and 42.5 MGD for the COH. The qualities of the waters affected by these permits are closely

monitored and all necessary programs to protect water quality standards will be implemented. Nevada continues to apply the policies adopted by the Forum.

Water Quality Management Planning

Area-wide water quality management planning duties and powers have been vested to certain counties. The Clark County Board of Commissioners (BCC) was designated the Area-Wide Water Quality Management Planning organization within Clark County. The initial 208 Water Quality Management Plan (208 Plan) was adopted by the BCC in 1978 and was approved by the USEPA. Subsequently, in 1997, the BCC adopted the Las Vegas Valley 208 Water Quality Management Plan Amendment. The Las Vegas Valley 208 amendment included updates to planning area boundaries, wastewater flow projections, reclaimed water demands, nonpoint source management, Las Vegas Wash Wetlands planning, integrated planning coordination, and overall water quality planning. The main purpose of this 208 Plan Amendment is to:

- Revise the 1990 208 Plan Amendment
- Include effects of sustained regional growth and development
- Revise stormwater permitting to a more inclusive nonpoint section
- Provide water quality planning to a horizon year of 2020

The Las Vegas Valley 208 Water Quality Management Plan Amendment was further updated in 2002 to include the Areawide Reuse Study, and the Comprehensive Adaptive Management Plan for the Las Vegas Wash.

Clark County adopted the Northeast Clark County 208 Water Quality Management Plan in June, 2000. The amendment area is located in the northeast area of the county including the communities of Bunkerville, Logandale, Overton, Moapa, Moapa Valley, and the City of Mesquite. Two tributaries to the Colorado River are located in the area, the Muddy and Virgin Rivers. The Virgin River is currently listed on the State's 303d list. Both rivers have aquatic endangered species and drain into Lake Mead.

Local government entities within urban Clark County are also participants in the NPDES Stormwater Quality Management Committee to identify and implement measures to meet State stormwater permitting requirements. Future 208 amendments are expected to address gray water issues and shallow ground water issues, to update population projections, and to incorporate BMPs identified in the stormwater permit for the Las Vegas area entities.

Other Activities

A program has been developed by CCSD, CLV, and CNLV to coordinate, investigate, and encourage the implementation of management practices resulting in reduction of wastewater salinity. The principal emphasis of this program will be directed toward salinity control to meet the requirements of the NPDES permits issued to Clark County, the City of Las Vegas, and Henderson.

New Mexico

Scope

New Mexico's portion of the Colorado River Basin above Imperial Dam is comprised of two major main stem drainages: (1) the Puerco River which is a tributary of the Little Colorado River, and (2) the San Juan River, a major tributary of the Colorado River that reenters Colorado prior to draining into Lake Powell on the Arizona-Utah border.

NPDES Permitting

In New Mexico, authority for issuing permits is administered by USEPA, Region VI, except for facilities located on the Navajo Indian Reservation, which are administered by Region IX. All permits for industrial and municipal discharges are written in conformance with the associated Forum policies. Currently, there are 37 active discharge permits in the New Mexico portion of the Colorado River System, of which Region VI administers 25 permits and Region IX administers 12 Navajo Reservation permits. Of these, 21 permits (20 non-Indian, one Navajo) are for industrial discharges and 16 permits (5 non-Indian, 11 Navajo) are associated with municipal wastewater discharges.

Water Quality Assessment and TMDLs

The New Mexico Water Quality Control Commission (WQCC) has adopted the framework for water quality in New Mexico, which includes the State of New Mexico Water Quality Management Plan (NMWQMP) and the New Mexico Nonpoint Source Management Plan (NPSMP). Both plans cover the entire state except for that portion of the Navajo Reservation lying therein. Planning within the reservation is the sole responsibility of the Navajo Tribe. Much of the Colorado River Basin in New Mexico falls within the boundaries of the reservation.

There are no TMDLs within the New Mexico portion of the Colorado River Basin at this time. Further information regarding TMDLs can be found at http://nmenv.state.nm.us.

Watershed Planning

Work plans are developed and grant funding secured under Clean Water Act Section 319(h) for watershed associated development, riparian area restoration, certification of Section 404 permits, spill response, and treatment of abandoned mines. The work plans identify and coordinate efforts by state, federal, and local agencies along with other groups and private citizens to reduce or prevent non-point source pollution and implement best management practices to reduce non-point source pollutants. State Revolving Loan Funds and other funds are authorized and available for use in funding salinity control projects. State actions in support of salinity control include: (1) inclusion of salinity control measures in the Section 208 plans, (2) dissemination of information on salinity sources and control, (3) consultation with industries on potential salinity reduction measures, (4) implementation of Forum policy through NPDES permits, (5) maintaining a continuous water quality planning program whereby new or additional salinity control measures can be addressed.

Utah

Scope

Utah's portion of the Colorado River Basin is comprised of nine major sections: 1) the main stem of the Colorado River from the Colorado border to the Arizona Border in Lake Powell; 2) the Green River Basin from the Wyoming State Line in Flaming Gorge reservoir to the confluence with the Colorado River; 3) the Duchesne River Basin: 4) the lower Yampa and White River Basins which flow to the Green River in Utah; 4) the Price and San Rafael River Basins; 5) the Dirty Devil and Escalante Rivers; 6) the lower portion of the San Juan Basin which flows the main stem in Utah; 7) the Paria River; 8)the Kanab Creek Basin to the Arizona State Line; and 9) the Virgin River Basin to the Arizona state line.

NPDES Permitting

The Utah Division of Water Quality in the Utah Department of Environmental Quality administers the NPDES permitting program in Utah. Permits for industrial and municipal discharges are written in conformance with the associated Forum policies.

As of Dec 31, 2004, there are 79 discharge permits issued in the Utah portion of the Colorado River Basin. Of these, 25 are for municipal discharges and 54 are for industrial discharges. A specific listing of the individual permits and their compliance status is contained in Appendix B. Utah is developing 2 discharge permits for mining operations that will offset salinity contributions in accordance with the Forum policy adopted as part of the 2002 Triennial Review. It is anticipated that these permits and the salinity-offset project plans will be finalized early in 2005.

Water Quality Assessments and TMDLs

The waters in Utah's portion of the Colorado River Basin are generally of good quality. There are 27 stream segments which are listed for impacts from salinity/TDS/chlorides. These segments are generally in the lower reaches of the respective basins and are the result of a combination of natural salt loadings as well as agricultural drainage. Currently no TMDLs for Salinity/TDS/chlorides are in place. TMDLs are currently being developed for three reaches, the Upper Escalante, and the Paria River segments 1 and 3.

Watershed Planning

The Upper Colorado Basin in Utah currently has now watershed planning projects for water quality in progress. The Basin Plans for the Utah State Water Plan include water quality as part of the process and these plans are updated periodically.

Wyoming

Scope

Wyoming's portion of the Colorado River Basin is comprised of two major main stem drainages: (1) the Little Snake River which is a tributary of the Yampa River in Colorado and (2) the Green River which empties into Flaming Gorge Reservoir on the Wyoming-Utah border.

NPDES Permits

The Wyoming Department of Environmental Quality, Water Quality Division administers the NPDES permitting Program within the Colorado River Basin in Wyoming. There are no Indian lands situated within the Colorado River drainage in Wyoming. All permits for industrial and municipal discharges are written in conformance with the associated Forum policies.

Currently there are 43 active discharge permits in the Wyoming portion of the Colorado River System. Of these, 24 are for industrial discharges related to coal mines, power plants or oil and gas production facilities. The largest discharge is from PacifiCorp's Naughton Power Plant which discharges approximately 6 tons/day of salt into the Ham's Fork, a tributary of the Green River near Kemmerer. There are also nineteen permits associated with municipal wastewater discharges. These facilities serve a total population of approximately 44,000 people. A specific listing of the individual permits and compliance status is contained in Appendix B.

Water Quality Assessments and TMDLs

In general, water quality in the Wyoming portion of the Colorado Basin is good to very good. There are currently only 15 stream segments listed in the state's 2004 Section 303 (d) report as either impaired or threatened (7 - Green River; 8 - Little Snake). The primary sources of impairment are habitat degradation, pathogens and trace metals. No waters are currently listed for salinity related impacts. Complete assessment information can be found at http://deq.state.wy.us/wqd/watershed/index.asp.

Watershed Planning

Most of the water quality issues mentioned above are currently being addressed through locally-led watershed management plans funded through Wyoming's 319 grant program. In addition, the Wyoming Water Development Commission is engaged in a statewide water planning process and has completed a planning document for the Green and Little Snake drainages. This planning document presents current and proposed (estimated) future uses of water in Wyoming's Green River and Little Snake Basins. Products in the Plan include irrigated lands delineation, hydrologic modeling of major streams, current use determinations for all water use categories, future use projections, water development opportunities identification, and related activities. Detailed information can be accessed at: http://waterplan.state.wy.us.

Conclusion

The Standards consist of two components, the numeric criteria and the plan of implementation. No change has been made in the numeric criteria since their adoption in 1975 by the Basin states and approval by the USEPA. After having conducted this Review, the Forum has again found the numeric criteria to be appropriate, and recommends no changes in these criteria. By this Review, as has been the case every three years, the Forum has adopted an updated plan of implementation.

As water development occurs throughout the Colorado River Basin, salinity concentrations and the associated economic damages will increase. An aggressive salinity control program is needed to reduce these damages. The Salinity Control Program, while continuing to maintain salinity concentrations at or below the numeric criteria, will focus on the opportunities to further reduce future economic damages. The Forum will continue to advance an aggressive program over the next decade to continue to control as much salt loading as economically justifiable.

Although the planning horizon in this Review for the plan of implementation extends through the year 2025, there is an urgency to accomplish parts of the plan prior to the next triennial review in the year 2008. With the adoption of this Review, the Forum and the states become committed to that end. The federal agencies are a critical part of the Salinity Control Program. It is expected that by their involvement in the preparation of this Review, those federal agencies will support the plan of implementation and its programs.

CHAPTER 4 – MEANS OF MAKING PLAN OPERATIONAL

Background

It has now been over thirty years since the Colorado River Salinity Control Program was conceived. It was agreed to by the states and the USEPA and authorized by the United States Congress (Congress). Although the goals of creating a plan and a program that would control salinity concentrations at the three downstream numeric criteria stations were agreed to at the outset, how salinity control was to be accomplished was not known. The three decades following 1974 can be divided almost equally into three time periods of accomplishments.

Much of the first ten years was spent looking for methods to control the salt loading in the Upper Colorado River Basin (Upper Basin) in a cost-effective way. Success was not certain. The second ten years were spent trying options and beginning salinity control activities. During the last ten years the program has moved ahead, partial success has been realized, much salt load reduction has been accomplished and the path to future salinity control is quite clear.

Financing Salinity Control Activities

The means of making the plan of implementation operational consists of having coordinated planning for additional salt removal and seeking the necessary appropriations for carrying out those goals. Accomplishment of the Salinity Control Program is dependent upon funding of the efforts included in the plan of implementation. This is dependent upon agency budgetary requests being made, Congressional appropriations being secured, and irrigation modifications and other salt loading reduction practices being put into place and then kept operational.

The plan of implementation recognizes that the Forum, participating federal agencies, and the Colorado River Basin states each have specific responsibilities for furthering the Salinity Control Program. The Forum will continue to provide overall coordination, and a continuing review of salinity changes, program effectiveness, and the need to make further program changes and improvements.

Federal agencies must complete planning efforts and seek authorization and funding for salinity control efforts in accordance with Title II of P.L. 93-320, as amended by P.L. 98-569, P.L. 104-20, and P.L. 104-127. The Colorado River Basin states will continue to encourage the agencies to request funding as recommended annually by the Colorado River Basin Salinity Control Forum's Advisory Council (Advisory Council) and to lend their support to obtaining needed funding from the Congress.

Table 4-1 provides a compilation of the amount of funding provided to Reclamation, USDA, and BLM for the Salinity Control Program from FY 1988 to the present. Funding levels for salinity control activities by the BLM continue to be difficult to ascertain due to the fact that the BLM budget does not contain a specific line item for salinity control.

In 1996, Congress amended the Salinity Control Act and the Basin states began up-front cost sharing on funds expended by Reclamation and the USDA. The Basin states cost sharing is 30% of the total of the combined federal funding for Reclamation, USDA and Basin states funding. Over the last ten years, the average combined funding for the salinity control effort has been over $34,300,000 per year. The Basin states' total contribution over the ten years has been $100,482,000 and these funds, combined with local agricultural producers' contributions for on-farm irrigation improvements, have given a significant assistance to the implementation of the salinity control effort.

Table 4-1
Summary of Colorado River Basin Salinity Control Program
Funding for Federal Agencies
(In Dollars)

Federal Fiscal Year	Bureau of Reclamation	USDA - NRCS	Up-front Cost Sharing from Basin Funds	Bureau of Land Management[1]
1988	20,783,000	3,804,000		500,000
1989	16,798,000	5,452,000		500,000
1990	14,185,000	10,341,000		700,000
1991	24,984,000	14,783,000		873,000
1992	34,566,000	14,783,000		873,000
1993	33,817,000	13,783,000		866,000
1994	32,962,000	13,783,000		800,000
1995	13,622,000	4,500,000	[2]	800,000
1996	17,420,000	9,561,000	6,028,000	800,000
1997	11,942,000	3,152,000	5,850,000	800,000
1998	15,876,000	3,906,000	8,011,000	800,000
1999	15,422,000	5,132,000	9,594,000	800,000
2000	15,776,000	5,330,000	9,698,000	800,000
2001	13,880,000	5,784,771	9,444,000	800,000
2002	14,892,000	9,721,000	11,524,000	800,000
2003	11,507,000	12,714,000	11,442,000	800,000
2004	12,418,000	19,488,000	14,691,000	800,000
2005 (est.)	11,250,000	19,538,000	14,200,000	800,000

[1] Funds expended by BLM for salinity control cannot accurately be determined. This amount reflects what has been reported as having been designated within the BLM budget.

[2] Prior to 1996 Basin Funds were used to repay the reimbursable portion of Reclamation's Salinity Control Projects within a fifty-year period or within a period equal to the estimated life of the project, whichever is less.

The USGS stream flow gaging and water quality sampling activities, and the longstanding periods of record at existing stations, are essential to the monitoring and evaluation of salinity control effectiveness. The USGS should continue to seek funding under its existing authority for flow gaging and water quality monitoring to provide necessary data for the evaluation of the short-term and long-term effectiveness of the Salinity Control Program.

As stated previously, the 1996 Amendments to the Act (P.L. 104-127) permit up-front cost-sharing by the Upper and Lower Basin Funds in lieu of repayment. Revenues accruing to the Lower Basin fund for the Salinity Control Program are derived from a 2.5 mill per kilowatt hour levy on California and Nevada purchases of hydro power generation from Hoover Powerplant and beginning June 1, 2005 from Parker and Davis Powerplants. Revenues accruing to the Upper Basin fund are collected by the Western Area Power Administration. The Basin funds will be adequate to provide the up-front cost-sharing.

Interagency Coordination

Overview

The Salinity Control Program is truly a unique program, and it cannot be successful without the cooperation of a multitude of agencies and governments involved at the local, state and federal levels. First, the program is reliant upon the cooperation of land owners in implementing important and cost-effective salinity control measures. Secondly, the program is dependent on a multitude of agreements among the seven Colorado River Basin states which have always been accomplished by consensus. Lastly, the program depends upon the cooperation of a number of federal agencies for its success. In addition to the three implementing agencies, there are other federal agencies which are involved in the Salinity Control Program, and cooperation and coordination with these agencies is also most essential. Three agencies are notable, the United States Fish and Wildlife Service (USFWS), USGS and the USEPA.

USFWS

Pursuant to authorities and responsibilities as set forth in the Endangered Species Act, Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, and the Migratory Bird Treaty Act, the USFWS is an active participant in the Salinity Control Program. It is primarily through these legislative authorities that the USFWS coordinates with lead federal agencies and the Basin states.

In general, USFWS activities consists of coordination with lead federal agencies in evaluating potential impacts to fish and wildlife resources resulting from proposed salinity control projects. Documentation of USFWS concerns and recommendations are typically in the form of Fish and Wildlife Coordination Act reports, Planning Aid Memoranda, biological opinions, and comments on Draft and Final Environmental Assessments and Environmental Impact Statements. Follow-up coordination with project sponsors to ensure appropriate mitigation is also a major thrust of the USFWS. The Salt Lake City, Utah Field Office (Ecological Services) provides overall program coordination for the USFWS.

USGS

The USGS' Water Resources Division provides and analyzes hydrologic information to assess the nation's water resources. Programs are developed with cooperation and financial support from state, local and other federal agencies. The programs provide hydrologic and geochemical information for evaluation of surface and ground water systems, as well as for management and policy decisions.

To provide information required by the federal, state and local agencies to address Colorado River water quantity and quality issues, the USGS operates and maintains a network of about 520 stream gaging stations and 140 water quality stations in the Colorado River Basin. Stream flow and water-quality information from these stations provide input to the hydrologic database for Reclamation's CRSS. In addition to collecting hydrologic data, the USGS conducts specific studies on surface water, ground water, and water quality.

USEPA

The major USEPA programs relating to Colorado River salinity control are: (1) water quality management planning; (2) water quality standards; (3) NPDES permits; (4) review of National Environmental Policy Act (NEPA) documents; (5) nonpoint source control under Section 319 of the Water Quality Act of 1987; (6) wetlands protection; and (7) the Underground Injection Control (UIC) Program. For the most part, these programs are either implemented by the states under federal statute, (such as the water quality standards program), or delegated to the states by the USEPA (such as the NPDES program). The USEPA maintains oversight responsibilities for the assumed and delegated programs, and has responsibility for reviewing and approving water quality standards, including those for salinity. USEPA continues to encourage the Colorado River Basin states to develop and implement the basinwide and state salinity control strategies.

Section 303 of the Clean Water Act requires states to adopt water quality standards pursuant to their own laws which are consistent with the applicable requirements of the Clean Water Act. The Colorado River Basin Salinity Control Forum, through its Work Group, has been re-affirming the numeric criteria for salinity and developing a new basinwide plan of implementation for salinity control for the seven Basin states every three years to satisfy the triennial review requirements of the Clean Water Act. Following adoption of the standards by each state, it is the responsibility of the USEPA regional administrators to approve or disapprove the standards based on consistency with Clean Water Act requirements.

Colorado River Basin States

The Colorado River Basin states individually, and together as the Forum, have and will continue to work with concerned agencies, both state and federal, to increase the public understanding of the salinity problem and its control. The Colorado River Basin states work within the framework of ongoing efforts by federal, state and local organizations to achieve this goal. Assistance from the Executive Director of the Forum is also provided. The plan formulation phase of Reclamation, USDA, and BLM salinity control efforts provide an excellent opportunity for public education with regard to Colorado River salinity and the means for its control.

The Forum meets at least twice a year, or as needed, to discuss the Salinity Control Program, the efforts of the federal agencies and the states, and the need for additional policy and/or action by the Forum. Meetings of the Forum are open and the public is welcome to attend. All input, whether oral or written, is considered and acted on as appropriate by the Forum. Every three years the Forum also provides for public involvement in the water quality standards review process as public meetings are held to receive comments on the salinity standards. As a result of public input, appropriate adjustments to the program are made.

Reclamation and the USDA work in cooperation with the Forum's Work Group. The Work Group, created by the Forum, holds meetings on a more frequent basis than the Forum to review technical information which is generated by the federal agencies and informally exchange ideas and viewpoints. Membership on the Work Group is composed of technical representatives from each of the Basin states and the Executive Director of the Forum. The Work Group keeps current with salinity control efforts and suggests revisions to the plan of implementation as appropriate. The Work Group operates under a schedule which enables the states to take action on any potential revision in a timely manner. The Work Group coordinates the efforts of the Basin states and reports back to the Forum any actions which the Work Group believes the Forum should consider. In addition to coordinating with federal and state agencies, the Forum and the Work Group also assist the Advisory Council in the preparation of its annual reports. Forum members also participate with their own state's water quality planning agencies in matters related to salinity and salinity control, and will continue to do so as the need arises.

Colorado River Basin Salinity Control Advisory Council

Cooperation between the federal agencies and the Colorado River Basin states is essential, and the program has advanced because of a spirit of good will and a desire to succeed in controlling the salinity of the Colorado River expressed by all of the states and the federal agencies. Congress created the Colorado River Basin Salinity Control Advisory Council, which is to be composed of no more than three members from each state appointed by the Governors of each of the Colorado River Basin states. The Act directs that the Advisory Council shall, among other things, act as a liaison between both the Secretaries of the Interior and the USDA and the Administrator of the USEPA and the states in accomplishing the purposes of this title. The Act further directs that the Secretary will make reports to the Advisory Council, and that the Advisory Council will recommend to both the Secretary and the Administrator of the USEPA appropriate studies to further projects, techniques, or methods for accomplishing the purposes of this title.

Adoption by States

After the final adoption of this Review by the Forum, each of the seven Colorado River Basin states will include the Review as a part of its own water quality standards, and through procedures established by each state, consider the Review for adoption and submittal to the appropriate regional office of the USEPA for approval. Because the Colorado River Basin contains portions of three USEPA regions, Utah, Colorado and Wyoming will make submittals to USEPA Region VIII in Denver, Colorado; New Mexico to USEPA Region VI in Dallas, Texas; and Nevada, Arizona and California to USEPA Region IX in San Francisco, California. It is anticipated that the USEPA, by approval of the states' submittals, will fully support this salinity control effort.

APPENDIX A

Forum Policies

POLICY FOR IMPLEMENTATION OF COLORADO RIVER SALINITY STANDARDS THROUGH THE NPDES PERMIT PROGRAM

Adopted by
The Colorado River Basin Salinity Control Forum

February 28, 1977
Revised October 30, 2002

In November 1976, the United States Environmental Protection Agency Regional Administrators notified each of the seven Colorado River Basin states of the approval of the water quality standards for salinity for the Colorado River System as contained in the document entitled "Proposed Water Quality Standards for Salinity Including Numeric Criteria and Plan of Implementation for Salinity Control, Colorado River System, June 1975, and the supplement dated August 25, 1975. The salinity standards including numeric criteria and a plan of implementation provide for a flow weighted average annual numeric criteria for three stations in the lower main stem of the Colorado River: below Hoover Dam, below Parker Dam, and at Imperial Dam.

In 1977, the states of the Colorado River Basin adopted the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." The plan of implementation is comprised of a number of Federal and non-Federal projects and measures to maintain the flow-weighted average annual salinity in the Lower Colorado River at or below numeric criteria at the three stations as the Upper and Lower Basin states continue to develop their compact-apportioned waters. One of the components of the Plan consists of the placing of effluent limitations, through the National Pollutant Discharge Elimination System (NPDES) permit program, on industrial and municipal discharges.

NPDES Policy for Municipal and Industrial Discharges of Salinity in the Colorado River

The purpose of this policy is to provide more detailed guidance in the application of salinity standards developed pursuant to Section 303 and through the NPDES permitting authority in the regulation of municipal and industrial sources. (See Section 402 of the Federal Water Pollution Control Act.) The objective of the policy, as provided in Sections I.A. and I.B., is to achieve "no salt return" whenever practicable for industrial discharges and an incremental increase in salinity over the supply water for municipal discharges. This policy is applicable to discharges that would have an impact, either direct or indirect on the lower main stem of the Colorado River System. The lower main stem is defined as that portion of the River from Hoover Dam to Imperial Dam.

In October, 2002, the Forum substantially amended the NPDES policies relating to industrial discharges but made no changes to the procedures for municipal discharges. In the printing of the 2002 Review, however, the section relating to municipal discharges and an additional appendix entitled “Guidance on New Construction Determination” were inadvertently omitted. Both errors have been corrected in this printing and the Forum reaffirms the validity of all of the policies as they appear in this document.

NPDES Policies Separately Adopted by the Forum

The Forum developed a separate and specific policy for the use of brackish and/or saline waters for industrial purposes on September 11, 1980. The Forum addressed the issue of intercepted ground water and adopted a specific policy dealing with that type of discharge on October 20, 1982. On October 28, 1988, the Forum adopted a specific policy addressing the water use and discharge associated with fish hatcheries. Each of these separately adopted policies is attached hereto.

NPDES Policies for Specified Industrial Discharges – 2002 Amendments

On October 30, 2002, the Forum amended this policy for implementation of Colorado River salinity standards through the NPDES permit program in order to address the following three additional types of industrial discharges: (1) water that has been used for once-through noncontact cooling water purposes; (2) new industrial sources that have operations and associated discharges at multiple locations; and (3) "fresh water industrial discharges" where the discharged water does not cause or contribute to exceedances of the salinity standards for the Colorado River System. This policy was also amended to encourage new industrial sources to conduct or finance one or more salinity-offset projects in cases where the permittee has demonstrated that it is not practicable to prevent the discharge of all salt from proposed new construction.

Discharges Of Once-Through Noncontact Cooling Water

Section I.C. of this policy has been added to address discharges of water that has been used for once-through noncontact cooling water purposes. The policy for such discharges shall be to permit these uses based upon a finding that the returned water does not contribute to the loading or the concentration of salts in the waters of the receiving stream beyond a *de minimis* amount. A *de minimis* amount is considered, for purposes of this policy, as an average annual increase of not more than 25 milligrams per liter (mg/L) in total dissolved solids measured at the discharge point or outfall prior to any mixing with the receiving stream in comparison to the total dissolved solids concentration measured at the intake monitoring point of the cooling process or facility. This policy is not intended to supersede any other water quality standard that applies to the receiving stream, including but not limited to narrative standards promulgated to prohibit impairment of designated uses of the stream. It is the intent of the Forum to permit the return of once-through noncontact cooling water only to the same stream from which the water was diverted. Noncontact cooling water is distinguished from blowdown water, and this policy specifically excludes blowdown or any commingling of once-through noncontact cooling water with another waste stream prior to discharge to the receiving stream. Sections I.A. and I.B. of this policy govern discharges of blowdown or commingled water.

New Industrial Sources with Operations and Discharges at Multiple Locations under Common or Affiliated Ownership or Management

Recently there has been a proliferation of new industrial sources that have operations and associated discharges at multiple locations. An example is the recent growth in the development of energy fuel and mineral resources that has occurred in the Upper Colorado River Basin. This

type of industrial development may involve the drilling of relatively closely spaced wells into one or more geological formations for the purpose of extracting oil, gas or minerals in solution. Large-scale ground water remediation efforts involving multiple pump and treat systems operating for longer than one year may share similar characteristics. With such energy and mineral development and ground water remediation efforts there is the possibility of a single major industrial operation being comprised of numerous individual point source discharges under common or affiliated ownership or management that produce significant quantities of water as a waste product or byproduct over a long period. Given the large areal scope of these types of major industrial sources and the often elevated concentrations of salinity in their produced water, the total amount of salt loading that they could generate may be very large in comparison to the Forum's past and present salt removal projects. Relatively small quantities of this produced water could generate one ton per day in discharges to surface waters. Since salinity is a conservative water quality constituent, such discharges of produced water, if uncontrolled, could have an adverse effect on achieving the adopted numeric salinity standards for the Colorado River System.

These kinds of major industrial sources strain the conventional interpretation of the industrial source waiver for new construction set forth in Section I.A.1.a. of this policy, which authorizes a discharge of salinity from a single point source of up to one ton per day in certain circumstances. The Forum adopted this provision in 1977, well before most of the new major industrial sources that have operations and discharges at multiple locations began to appear in the Colorado River Basin. A new category of industrial sources is, therefore, warranted. NPDES permit requirements for New Industrial Sources with Operations and Discharges at Multiple Locations under Common or Affiliated Ownership or Management are set forth in Section I.D. of this policy. These new requirements are intended to apply to new industrial sources with operations that commence discharging after October 30, 2002.

For purposes of interpreting this policy, "common or affiliated ownership or management" involves the authority to manage, direct, superintend, restrict, regulate, govern, administer, or oversee, or to otherwise exercise a restraining or directing influence over activities at one or more locations that result in a discharge of salinity into the Colorado River System. Common or affiliated ownership or management may be through the ownership of voting securities or may be indicated where individual sources are related through one or more joint ventures, contractual relationships, landlord/tenant or lessor/lessee arrangements. Other factors that indicate two or more discharging facilities are under common or affiliated ownership or management include: sharing corporate executive officers, pollution control equipment and responsibilities, common workforces, administrative functions, and/or payroll activities among operational facilities at different locations.

Fresh Water Industrial Discharges

Sections I.A. and I.B. of this policy have been amended to allow the permitting authority to authorize "fresh water industrial discharges" where the discharged water does not cause or contribute to exceedances of the adopted numeric salinity standards for the Colorado River System. Different end-of-pipe concentrations of salinity as shown in Table 1 of the policy, are

appropriate for discharges to tributaries depending upon their location within the Basin. The concept of "benchmark concentrations" has been developed in order to address this need for different end-of-pipe concentrations. These benchmark concentrations are not to be interpreted as water quality standards. Rather, they are intended to serve solely for the establishment of effluent limits for implementing the waiver for "fresh water discharges." The allowance for freshwater discharges is intended to preserve flows from discharges in the Basin, which do not cause significant degradation of existing ambient quality with respect to salinity. Operations or individual discharges that qualify for the freshwater waiver shall not be subject to any further limitation on salt loading under this policy.

Salinity-Offset Projects

This policy has been amended to allow the permitting authority to authorize industrial sources of salinity to conduct or finance one or more salinity-offset projects when the permittee has determined that it is not practicable: (i) to prevent the discharge of all salt from proposed new construction; (ii) to reduce the salt loading to the Colorado River to less than one ton per day or 366 tons per year; or (iii) the proposed discharge is of insufficient quality in terms of TDS concentrations that it could be considered "fresh water" as defined below. Presently, the permitting authority can consider the costs and availability of implementing off-site salinity control measures to mitigate the adverse impacts of the permitted salt load. It is not intended that the applicant be required to develop or design an off-site salinity control project or establish a salt bank, but rather to assess the costs of conducting or buying into such projects where they are available. In the future the Forum or another entity may create a trading/banking institution to facilitate the implementation of a salinity-offset program, basin-wide. This would allow industrial sources to conduct or finance the most cost effective project available at the time an offset project is needed regardless of the project's location in the Basin.

NPDES PERMIT PROGRAM POLICY
FOR IMPLEMENTATION OF COLORADO RIVER SALINITY STANDARDS

I. Industrial Sources

The Salinity Standards state that "The objective for discharges shall be a no-salt return policy whenever practicable." This is the policy that shall be followed in issuing NPDES discharge permits for all new industrial sources, and upon the reissuance of permits for all existing industrial sources, except as provided herein. The following addresses those cases where "no discharge of salt" may be deemed not to be practicable.

A. New Construction

1. "New construction" is defined as any facility from which a discharge may occur, the construction of which is commenced after October 18, 1975. (Date of submittal of water quality standards as required by 40 CFR 120, December 11, 1974.) Attachment 1 provides guidance on new construction determination. "A new industrial source with operations and discharging facilities at multiple locations under common or affiliated ownership or management" shall be defined for purposes of NPDES permitting, as an industrial source that commenced construction on a pilot, development or production scale on or after October 30, 2002.

   a. The permitting authority may permit the discharge of salt upon a satisfactory demonstration by the permittee that:

      i. It is not practicable to prevent the discharge of all salt from the new construction or,

      ii. In cases where the salt loading to the Colorado River from the new construction is less than one ton per day or 366 tons per year, or

      iii. The proposed discharge from the new construction is of sufficient quality in terms of TDS concentrations that it can be considered "fresh water" that would have no adverse effect on achieving the adopted numeric standards for the Colorado River System. The permitting authority may consider a discharge to be fresh water if the maximum TDS concentration is: (i) 500 mg/L for discharges into the Colorado River and its tributaries upstream of Lees Ferry, Arizona; or, (ii) 90% of the applicable in-stream salinity standard at the appropriate benchmark monitoring station for discharges into the Colorado River downstream of Lees Ferry as shown in Table 1, below

Table 1

	Benchmark Monitoring Station	Applicable Criteria	Freshwater Discharge (mg/L)
1	Colorado River at Lees Ferry, Arizona	N/A	500
2	Colorado River below Hoover Dam	723	650
3	Colorado River below Parker Dam	747	675
4	Colorado River at Imperial Dam	879	790

b. Unless exempted under Sections I.A.1.a.ii. or iii., above, the demonstration by the applicant must include information on the following factors relating to the potential discharge:

(i) Description of the proposed new construction.

(ii) Description of the quantity and salinity of the water supply.

(iii) Description of water rights, including diversions and consumptive use quantities.

(iv) Alternative plans that could reduce or eliminate salt discharge. Alternative plans shall include:

(A) Description of alternative water supplies, including provisions for water reuse, if any;

(B) Description of quantity and quality of proposed discharge;

(C) Description of how salts removed from discharges shall be disposed of to prevent such salts from entering surface waters or groundwater aquifers;

(D) Costs of alternative plans in dollars per ton of salt removed; and

(E) Unless the permitting authority has previously determined through prior permitting or permit renewal actions that it is not practicable to prevent the discharge of all salt from the new construction in accordance with Section I.A.1.a.i., the applicant must include information on project options that would offset all or part of the salt loading to the Colorado River associated with the proposed discharge or that would contribute to state or interstate salinity control projects or salt banking programs.

(v) A statement as to the one plan among the alternatives for reduction of salt discharge that is recommended by the applicant and also information as to which of the other evaluated alternatives are economically infeasible.

(vi) Such other information pertinent to demonstration of non- practicability as the permitting authority may deem necessary.

c. In determining what permit conditions shall be required under I.A.1.a.i., above, the permit issuing authority shall consider, but not be limited to the following:

(i) The practicability of achieving no-discharge of salt from the new construction.

(ii) Where "no discharge" is determined not to be practicable:

(A) The impact of the total proposed salt discharge of each alternative on the lower main stem in terms of both tons per year and concentration.

(B) Costs per ton of salt removed from the discharge for each plan alternative.

(C) Capability of minimizing salinity discharge.

(D) If applicable under I.A.1.b.(iv)(E), costs and practicability of offsetting all or part of the salt load by the implementation of salt removal or salinity control projects elsewhere in the Colorado River Basin. The permittee shall evaluate the practicability of offsetting all or part of the salt load by comparing such factors as the cost per ton of salt removal for projects undertaken by the Colorado River Basin Salinity Control Forum and the costs in damages associated with increases in salinity concentration against the permittee's cost in conducting or buying into such projects where they are available.

(iii) With regard to subparagraphs, (b) and (c) above, the permit issuing authority shall consider the compatibility of state water laws with either

the complete elimination of a salt discharge or any plan for minimizing a salt discharge.

B. Existing Facilities or any discharging facility, the construction of which was commenced before October 18, 1975

1. The permitting authority may permit the discharge of salt upon a satisfactory demonstration by the permittee that it is not practicable to prevent the discharge of all salt from an existing facility.

2. The demonstration by the applicant must include, in addition to that required under Section I.A.1.b the following factors relating to the potential discharge:

a. Existing tonnage of salt discharged and volume of effluent.

b. Cost of modifying existing industrial plant to provide for no salt discharge.

c. Cost of salt minimization.

3. In determining what permit conditions shall be required, the permit issuing authority shall consider the items presented under I.A.1.c.(ii), and in addition; the annual costs of plant modification in terms of dollars per ton of salt removed for:

a. No salt return.

b. Minimizing salt return.

4. The no-salt discharge requirement may be waived in those cases where:

a. The discharge of salt is less than one ton per day or 366 tons per year; or

b. The permitting authority determines that a discharge qualifies for a "fresh water waiver" irrespective of the total daily or annual salt load. The maximum TDS concentration considered to be fresh water is 500 mg/L for discharges into the Colorado River and its tributaries upstream of Lees Ferry, Arizona. For discharges into the Colorado River downstream of Lees Ferry the maximum TDS concentration considered to be afresh water shall be 90% of the applicable in-stream standard at the appropriate benchmark monitoring station shown in Table 1, above.

C. Discharge of Once-Through Noncontact Cooling Water

1. Definitions:

a. The terms "noncontact cooling water" and "blowdown" are defined as per 40CFR 401.11 (m) and (n).

b. "Noncontact cooling water" means water used for cooling that does not come into direct contact with any raw material, intermediate product, waste product or finished product.

c. "Blowdown" means the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentration in amounts exceeding limits established by best engineering practice.

d. "Salinity" shall mean total dissolved solids as the sum of constituents.

2. Permits shall be authorized for discharges of water that has been used for once-through noncontact cooling purposes based upon a finding that the returned water does not contribute to the loading of salts or the concentration of salts in the waters of the receiving stream in excess of a *de minimis* amount.

3. This policy shall not supplant nor supersede any other water quality standard of the receiving stream adopted pursuant to the Federal Clean Water Act, including but not limited to impairment of designated uses of the stream as established by the governing water quality authority having jurisdiction over the waters of the receiving stream.

4. Noncontact cooling water shall be distinguished from blowdown, and Section 1.C. of this policy specifically excludes blowdown or any commingling of once-through noncontact cooling water with another waste stream prior to discharge to the receiving stream. Sections I.A. and I.B of this policy shall in all cases govern discharge of blowdown or commingled water.

5. Once-through noncontact cooling water shall be permitted to return only to the same stream from which the water was diverted.

6. Because the increase in temperature of the cooling water will result in some evaporation, a *de minimis* increase in the concentration of dissolved salts in the receiving water may occur. An annual average increase in total dissolved solids of not more than 25 milligrams per liter (mg/L) measured at the intake monitoring point, as defined below, of the cooling process or facility, subtracted from the effluent total dissolved solids immediately upstream of the discharge point to the receiving stream, shall be considered *de minimis*.

7. At the time of NPDES discharge permit issuance or reissuance, the permitting authority may permit a discharge in excess of the 25 mg/L increase based upon a satisfactory demonstration by the permittee pursuant to Section 1.A.1.a.

8. Once-through demonstration data requirements:

a. Description of the facility and the cooling process component of the facility.

b. Description of the quantity, salinity concentration and salt load of intake water sources.

c. Description of the discharge, covering location, receiving waters, quantity of salt load and salinity concentration of both the receiving waters and the discharge.

d. Alternative plans for minimizing salt discharge from the facility which shall include:

(i) Description of alternative means to attain no discharge of salt.

(ii) Cost of alternative plans in dollars per ton of salt removed from discharge.

(iii) Such other information pertinent to demonstration of non- practicability as the permitting authority may deem necessary.

9. If, in the opinion of the permitting authority, the database for the salinity characteristics of the water source and the discharge is inadequate, the permit will require that the permittee monitor the water supply and the discharge for salinity. Such monitoring program shall be completed in two years and the permittee shall then present the once-through demonstration data as specified above.

10. All new and reissued NPDES permits for once-through noncontact cooling water discharges shall require at a minimum semiannual monitoring of the salinity of the intake water supply and the effluent, as provided below.

a. The intake monitoring point shall be the point immediately before the point of use of the water.

b. The effluent monitoring point shall be prior to the discharge point at the receiving stream or prior to commingling with another waste stream or discharge source.

c. Discrete or composite samples may be required at the discretion of the permitting authority, depending on the relative uniformity of the salinity of the water supply.

d. Analysis for salinity may be either total dissolved solids or electrical conductivity where a satisfactory correlation with total dissolved solids has been established. The correlation shall be based on a minimum of five different samples.

D. Discharges of Salinity from a New Industrial Source with Operations and Discharging Facilities at Multiple Locations

1. The objective for discharges to surface waters from a new industrial source with operations and discharging facilities at multiple locations shall be to assure that such operations will have no adverse effect on achieving the adopted numeric salinity standards for the Colorado River System.

2. NPDES permit requirements for a new industrial source with operations and discharging facilities at multiple locations shall be defined, for purposes of establishing effluent limitations for salinity, as a single industrial source if these facilities meet the criteria:

   a. The discharging facilities are interrelated or integrated in any way including being engaged in a primary activity or the production of a principle product; and

   b. The discharging facilities are located on contiguous or adjacent properties or are within a single production area e.g. geologic basin, geohydrologic basin, coal or gas field or 8 digit hydrologic unit watershed area; and

   c. The discharging facilities are owned or operated by the same person or by persons under common or affiliated ownership or management.

3. The permitting authority may permit the discharge of salt from a new industrial source with operations and discharging facilities at multiple locations if one or more of the following requirements are met:

   a. The permittee has demonstrated that it is not practicable to prevent the discharge of all salt from the industrial source. This demonstration by the applicant must include detailed information on the factors set forth in Section I.A.1.b of the Policy for implementation of Colorado River Salinity Standards through the NPDES permit program; with particular emphasis on an assessment of salinity off-set options that would contribute to state or interstate salinity control projects or salt banking programs and offset all or part of the salt loading to the Colorado River associated with the proposed discharge.

   b. In determining what permit conditions shall be required under I.A.1.a.i., above, the permit issuing authority shall consider the requirement for an offset project to be feasible if the cost per ton of salt removal in the offset project options (i.e. the permittee's cost in conducting or buying into such projects where they are available) is less than or equal to the cost per ton of salt removal for projects undertaken by the Colorado River Basin Salinity Control Forum or less than the cost per ton in damages caused by salinity that would otherwise be cumulatively discharged from the outfalls at the various locations with operations controlled by the industrial source; or

   c. The pemittee has demonstrated that one or more of the proposed discharges is of sufficient quality in terms of TDS concentrations to qualify for a "fresh water waiver" from the policy of "no salt return, whenever practical." An individual

discharge that can qualify for a fresh water waiver shall be considered to have no adverse effect on achieving the adopted numeric salinity standards for the Colorado River System.

4. For the purpose of determining whether a freshwater waiver can be granted, the quality of water discharged from the new industrial source with operations and discharging facilities at multiple locations, determined as the flow weighted average of salinity measurements at all outfall points, must meet the applicable benchmark concentration in accordance with Section I.A.1.a.iii., as set forth above.

5. Very small-scale pilot activities, involving 5 or fewer outfalls, that are sited in areas not previously developed or placed into production by a new industrial source operations and discharges at multiple locations under common or affiliated ownership or management, may be permitted in cases where the discharge of salt from each outfall is less than one ton per day or 366 tons per year. However, no later than the date of the first permit renewal after the pilot activities have become part of a larger industrial development or production scale effort, all discharging facilities shall be addressed for permitting purposes as a single industrial source with operations and discharges at multiple locations under common or affiliated ownership or management.

6. The public notice for NPDES permits authorizing discharges from operations at multiple locations with associated outfalls shall be provided promptly and in the most efficient manner to all member states in the Colorado River Basin Salinity Control Forum in relation to this policy.

II. Municipal Discharges

The basic policy is that a reasonable increase in salinity shall be established for municipal discharges to any portion of the Colorado River stream system that has an impact on the lower main stem. The incremental increase in salinity shall be 400 mg/L or less, which is considered to be a reasonable incremental increase above the flow weighted average salinity of the intake water supply.

A. The permitting authority may permit a discharge in excess of the 400 mg/L incremental increase at the time of issuance or reissuance of a NPDES discharge permit, upon satisfactory demonstration by the permittee that it is not practicable to attain the 400 mg/L limit.

B. Demonstration by the applicant must include information on the following factors relating to the potential discharge:

1. Description of the municipal entity and facilities.

2. Description of the quantity and salinity of intake water sources.

3. Description of significant salt sources of the municipal wastewater collection system, and identification of entities responsible for each source, if available.

4. Description of water rights, including diversions and consumptive use quantities.

5. Description of the wastewater discharge, covering location, receiving waters, quantity, salt load, and salinity.

6. Alternative plans for minimizing salt contribution from the municipal discharge. Alternative plans should include:

   a. Description of system salt sources and alternative means of control.

   b. Cost of alternative plans in dollars per ton, of salt removed from discharge.

7. Such other information pertinent to demonstration of non-practicability as the permitting authority may deem necessary.

C. In determining what permit conditions shall be required, the permit issuing authority shall consider the following criteria including, but not limited to:

1. The practicability of achieving the 400 mg/L incremental increase.

2. Where the 400 mg/L incremental increase is not determined to be practicable:

   a. The impact of the proposed salt input of each alternative on the lower main stem in terms of tons per year and concentration.

   b. Costs per ton of salt removed from discharge of each alternative plan.

   c. Capability of minimizing the salt discharge.

D. If, in the opinion of the permitting authority, the data base for the municipal waste discharger is inadequate, the permit will contain the requirement that the municipal waste discharger monitor the water supply and the wastewater discharge for salinity. Such monitoring program shall be completed within 2 years and the discharger shall then present the information as specified above.

E. Requirements for establishing incremental increases may be waived in those cases where the incremental salt load reaching the main stem of the Colorado River is less than one ton per day or 366 tons per year. Evaluation will be made on a case-by-case basis.

F. All new and reissued NPDES permits for all municipalities shall require monitoring of the salinity of the intake water supply and the wastewater treatment plant effluent in accordance with the following guidelines:

Treatment Plant Design Capacity	Monitoring Frequency	Type of Sample
<1.0 MGD*	Quarterly	Discrete
1.0 - 5.0 MGD	Monthly	Composite
>5.0 - 50.0 MGD	Weekly	Composite
50.0 MGD	Daily	Composite

1. Analysis for salinity may be either as total dissolved solids (TDS) or be electrical conductivity where a satisfactory correlation with TDS has been established. The correlation should be based on a minimum of five different samples.

2. Monitoring of the intake water supply may be at a reduced frequency where the salinity of the water supply is relatively uniform.

Attachment 1

Guidance on New Construction Determination

For purposes of determining a new construction, a source should be considered new if by October 18, 1975, there has not been:

I. Significant site preparation work such as major clearing or excavation; and/or

II. Placement, assembly or installation of unique facilities or equipment at the premises where such facilities or equipment will be used; and/or

III. Any contractual obligation to purchase unique facilities or equipment. Facilities and equipment shall include only the major items listed below, provided that the value of such items represents a substantial commitment to construct the facility:

   A. structures; or
   B. structural materials; or
   C. machinery; or
   D. process equipment; or
   E. construction equipment.

IV. Contractual obligation with a firm to design, engineer, and erect a completed facility (i.e., a turnkey plant).

POLICY FOR USE OF
BRACKISH AND/OR SALINE WATERS
FOR INDUSTRIAL PURPOSES

Adopted by
The Colorado River Basin Salinity Control Forum

September 11, 1980

The states of the Colorado River Basin, the federal Executive Department, and the Congress have all adopted as a policy that the salinity in the lower main stem of the Colorado River shall be maintained at or below the flow-weighted average values found during 1972, while the Basin states continue to develop their compact-apportioned waters. In order to achieve this policy, all steps which are practical and within the framework of the administration of states' water rights must be taken to reduce the salt load of the river. One such step was the adoption in 1975 by the Forum of a policy regarding effluent limitations for industrial discharges with the objective of "no-salt return" wherever practicable. Another step was the Forum's adoption in 1977 of the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." These policies are part of the basinwide plan of implementation for salinity control which has been adopted by the seven Basin states.

The Forum finds that the objective of maintaining 1972 salinity levels would be served by the exercise of all feasible measures including, wherever practicable, the use of brackish and/or saline waters for industrial purposes.

The summary and page 32 of the Forum's 1978 Revision of the Water Quality Standards for Salinity state: "The plan also contemplates the use of saline water for industrial purposes whenever practicable,..." In order to implement this concept and thereby further extend the Forum's basic salinity policies, the Colorado River Basin states support the Water and Power Resources Service (WPRS) appraisal study of saline water collection, pretreatment and potential industrial use.

The Colorado River Basin contains large energy resources which are in the early stages of development. The WPRS study should investigate the technical and financial feasibility of serving a significant portion of the water requirements of the energy industry and any other industries by the use of Basin brackish and/or saline waters. The Forum recommends that:

I. The Colorado River Basin states, working with federal agencies, identify, locate and quantify such brackish and/or saline water sources.

II. Information on the availability of these waters be made available to all potential users.

III. Each state encourage and promote the use of such brackish and/or saline waters, except where it would not be environmentally sound or economically feasible, or would significantly increase

consumptive use of Colorado River System water in the state above that which would otherwise occur.

IV. The WPRS, with the assistance of the states, encourages and promotes the use of brackish return flows from federal irrigation projects in lieu of fresh water sources, except where it would not be environmentally sound or economically feasible, or would significantly increase consumptive use of Colorado River System water.

V. The WPRS considers a federal contribution to the costs of industrial use of brackish and/or saline water, where cost-effective, as a joint private-government salinity control measure. Such activities shall not delay the implementation of the salinity control projects identified in Title II of P.L. 93-320.

POLICY FOR IMPLEMENTATION OF COLORADO RIVER SALINITY STANDARDS THROUGH THE NPDES PERMIT PROGRAM FOR INTERCEPTED GROUND WATER

Adopted by
The Colorado River Basin Salinity Control Forum

October 20, 1982

The States of the Colorado River Basin in 1977 agreed to the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program" with the objective for industrial discharge being "no-salt return" whenever practicable. That policy required the submittal of information by the applicant on alternatives, water rights, quantity, quality, and costs to eliminate or minimize the salt discharge. The information is for use by the NPDES permit-issuing agency in evaluating the practicability of achieving "no-salt" discharge.

There are mines and wells in the Basin which discharge intercepted ground waters. The factors involved in those situations differ somewhat from those encountered in other industrial discharges. Continued development will undoubtedly result in additional instances in which permit conditions must deal with intercepted ground water.

The discharge of [1]intercepted ground water needs to be evaluated in a manner consistent with the overall objective of "no-salt return" whenever practical. The following provides more detailed guidance for those situations where ground waters are intercepted with resultant changes in ground-water flow regime.

I. The "no-salt" discharge requirement may be waived at the option of the permitting authority in those cases where the discharged salt load reaching the main stem of the Colorado River is less than one ton per day or 350 tons per year whichever is less. Evaluation will be made on a case-by-case basis.

II. Consideration should be given to the possibility that the ground water, if not intercepted, normally would reach the Colorado River System in a reasonable time frame. An industry desiring such consideration must provide detailed information including a description of the topography, geology, and hydrology. Such information must include direction and rate of ground-water flow; chemical quality and quantity of ground water; and the location, quality, and quantity of surface streams and springs that might be affected. If the information adequately demonstrates that the ground water to be intercepted normally would reach the river system in a reasonable time frame and would contain approximately the same or greater salt load than if intercepted, and if no significant localized problems would be created, then the permitting agency may waive the "no-salt" discharge requirement.

[1]The term "intercepted ground water" means all ground water encountered during mining or other industrial operations.

III. In those situations where the discharge does not meet the criteria in I or II above, the applicant will be required to submit the following information for consideration:

A. Description of the topography, geology, and hydrology. Such information must include the location of the development, direction and rate of ground-water flow, chemical quality and quantity of ground water, and relevant data on surface streams and springs that are or might be affected. This information should be provided for the conditions with and without the project.

B. Alternative plans that could substantially reduce or eliminate salt discharge. Alternative plans must include:

1. Description of water rights, including beneficial uses, diversions, and consumptive use quantities.

2. Description of alternative water supplies, including provisions for water reuse, if any.

3. Description of quantity and quality of proposed discharge.

4. Description of how salts removed from discharges shall be disposed of to prevent their entering surface waters or ground-water aquifers.

5. Technical feasibility of the alternatives.

6. Total construction, operation, and maintenance costs; and costs in dollars per ton of salt removed from the discharge.

7. Closure plans to ensure termination of any proposed discharge at the end of the economic life of the project.

8. A statement as to the one alternative plan for reduction of salt discharge that the applicant recommends be adopted, including an evaluation of the technical, economic, and legal Practicability of achieving no discharge of salt.

9. Such information as the permitting authority may deem necessary.

IV. In determining whether a “no-salt” discharge is Practicable, the Permit-issuing authority shall consider, but not be limited to, the water rights and the technical, economic, and legal practicability of achieving no discharge of salt.

V. Where “no-salt” discharge is determined not to be Practicable the permitting authority shall, in determining permit conditions, consider:

A. The impact of the total proposed salt discharge of each alternative on the lower main stem in terms of both tons per year and concentration.

B. Costs per ton of salt removed from the discharge for each plan alternative.

C. The compatibility of state water laws with each alternative.

D. Capability of minimizing salinity discharge.

E. The localized impact of the discharge.

F. Minimization of salt discharges and the preservation of fresh water by using intercepted ground water for industrial processes, dust control, etc. whenever it is economically feasible and environmentally sound.

POLICY FOR IMPLEMENTATION OF COLORADO RIVER SALINITY STANDARDS THROUGH THE NPDES PERMIT PROGRAM FOR FISH HATCHERIES

Adopted by
The Colorado River Basin Salinity Control Forum

October 28, 1988

The states of the Colorado River Basin in 1977 adopted the "Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program." The objective was for "no-salt return" whenever practicable for industrial discharges and an incremental increase in salinity over the supply water for municipal discharges. The Forum addressed the issue of intercepted ground water under the 1977 policy, and adopted a specific policy dealing with that type of discharge.

A specific water use and associated discharge which has not been here-to-fore considered is discharges from fish hatcheries. This policy is limited exclusively to discharges from fish hatcheries within the Colorado River Basin. The discharges from fish hatcheries need to be addressed in a manner consistent with the 1977 and 1980 Forum policies.

The basic policy for discharges from fish hatcheries shall permit an incremental increase in salinity of 100 mg/L or less above the flow weighted average salinity of the intake supply water. The 100 mg/L incremental increase may be waived if the discharged salt load reaching the Colorado River system is less than one ton per day, or 350 tons per year, whichever is less. Evaluation is to be made on a case-by-case basis.

I. The permitting authority may permit a discharge in excess of the 100 mg/L incremental increase at the time of issuance or reissuance of a NPDES discharge permit. Upon satisfactory demonstration by the permittee that it is not practicable to attain the 100 mg/L limit.

II. Demonstration by the applicant must include information on the following factors relating to the potential discharge:

   A. Description of the fish hatchery and facilities.

   B. Description of the quantity and salinity of intake water sources.

   C. Description of salt sources in the hatchery.

   D. Description of water rights, including diversions and consumptive use quantities.

   E. Description of the discharge, covering location, receiving waters, quantity salt load, and salinity.

F. Alternative plans for minimizing salt discharge from the hatchery. Alternative plans should include:

1. Description of alternative means of salt control.

2. Cost of alternative plans in dollars per ton, of salt removed from discharge.

G. Such other information pertinent to demonstration of non-practicability as the permitting authority may deem necessary.

III. In determining what permit conditions shall be required, the permit-issuing authority shall consider the following criteria including, but not limited to:

A. The practicability of achieving the 100 mg/L incremental increase.

B. Where the 100 mg/L incremental increase is not determined to be practicable:

1. The impact of the proposed salt input of each alternative on the lower main stem in terms of tons per year and concentration.

2. Costs per ton of salt removed from discharge of each alternative plan.

3. Capability of minimizing the salt discharge.

IV. If, in the opinion of the permitting authority, the database for the hatchery is inadequate, the permit will contain the requirement that the discharger monitor the water supply and the discharge for salinity. Such monitoring program shall be completed within two years and the discharger shall then present the information as specified above.

V. All new and reissued NPDES permits for all hatcheries shall require monitoring of the salinity of the intake water supply and the effluent at the time of peak fish population.

A. Analysis for salinity may be either as total dissolved solids (TDS) or be electrical conductivity where a satisfactory correlation with TDS has been established. The correlation should be based on a minimum of five different samples

APPENDIX B

List of NPDES Permits

LEGEND

NPDES PERMITS
EXPLANATION CODES

COLORADO RIVER BASIN SALINITY CONTROL FORUM
Through December 31, 2004

NPDES permits are reviewed under two different criterium under Forum policy; these being municipal and industrial. In order for a permittee to be in compliance under the municipal criterium, the increase in concentration between inflow and outflow can not be greater than 400 mg/L. Forum industrial criterium requires that no industrial user discharges more than 1.00 ton/day. Under Forum policy there can be granted exceptions to these limitations by the states. The following gives an explanation of the current status of the NPDES permits. Because at any given time many of the approximate 650 permits identified in this list are being reviewed, reissued, and/or terminated, and new discharge permits are being filed, this list must be considered as being subject to frequent change.

MUNICIPAL

(M) Municipal user in compliance with Forum policy.

(M-1) Permit has expired or been revoked. No discharge.

(M-2) Permittee did not discharge during the reporting period.

(M-3) Measurement of TDS is not currently required, but the state and/or EPA plans to require measurements of both inflow and outflow when the permit is reissued.

Measurements of inflow are not consistent with Forum policy;

(M-4A) Therefore, it is not known whether or not this municipal user is in compliance.

(M-4B) However, since outflow concentration is less than 500 mg/L it is presumed that this permit is not in violation of the ≤400 mg/L increase.

(M-5) Permittee is in violation of Forum policy in that there is an increase in concentration of >400 mg/L over the source waters.

(M-5A) The state is currently working to bring permittee into compliance.

(M-6) This permit requires no discharge or discharge only under rare and extreme hydrologic conditions. Thus, flow and concentration measurements are not required.

(M-7) Insufficient data to know the status of this permit.

* Permit issued by and the responsibility of USEPA.

INDUSTRIAL

(I) Industrial user in compliance with Forum policy.

(I-1) Permit has expired or been revoked. No discharge.

(I-2) Permittee did not discharge during the reporting period.

(I-3) Measurement of TDS is not currently required, but the state and/or EPA plans to require measurements of both volume and concentration of outflow when the permit is reissued.

(I-4) Either concentration or volume of outflow are not currently being reported, thus the permittee is in violation of Forum policy. It is not known if the discharge is in excess of the <1.00 ton/day requirement.

Permittee appears to be in violation of Forum policy in that discharge of salts is >1.00 ton/day.

(I-5A) No provision has been made allowing this violation of Forum policy.

(I-5B) Though discharge is >1.00 ton/day, in keeping with Forum policy the permittee has demonstrated the salt reduction is not practicable and the requirement has been waived.

(I-5C) The use of ground water under this permit is for geothermal energy and only heat is extracted. The intercepted salt and water are naturally tributary to the Colorado River System and hence, this discharge does not increase salt in the river. The permit is covered by the Forum's policy on intercepted ground waters.

(I-5D) This permit is in compliance with the Forum's policy for fish hatcheries. The use of the water is a one-time pass through, and the incremental increase in salinity is ≤ 100 mg/l.

(I-5E) This permit is for the interception and passage of ground waters and thus is excepted under the Forum's policy on intercepted ground waters .

(I-6) This permit requires no discharge or discharge only under rare and extreme hydrologic conditions. Thus, flow and concentration measurements are not required.

(I-7) Insufficient data to know the current status of this permit.

LEGEND (continued)

NPDES PERMITS
REACH DEMARCATIONS

COLORADO RIVER BASIN SALINITY CONTROL FORUM

In order to provide a better understanding of the location of the various NPDES permits and the geographical sequence in the Colorado River System, each of the following NPDES permits is identified with a Colorado River reach number. The reach numbers have their origin in the old CRSS river model. Though this model is no longer used, the reach numbers assist in understanding the general location of the permits. The reaches are defined as:

100	Upper Main Stem	from headwaters of Colorado River to Colorado River near Cameo
190	Taylor Park	from headwaters of Gunnison River to above Blue Mesa Reservoir
200	Blue Mesa	from above Blue Mesa Reservoir to below Blue Mesa Dam
210	Morrow Point	from below Blue Mesa Dam to Crystal Reservoir
220	Lower Gunnison	from Crystal Reservoir to confluence with Colorado River
300	Grand Valley	from Colorado River near Cameo to confluence with Green River
310	Dolores River	from headwaters of Dolores River to confluence with Colorado River
401	Fontenelle	from headwaters of Green River to Green River near Green River, WY
411	Flaming Gorge	from Green River near Green River, WY to confluence with White and Duchesne Rivers
500	Yampa River	from headwaters of Yampa River to confluence with Green River
510	White River	from headwaters of White River to confluence with Green River
600	Green River	Green River from confluence with White and Duchesne Rivers to confluence with Colorado River
610	Duchesne River	from headwaters of Duchesne River to confluence with Green River
700	Lake Powell	Colorado River from confluence of with Green River to Lees Ferry
710	San Rafael River	from headwaters of San Rafael River to confluence with Green River
801	Upper San Juan River	from headwaters of San Juan River to San Juan near Bluff
802	Lower San Juan River	from San Juan near Bluff to confluence with Lake Powell
900	Glen Canyon to Lake Mead	Colorado River from Lees Ferry to backwaters of Lake Mead
905	Virgin River	from headwaters of Virgin River to backwaters of Lake Mead
910	Lake Mead	from backwaters of Lake Mead to Colorado River below Hoover Dam
920	Lake Mohave	Colorado River from below Hoover Dam down to I-40 bridge
930	Lake Havasu	Colorado River from I-40 bridge to below Parker Dam
940	Parker Dam to Imperial Dam	Colorado River from below Parker Dam to above Imperial Dam
945	Imperial Dam	Colorado River from above Imperial Dam to Gila and Yuma users

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2004

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
AZ0023311	900	APS/CHOLLA POWER PLANT		273.6		I-6
AZ0110167	900	BIA HUNTERS POINT SCHOOL	<400	0.014		M*
AZ0022560	900	BIA KEAMS CANYON		0.03		M-6*
AZ0110213	900	BIA LOW MOUNTAIN BOARDING SCHOOL	<400	0.014		M*
AZ0110043	802	BIA NAZLINI BOARDING SCHOOL	<400	0.013		M*
AZ0110183	900	BIA SEBA DALKAI BOARDING SCHOOL	<400	0.01		M*
AZ0110094	801	BIA TEEC NOS POS SCHOOL	<400	0.08		M*
AZ0024473	900	BISON RANCH		0.04		M-6
AZ0023507	930	BLAKE RANCH RVP		0.003		M-6
AZ0023035	930	BLUE BEACON OF KINGMAN		0.03		I-3
AZ0021610	900	CAMERON TRADING POST		0.054		M-6*
AZ0024015	900	CANYON-VALLE AIRPORT		0.045		M-3
AZ0023990	930	CAWCD-HAVASU PLUMBING PLANT		1.5		I
AZ0021024	920	CITIZENS UTILITIES - RIVERBEND		0		M-1
AZ0021415	940	COLORADO RIVER JOINT VENTURE	<400	1.2		M*
AZ0022268	930	CYPRUS BAGDAD COPPER DIV		0		I-6
AZ0022322	900	ENERGY FUELS NUCLEAR KANAB		0		I-1
AZ0022187	920	HARRISON MINING/TYRO MINE		0		I-1
AZ0024279	900	HIGH COUNTRY PINES		0.036		M-6
AZ0020257	900	HOLBROOK, CITY OF		1.3		M-3
AZ0022489	930	KINGMAN/DOGTOWN	75	0.52	0.16	M
AZ0022918	900	LAKE INVESTMENTS % LIVECO		0		M-1
AZ0022098	940	LE PERA SCHOOL - PARKER S. D. #27		0		M-1
AZ0023647	930	MOHAVE TOPOCK COMPRESSOR STATION	1300	0.202	1.10	I
AZ0022195	900	NTUA/GANADO	<400	0.4		M*
AZ0022471	802	NTUA/KAIBETO		0.1		M-6*
AZ0022802	900	NTUA/ROUGH ROCK LAGOONS		0.007		M-6*
AZ0020265	802	NTUA/CHINLE	<400	0.783		M-*
AZ0020281	802	NTUA/KAYENTA	<400	0.9		M*
AZ0021920	802	NTUA/MANY FARMS		0.07		M-6*
AZ0020290	900	NTUA/TUBA CITY	<400	1.1		M-6*
AZ0021555	900	NTUA/WINDOW ROCK-FT.DEFIANCE	<400	1.32		M-6*
AZ0022284	940	PARKER, TOWN OF WTP		0.013		M-3
AZ0022179	900	PEABODY WESTERN COAL CO.		0		I-6*
AZ0022756	930	PETRO STOP CENTER/KINGMAN		0.008		I-3
AZ0024406	930	PLANET TRUCK WASH		0.007		I-3
AZ0023752	940	QUARTSZITE, CITY OF WWTF	<400	0.45		M
AZ0022772	900	ST. JOHNS, CITY OF POTW		0.5		M-3
AZ0024422	900	SANDERS SCHOOL DISTRICT NO. 6	<400	0.04		M
AZ0023698	905	SENITA VILLAGE RV RESORT		0		M-1
AZ0024287	900	SHOW LOW, CITY OF	<400	1.42		M
AZ0024287	900	SNOWFLAKE, CITY OF	<400	0.6		M
AZ0023477	900	SOUTH GRAND CANYON S.D.	<400	0.75		M
AZ0021474	900	STONE FOREST INDUSTRIES/FLAGSTAFF		0		I-1
AZ0110248	920	USBR/DAVIS DAM		0.027		M-3
AZ0110019	900	USBR/GLEN CANYON CRSP	350	0.015	0.02	M
AZ0110329	910	USBR/HOOVER DAM	150	0.045	0.03	M
AZ0110272	900	USFS/KAIBAB/JACOB LAKE		0		M-1*
AZ0000132	920	USFWS/WILLOW BEACH FISH HATCHERY	<100	7.5		I-5D*
AZ0023612	900	USNPS/GRAND CANYON/ DESERT VIEW	<400	0.04		M

NPDES PERMITS
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NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
AZ0110426	900	USNPS/GRAND CANYON/NORTH RIM		0.15		M-3
AZ0023621	900	USNPS/GRAND CANYON/INDIAN GARDENS	<100	1.008		M
AZ0022152	900	USNPS/GRAND CANYON/SOUTH RIM	<400	0.75		M
AZ0023523	920	USNPS/KATHERINE'S LANDING WTP	<100	0.2		M+G190
AZ0023655	905	VIRGIN RIVER DOMESTIC WATER IMP DISTRICT	<400	0.04		M
AZ0020346	900	WILLIAMS, CITY OF WWTP		0.54		M-3
AZ0023361	900	WILLIAMS WTP		0.033		M-3
AZ0023833	900	WINSLOW, CITY OF POTW	<400	2.2		M
CA7000016	940	PG&E TOPOCK	500	0.030	0.00	I-2
CA7000005	940	USBR, PARKER DAM AND POWER PLANT DWF	560	0.009	0.02	M
COG584012	190	ALMONT WWTP	422.6	0.010	1.76	M
COG500141	300	ALPINE ROCK COMPANY				I-2
CO0026468	801	AMORELLI, JOE AND CHERYL	510.0	0.004	2.13	M
COG600476	510	ANDRIKOPOULOS, A.G., RESOURCES	4782.8	0.520	10.37	I-5A
CO0026387	100	ASPEN CONSOLIDATED SAN DISTRCT	573.5	1.506	2.39	M
COG600078	100	ASPEN SKIING COMPANY				I-4
CO0022721	100	ASPEN VILLAGE, INC.	361.3	0.025	1.51	M
COG600255	100	ASPEN, CITY OF				I-2
COG600371	100	ASPEN, CITY OF		0.03		I-4
COG600426	100	ASPEN, CITY OF	209.3	0.002		I
COG640066	100	ASPEN, CITY OF	310.3	0.046	0.06	I
COG584020	801	BAILEY, FRITZ L. & REBECCA D.	792.5	0.007	3.30	M
COG584063	100	BASALT SANITATION DISTRICT	349.5	0.374	1.46	I-2
COG640095	100	BASALT, TOWN OF		0.003		I-4
COG640068	100	BATTLEMENT MESA METRO DISTRICT				I-2
COG584028	100	BATTLEMENT MESA METRO. DIST.	756.0	0.431	3.15	M
CO0020273	801	BAYFIELD SANITATION DISTRICT	316.7	0.239	1.32	M
COG582037	801	BAYFIELD SANITATION DISTRICT	406.7	0.012	1.70	M
CO0044377	220	BEAR COAL COMPANY				I-2
CO0042111	801	BEAR, RUEDI	2995.6			I-4
COG581011	801	BENSON, LARRY W & MABEL A.	326.2	0.010	1.36	M
COG584074	100	BLUE CREEK RANCH LLC	317.5	0.001	1.32	M
COG584068	310	BLUE JAY RESTAURANT AND LODGE	804.0	0.002	3.35	M
CO0038024	510	BLUE MOUNTAIN ENERGY, INC.	958.3	0.011	4.00	I-5A
COG600507	200	BLUE RIVER LAND COMPANY				I-2
COG600155	801	BOC GASES		0.153		I-4
CO0033685	220	BOWIE RESOURCES LIMITED				I-2
CO0044776	220	BOWIE RESOURCES LIMITED	5437.3	0.024	0.54	I
COG850043	190	BOWIE RESOURCES LLC	2268.0	0.010	0.09	I-2
CO0021539	100	BRECKENRIDGE SAN DISTRICT		0.782		M
CO0029211	100	BRECKENRIDGE SAN DISTRICT	227.3	0.006	0.95	M
CO0027197	100	BRECKENRIDGE SANITATION DIST.	262.0	0.001		M
COG640020	100	BRECKENRIDGE, TOWN OF				I-2
COG640053	100	BRECKENRIDGE, TOWN OF				I-2
CO0045217	190	BROOKWAY IRWIN, LLC				M-2
CO0034142	500	BTU EMPIRE CORPORATION	988.6	0.837	3.45	I-5A
COG850005	100	C.B. MINERALS COMPANY, LLC				I-2
COG584003	100	CANYON CREEK ESTATE HOA	699.5	0.013	2.92	M

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COG500179	801	CANYON SAND AND GRAVEL				I-2
COG640094	100	CARBONDALE, CITY OF				I-2
COG584050	100	CARBONDALE, TOWN OF	340.8	0.667	0.95	M
COG640027	100	CARBONDALE, TOWN OF				I-2
CO0031984	220	CEDAREDGE, TOWN OF	388.5	0.159	1.62	M
COG640015	220	CEDAREDGE, TOWN OF	83.0	0.048	0.02	I
COG500229	100	CENTRAL AGGREGATES, INC.				I-2
CO0038342	100	CENTRAL APPALACHIA MINING, LLC	1459.0			I
CO0040827	100	CENTRAL APPALACHIA MINING, LLC				I-2
CO0033260	300	CLIFTON SANITATION DISTRICT #1	749.3	0.076	3.12	M
CO0033791	300	CLIFTON SANITATION DISTRICT #2	685.6	0.424	2.86	M
CO0035394	190	CLIMAX MOLYBDENUM COMPANY	885.5	0.330	1.22	I-5B
COG584067	100	CO. DEPT. OF TRANSPORTATION	443.5	0.002		M
COG584075	300	CO. DEPT. OF TRANSPORTATION				M-2
COG584076	300	CO. DEPT. OF TRANSPORTATION				M-2
COG600141	500	CO. DEPT. OF TRANSPORTATION				I-4
COX042731	200	CO. DEPT. OF TRANSPORTATION	998.6		4.16	I-4
CO0040487	100	COLLBRAN, TOWN OF	2140.0	0.080	0.71	M
COG584032	100	COLO DEPARTMENT OF CORRECTIONS	425.5	0.026	0.05	M
CO0042731	100	COLO. DEPARTMENT OF HIGHWAYS	607.5		2.53	M
COG600393	300	COLO. DIVISION OF WILDLIFE		0.0002		I
COG130001	100	COLORADO DIVISION OF WILDLIFE	259.7	9.384	0.04	I-5D
COG130004	190	COLORADO DIVISION OF WILDLIFE	118.5	2.884	0.01	I-5D
COG130005	801	COLORADO DIVISION OF WILDLIFE	217.7	2.367	0.01	I-5D
COG130006	190	COLORADO DIVISION OF WILDLIFE	176.5	5.594	0.02	I-5D
COG130007	100	COLORADO DIVISION OF WILDLIFE	145.0	2.560	0.01	I-5D
COG130011	100	COLORADO DIVISION OF WILDLIFE	280.6	3.733	0.02	I-5D
COG500356	100	COLORADO STONE QUARRIES, INC.	185.0	9.600	7.41	I-5A
COG600561	300	COLOWYO COAL COMPANY L.P.				I-2
COG600582	100	COLOWYO COAL COMPANY L.P.				I-2
COG500245	500	CONNELL RESOURCES, INC.	205.0	1.468	1.25	I-4
COG500350	500	CONNELL RESOURCES, INC.	582.5	0.027	0.07	I-4
COG600036	100	COPPER MOUNTAIN, INC				I-2
CO0021598	100	COPPER MTN. CONSOLIDATED S.D.	334.5	0.263	0.37	M
CO0020125	801	CORTEZ SANITATION DISTRICT	672.0	0.180	2.80	M
CO0027880	801	CORTEZ SANITATION DISTRICT	572.5	0.589	1.41	M
CO0036251	310	COTTER CORPORATION	1668.5	0.008	0.06	I
COG600254	100	COVERED BRIDGE BUILDING ASSCN.		0.022		I-4
CO0040037	500	CRAIG, CITY OF	455.0	0.919	1.74	M
COG600439	300	CRESCENDO ENERGY, LLC				I-2
COG584045	190	CRESTED BUTTE SOUTH METRO DIST	326.8	0.053	0.07	M
CO0020443	190	CRESTED BUTTE, TOWN OF	186.8	0.165	0.13	M
COG600540	190	CROWN-KUNKLER RESIDENCE				I-2
COG584054	801	DAVIS, ROBERT H., JR.				I-2
COG584043	100	DEBEQUE, TOWN OF	870.0	0.027	0.10	M
CO0039641	220	DELTA, CITY OF	1269.6	0.950	5.03	M-5A
COG500458	300	DIAMOND LAZY L RANCH ENT LLP				I-2
COG640006	100	DILLON, TOWN OF		0.038		I
CO0040509	801	DOLORES, TOWN OF	580.3	0.107	0.26	M
COG582039	310	DOVE CREEK, TOWN OF	757.5	0.026	0.08	M

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COG500243	500	DUCKELS CONST. DBA YAMPA AGGRE	412.3	0.479	0.82	I
CO0023876	100	DUNDEE REALTY USA, INC.	533.8	0.007	0.02	M
COG582024	801	DURANGO WEST METRO. DIST. #2	695.0	0.091	0.26	M
CO0024082	801	DURANGO, CITY OF	370.0	1.954	3.01	M
CO0021369	100	EAGLE RIVER WATER & SAN. DIST.	429.7	1.509	2.70	M
CO0024431	100	EAGLE RIVER WATER & SAN. DIST.	470.8	2.067	4.06	M
CO0037311	100	EAGLE RIVER WATER & SAN. DIST.	612.7	1.054	2.69	M
CO0021059	100	EAGLE, TOWN OF	700.5		2.92	M
COG640031	100	EAGLE, TOWN OF				I-2
CO0040720	190	EAST RIVER REGIONAL SAN. DIST.	171.3	0.059	0.04	M
COG500402	500	ED HOCKIN TRUCKING	1065.5	0.678	3.01	I-5A
CO0040266	801	EDGEMONT RANCH METRO DISTRICT	505.7	0.024	0.05	M
COG500210	300	ELAM CONSTRUCTION, INC.	1121.3	0.235	1.10	I-5E
COG500353	300	ELAM CONSTRUCTION, INC.				I-2
COG500427	300	ELAM CONSTRUCTION, INC.	4056.5	1.870	31.63	I-5A
COG500429	300	ELAM CONSTRUCTION, INC.	3400.0	0.680	9.64	I-5A
COG500439	190	ELAM CONSTRUCTION, INC.				I-2
COG582035	801	ELLIS, JAMES M. III	565.0	0.008	0.02	M
COG500435	300	EPHEMERAL RESOURCES, LLC	4952.8	0.940	19.41	I-5A
CO0046426	500	EUZOA BIBLE CHURCH	226.5	0.001		M
COG500433	100	EVERIST MATERIALS, LLC	165.0		0.69	I
COG500316	100	EVERIST, L.G., INC.	390.0		1.63	I-4
CO0038270	100	EXXON COMPANY, USA				I-2
COG850046	100	EXXON COMPANY, USA				I-2
COX046027	220	FAIRWAY PINES SANITATION DIST.	808.7	0.002	0.01	M
CO0000051	100	FANCHER OIL LLC	1718.2	0.750	5.37	I-5E
COG600016	300	FILOHA MEADOWS		0.036		I-4
COG584002	801	FITZ PROPERTIES, INC.	337.5	0.003		M
COG500114	100	FLAG SAND AND GRAVEL				I-2
COG600528	300	FMC PROPERTIES, LLC				I-2
COG584025	801	FOREST LAKES METRO DISTRICT	400.0	0.051	0.09	M
COG584030	801	FORREST GROVES SEWAGE TRTMNT	440.0	0.004	0.01	M
COG500403	801	FOUR STATES AGGREGATES, LLC				I-2
CO0040142	100	FRASER SANITATION DISTRICT	263.0	0.698	0.77	M
CO0020451	100	FRISCO SANITATION DISTRICT		0.546		M
COG640067	100	FRISCO, TOWN OF	53.3	0.025	0.01	I
CO0046175	100	FRUITA MARKETING & MANAGEMENT				I-2
COG583002	100	FRUITA, TOWN OF	716.5	0.649	1.94	M
COG310138	220	GEOLOGIC SERVICES&CONSULTANTS				I-2
COG310121	220	GEOLOGIC SRVCS&CONSULTANTS INC		0.001		I-4
COG600308	100	GLENWOOD HOT SPGS LODGE & POOL	18300.0	0.004	0.31	I-5C
CO0020516	100	GLENWOOD SPRINGS, CITY OF	580.7	0.961	2.33	M
COG640052	100	GLENWOOD SPRINGS, CITY OF				I-2
CO0027529	801	GOLD KING MINES CORPORATION	2280.0	0.152	1.45	I-5B
CO0034665	801	GOSNEY & SONS	185.0	1.000	0.08	I-5A*
CO0020699	100	GRANBY SANITATION DISTRICT	361.0	0.312	0.47	M
COG640044	100	GRAND COUNTY W&S DISTRICT				I-2
CO0032964	100	GRAND COUNTY W&s DISTRICT #1	164.0	0.168	0.11	M
COG640087	100	GRAND COUNTY W&SD #1				I-2
COG500161	300	GRAND JUNCTION PIPE & SUPPLY				I-2

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COG500308	300	GRAND JUNCTION PIPE & SUPPLY	788.0	0.336	1.10	I-5E
COG500444	300	GRAND JUNCTION PIPE & SUPPLY	1283.0	0.505	2.70	I-5E
COG500326	300	GRAND JUNCTION PIPE&SUPPLY CO.				I-2
COG500348	300	GRAND JUNCTION PIPE&SUPPLY CO.				I-2
COG500364	300	GRAND JUNCTION PIPE&SUPPLY CO.	1943.0	0.165	1.34	I-5E
COG640004	220	GRAND JUNCTION, CITY OF				I-2
COG500252	100	GRANT BROS. CONSTRUCTION LLC				I-2
CO0041530	220	GUNNISON, CITY OF	372.5	1.038	1.61	M
COG640041	220	GUNNISON, COUNTY OF				I-2
COG584064	190	GYPSUM, TOWN OF	278.2	0.338	0.39	M
COG850008	500	HAYDEN GULCH TERMINAL, INC.				I-2
CO0040959	500	HAYDEN, TOWN OF	452.0	0.131	0.25	M
COG584010	801	HERMOSA SANITATION DISTRICT	618.8	0.109	0.28	M
COG600398	100	HOLLAND CREEK METRO DISTRICT	430.6	0.031	0.06	I
COG850024	310	HONEYWOOD COAL COMPANY				I-2
CO0024350	100	HOT SULPHUR SPRINGS, TOWN OF	327.0	0.056	0.08	M
COG640019	100	HOT SULPHUR SPRINGS, TOWN OF	98.0	0.011		I
CO0044903	220	HOTCHKISS, TOWN OF	1185.2	0.215	1.06	M-5A
COG640091	220	HOTCHKISS, TOWN OF				I-2
COG600556	100	HYDER CONSTRUCTION, INC.				I-2
COG600377	500	INDUSTRIAL COMPANY, THE				I-2
COG600307	100	INDUSTRIAL INSULATION GRP, LLC	1573.0	0.033	0.22	I
COG900008	500	INFINITY OIL & GAS OF WYOMING	730.0		3.04	I-4
COG584029	100	INGELHART, FRED B & FRED R.	362.3	0.011	0.02	M
CO0045420	100	IOWA HILL WATER RECLAMATION	296.0	0.629	0.78	M
COG500457	801	KIRKLAND CONSTRUCTION, LLLP				I-2
COG900011	100	KOCH EXPLORATION COMPANY, LLC	1935.1	0.169	1.36	I-5A
CO0021636	100	KREMMLING SANITATION DISTRICT	532.1		2.22	M
COG584071	801	KURPIUS, THOMAS E. & SHARON E.	473.0	0.0001		M
COG584052	200	L & N, INC.	682.8	0.006	0.02	M
COG500001	500	LAFARGE				I-2
COG500003	100	LAFARGE				I-2
COG500088	100	LAFARGE				I-2
COG500120	500	LAFARGE	122.3	0.948	0.48	I
COG500155	100	LAFARGE				I-2
COG500160	220	LAFARGE				I-2
COG500175	500	LAFARGE	169.0	0.757	0.53	I
COG500267	100	LAFARGE				I-2
COG500408	100	LAFARGE				I-5A
COG500342	100	LAFARGE WEST				I-2
COG500408	300	LAFARGE WEST, INC.	595.8	0.672	1.67	I-5A
COG600330	500	LAKE CATAMOUNT #1 METRO DIST		0.046		I-4
CO0040673	200	LAKE CITY, TOWN OF	360.0	0.079	0.12	M
COG600529	100	LANDMARK CONSULTANTS, INC.				I-2
COG584005	310	LAST DOLLAR PUD IMPS. ASSOC.	435.0	0.004	0.01	M
COG584049	100	LAZY GLEN HOA	392.0	0.026	0.04	M
COG582023	801	LEE, RICHARD O.	353.0	0.010	0.01	M
COG582028	801	LOMA LINDA SANITATION DISTRICT	475.0	0.050	0.10	M
CO0031062	500	LOWELL WHITEMAN SCHOOL CRP THE	369.0	0.003		M
COG500379	300	M.A. CONCRETE	7205.5	0.538	16.17	I-5A

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COG500380	300	M.A. CONCRETE	7576.3	0.650	20.54	I-5A
COG600345	100	MAIN ST. STATION BRECKENRIDGE		0.238		I-4
COG640065	801	MANCOS RURAL WATER COMPANY				I-2
CO0021687	801	MANCOS, TOWN OF	312.5	0.078	0.10	M
COG584042	510	MEEKER SANITATION DISTRICT	607.5	0.193	0.49	M
CO0040053	300	MESA CO./GRAND JUNCTION - CITY	809.9	7.720	26.07	M
COG583001	300	MESA WATER & SANITATION DIST.	588.5	0.013	0.03	M
COG584007	100	MID VALLEY METROPOLITAN DIST.	285.0	0.250	0.30	M
CO0029599	100	MINREC, INC.	1354.8	0.024	0.14	I
COG850009	100	MINREC, INC.				I-2
COG584035	100	MOBILE HOME MANAGEMENT CORP.	341.0	0.018	0.03	M
COG581016	500	MOFFAT COUNTY IMP. DISTRICT	445.0	0.010	0.02	M
CO0039624	220	MONTROSE, CITY OF	839.4	2.090	7.32	M
COG600506	220	MONTROSE, CITY OF	946.9	0.036	0.14	I
CO0022969	220	MORRISON CREEK METRO W&SD	253.3	0.036	0.04	M
COG640049	500	MOUNT WERNER WATER & SAN DIST				I-2
CO0038776	220	MOUNTAIN COAL COMPANY, LLC	907.3	0.091	0.34	I
CO0027171	190	MT. CRESTED BUTTE W&S DISTRICT	237.0	0.315	0.31	M
COG850001	801	NATIONAL KING COAL, LLC				I-2
CO0024007	310	NATURITA, TOWN OF	728.0	0.061	0.19	M
COG584062	100	NEW CASTLE, TOWN OF	413.3	0.180	0.31	M
COG640092	100	NEW CASTLE, TOWN OF	312.8	0.014	0.02	I
COG500354	300	NICHOLS GRAVEL PIT LLC				I-2
COG500368	801	NIELSONS INC.				I-2
COG584031	190	NORTH ELK MEADOWS HOA	463.9	0.019	0.04	M
COG600491	801	NORTHWEST PIPELINE CORP.				I-2
COG582038	310	NORWOOD SANITATION DISTRICT	498.0	0.066	0.14	M
COG582002	310	NUCLA SANITATION DISTRICT	1318.0	0.086	0.47	M
COG640038	310	NUCLA, TOWN OF	266.3	0.027	0.03	I
CO0041106	500	OAK CREEK, TOWN OF	587.5	0.165	0.40	M
COG640057	500	OAK CREEK, TOWN OF		0.389		I-4
CO0045802	100	OAK MEADOWS SERVICE COMPANY	591.3	0.011	0.03	M
COG850042	801	OAKRIDGE ENERGY INC.	255.0		1.06	I-5A
COG600452	100	OCCIDENTAL OIL SHALE, INC.				I-2
CO0020907	220	OLATHE, TOWN OF	1310.0	0.280	1.53	M-5A
COG500119	100	OLDCASTLE SW GROUP, INC.	965.0	0.325	1.31	I-5E
COG500136	300	OLDCASTLE SW GROUP, INC.	1754.0	0.340	2.49	I-5A
COG500209	220	OLDCASTLE SW GROUP, INC.				I-2
COG500216	300	OLDCASTLE SW GROUP, INC.	4602.0	0.175	3.36	I-5E
COG500218	300	OLDCASTLE SW GROUP, INC.	2435.0	0.300	3.05	I-5E
COG500291	801	OLDCASTLE SW GROUP, INC.	208.8	0.030	0.03	I
COG500299	300	OLDCASTLE SW GROUP, INC.	7571.0	0.255	8.05	I-5E
COG500310	801	OLDCASTLE SW GROUP, INC.	1600.0	0.033	0.22	I
COG500328	801	OLDCASTLE SW GROUP, INC.				I-2
COG500329	190	OLDCASTLE SW GROUP, INC.				I-2
COG500367	801	OLDCASTLE SW GROUP, INC.	2142.5	0.426	3.81	I-5A
COG500397	190	OLDCASTLE SW GROUP, INC.	523.3	0.400	0.87	I
COG500400	220	OLDCASTLE SW GROUP, INC.	908.8	0.150	0.57	I
COG500412	300	OLDCASTLE SW GROUP, INC.				I-2
COG500436	300	OLDCASTLE SW GROUP, INC.	1997.0	0.400	3.33	I-5A

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COG500437	300	OLDCASTLE SW GROUP, INC.	2864.7	0.450	5.38	I-5A
COG500441	300	OLDCASTLE SW GROUP, INC.	179.3	1.000	0.75	I
COG640081	220	ORCHARD CITY, TOWN OF	68.0	0.019	0.01	I
COG584041	100	OURAY RANCH HOMEOWNERS ASSN.	173.0	0.007	0.01	M
CO0043397	220	OURAY, CITY OF	615.0	0.199	0.51	M
COG600544	220	OURAY, CITY OF	1589.0	0.665	4.41	I-5A
CO0043222	220	OURAY, CITY OF - HOT SPGS POOL	1515.0	0.485	3.06	I-5C
CO0000132	220	OXBOW MINING, INC.				I-2
CO0031755	801	PAGOSA AREA WATER & SAN. DIST.	405.7	0.633	1.07	M
COG582040	801	PAGOSA AREA WATER & SAN. DIST.	521.8	0.098	0.21	M
COG640007	801	PAGOSA AREA WATER & SAN. DIST.				I-2
COG640022	801	PAGOSA AREA WATER & SAN. DIST.	78.0	0.011		I
COG640077	801	PAGOSA AREA WATER & SAN. DIST.				I-2
CO0022845	801	PAGOSA SPRINGS SAN. DIST.				M
COG584004	300	PALISADE, TOWN OF	406.3	0.252	0.43	M
COG640037	300	PALISADE, TOWN OF				I-2
CO0021709	220	PAONIA, TOWN OF	876.5	0.180	0.66	M
COG500263	300	PARKERSON CONSTRUCTION, INC.				I-2
COG600178	500	PETE LIEN & SONS				I-2
CO0039551	100	PITKIN IRON CORPORATION				I-2
COG600534	100	PITKIN IRON CORPORATION				I-2
CO0032638	500	PITTSBURG & MIDWAY COAL MINING		0.331		I-4
CO0023485	300	POWDERHORN METRO DISTRICT NO 1	252.0	0.014	0.01	M
COG500396	500	PRECISION EXCAVATING, INC.	351.4	0.704	1.03	I-2
CO0000027	300	PUBLIC SERVICE CO. OF COLORADO	766.4	9.390	30.01	I-5B
CO0000523	500	PUBLIC SERVICE CO. OF COLORADO	326.5	0.032	0.04	I
COG600536	500	PUBLIC SERVICE CO. OF COLORADO	320.8	0.025	0.03	I
COG581010	801	PURGATORY METROPOLITAN DIST.	827.5	0.075	0.26	M
COG600563	220	R.A. NELSON AND ASSOCIATES				I-2
COG600526	200	RACQUET CLUB OWNER'S ASSN.				I-2
COG584051	100	RANCH AT ROARING FORK HOA, INC	366.0	0.034	0.05	M
COG584044	510	RANGELY, TOWN OF	395.0	0.150	0.25	M
CO0021385	100	RED CLIFF, TOWN OF	249.3	0.130	0.14	M
COG640012	100	RED CLIFF, TOWN OF				I-2
CO0046370	100	REDSTONE WATER & SAN DISTRICT	637.3	0.018	0.05	M
CO0042579	220	RIDGEWAY STATE PARK	345.0	0.001		M
COG584047	220	RIDGWAY, TOWN OF	448.0	0.078	0.15	M
COG584024	100	RIFLE, CITY OF	1015.8	0.572	2.42	M
COG584053	100	RIFLE, CITY OF	594.5	0.066	0.16	M
COG584006	100	RIVERBEND SUBDIVISION WWTF	2376.5	0.010	0.10	M-5
COG584066	220	RIVERSBEND HOA	560.3	0.002		M
COG584048	510	RIVERSIDE SANITATION, INC.				I-2
CO0039209	100	ROARING FORK RESOURCES				I-2
CO0044750	100	ROARING FORK WATER & SAN DIST	367.0	0.032	0.05	M
COG640102	220	ROSCOE DEVELOPMENT COMPANY				I-2
COG582020	500	ROUTT CO. FOR PHIPPSBURG COMM	487.0	0.011	0.02	M
COG584037	500	ROUTT COUNTY FOR MILNER COMM.	371.5	0.013	0.02	M
COG584013	801	SAN JUAN RIVER VILLAGE METRO	297.5	0.035	0.04	M
COG600436	200	SANCTUARY/SNOWMASS CONDO ASSOC		0.021		
COG500241	801	SANDCO, INC.				I-2

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CO0000221	500	SENECA COAL COMPANY	2560.9	0.156	1.67	I-5B
COG500312	500	SENECA COAL COMPANY	170.0	0.001		I
COG600162	510	SHELL FRONTIER OIL & GAS, INC.	1792.5	0.432	3.23	I-5A
COG600523	510	SHELL FRONTIER OIL & GAS, INC.		165.000	0.69	
COG584046	100	SILT, TOWN OF	1022.0	0.187	0.80	M
CO0020826	100	SILVERTHORNE/DILLON JNT SWR	392.6	1.133	1.85	M
CO0020311	801	SILVERTON, TOWN OF	320.0	0.125	0.17	M
COG640008	801	SILVERTON, TOWN OF	111.8	0.005	0.00	I
CO0027146	300	SNOWCAP COAL	1370.0	0.407	2.33	I-5B
CO0023086	100	SNOWMASS WATER & SAN DISTRICT	231.3	0.664	0.64	M
CO0031810	100	SOPRIS VILLAGE HOA, INC.	537.3	0.027	0.06	M
COG584057	801	SOUTH DURANGO SANITATION DIST.	570.0	0.103	0.24	M
CO0046124	100	SPRING VALLEY SANITATION DIST.	483.8	0.033	0.07	M
COX045331	100	SPRING VALLEY SANITATION DIST.				M
COG584033	310	ST. BARNABAS CHURCH CAMPS, INC	1004.0	0.001		M
CO0032280	500	STEAMBOAT HEALTH & REC ASSOC.		0.008		I-4
CO0035556	500	STEAMBOAT LAKE W&SD	349.5	0.014	0.02	M
CO0020834	500	STEAMBOAT SPRINGS, CITY OF	222.1	2.234	2.07	M
COG600127	500	STEAMBOAT SPRINGS, CITY OF				I-2
COG600600	500	STEAMBOAT VENTURES				I-2
CO0045373	500	STEHLE PRODUCTION COMPANY				I-2
CO0029955	100	SUMMIT CO BOARD OF COMMISS		0.534		M
COG850041	500	SUNLAND MINING CORPORATION				I-2
CO0038598	100	SUNLIGHT, INC.				I-2
CO0000426	801	SUNNYSIDE GOLD				I-2
CO0045501	100	TABERNASH MEADOWS W&SD	264.0	0.034	0.04	M
COG584061	100	TALBOTT ENTERPRISES, INC.	1671.0	0.048	0.33	M
COG584021	310	TELECAM PARTNERSHIP II LIMITED	690.5	0.006	0.02	M
CO0041840	310	TELLURIDE, TOWN OF	458.2	0.678	1.30	M
COG640024	310	TELLURIDE, TOWN OF	411.9	0.011	0.02	I
COG500281	500	TEMPLE CONSTRUCTION, INC.				I-2
COG850028	220	TERROR CREEK COMPANY				I-2
CO0037681	100	THREE LAKES W&SD - WILLOW CREEK	54.6	0.436	0.10	M
CO0032115	500	TRAPPER MINING, INC.	1785.1	0.012	0.09	I
COG500255	200	TRI COUNTY GRAVEL	1265.5	0.111	0.59	I
CO0042447	100	TRI STATE GENERATION & TRANSMISSION	2647.0	0.022	0.24	I
COG600494	100	TRI STATE GENERATION & TRANSMISSION				I-2
CO0000540	310	TRI-STATE GENERATN &TRANSMISSN	1713.0	0.286	2.04	I-5B
CO0027154	500	TWENTYMILE COAL COMPANY	2222.5	0.012	0.11	I
CO0036684	500	TWENTYMILE COAL COMPANY	2932.5	0.009	0.11	I
CO0042161	500	TWENTYMILE COAL COMPANY	4975.0	0.253	5.25	I-5B
COG584070	100	TWO RIVERS VILLAGE	661.8	0.002	0.01	M
CO0041548	300	U.S. DEPARTMENT OF ENERGY				I-2
CO0043591	300	UMETCO MINERALS CORP-JHN BROWN				I-2
COG600277	100	UNION PACIFIC RAILROAD COMPANY		0.006		I-4
COG500201	300	UNITED COMPANIES OF MESA COUNTY				I-2
COG640105	100	UPPER EAGLE REG WATER AUTH.				I-2
COG640104	220	USCDWUA				I-2
COG584011	801	UPPER VALLEY SANITATION, INC.	260.0	0.019	0.02	M
COG640070	300	UTE WATER CONSERVANCY DISTRICT				I-2

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COG600242	100	VAIL ASSOCIATES, INC.		0.003		I-4
COG600381	100	VAIL ASSOCIATES, INC.				I-2
COG500010	220	VALCO, INC.	360.0	0.006	0.01	I
COG500134	220	VALCO, INC.				I-2
COG584026	801	VALLECITO RESORT	450.0	0.028	0.05	M
COG500420	190	VARRA COMPANIES, INC.		0.001		I-4
CO0042480	100	VIACOM INTERNATIONAL	2382.8	0.480	4.77	I-5A
COG600409	100	VILLAGE AT COPPER ASSOCIATION				I-2
CO0037702	801	VISTA VERDE VILLAGE	464.0	0.024	0.05	M
CO0042617	220	VOLUNTEERS OF AMERICA CARE FAC	381.5	0.008	0.01	M
CO0037206	220	WALKER RUBY TRUST MINING CO.	46.0		0.19	I
COG581002	100	WASTE WATER TREATMENT SERVICES	605.5	0.031	0.08	M
COG584008	100	WEST GLENWOOD SPRINGS SAN DIST	186.0	43.005	33.36	M
CO0030449	220	WEST MONTROSE SANITATION DIST	660.0	0.269	0.74	M-1
CO0000213	310	WESTERN FUELS-COLORADO, LLC	1720.0	0.435	3.12	I-5B
COG500358	220	WESTERN GRAVEL, INC.				I-2
COG500451	220	WESTERN GRAVEL, INC.				I-2
COG500123	220	WHITEWATER BUILDING MATERIALS				I-2
COG500127	220	WHITEWATER BUILDING MATERIALS	1522.5	0.040	0.25	I
COG500062	500	WILLIAMS FORK COMPANY				I-2
COG900010	500	WINDSOR JEPSON, LLC	1535.0	0.030	0.19	I
CO0026051	100	WINTER PARK WATER & SAN DIST	396.0	0.140	0.23	M
COG600443	300	WOLF CREEK RIFLE, LLC				I-2
COG500225	300	WRR SAND AND GRAVEL LLC				I-2
COG500419	100	3B ENTERPRISES, LLC	6150.0	3.400	87.19	I-5A
NV0021261	910	CCSD AWT Plant 1	1230	46.33	237.63	M-5A
NV0021563	920	CCSD Laughlin	417	2.18	3.79	M-6*
NV0022837	910	Circle K Stores Inc	ND	ND		I-5E
NV0022730	910	D&G Oil	Cancelled			I-5E
NV0022721	910	Exxon #7-3868	Inactive			I-5E
NV0022845	910	Harrah's Las Vegas	ND	ND		I
NV0022098	910	Henderson WRF	1300	15.8	85.65	M-5A
NV0021750	910	Hilton Hotel & Casino	1740	0.026	0.19	I-5E
NV0023060	910	Kerr McGee	6348	1.42	37.59	I
NV0000078	910	Kerr McGee (001a)	370	0.62	0.96	I
NV0000078	910	Kerr McGee (001b)	790	0.344	1.13	I
NV0000078	910	Kerr McGee (002a)	100	0.001	0.00	I
NV0000078	910	Kerr McGee (002b)	2743	0.432	4.94	I
NV0000078	910	Kerr McGee (003b)	0	0	0.00	I-2
NV0022691	910	Lake Las Vegas	ND	ND		I
NV0020133	910	Las Vegas WWTP	691	63.64	183.38	M-5A
NV0022748	910	Las Vegas, City of (Bonneville)	1460	0.0156	0.09	I-5E
NV0022250	910	Lowes HIW, Inc.	Inactive			I-5E
NV0021950	910	LV-Municipal Strom Drain Syst.			0.00	M-5A
NV0022641	910	Marnell Carrao for Bellagio	Inactive			I-2
NV0020192	910	NDOW - Lade Mead	ND	ND		I-5D
NV0020923	910	Pioneer Chlor Alkali #7	ND	ND		I-2
NV0022446	910	Rebel Oil Company	Inactive			I-2
NV0022896	910	Red Rock Mini Mart	Inactive			I-2

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NV0022594	910	Secor/7-eleven #13702	Inactive			I-5E
NV0022608	910	Secor/7-eleven #29643	Inactive			I-5E
NV0022772	910	Signature Homes	5480	0.296	6.76	I-7
NV0022802	910	Southland Corp - #20084	Inactive			I-5E
NV0022829	910	Southland Corp - #20084	Inactive			I-5E
NV0022811	910	Southland Corp - #20084	Inactive			I-5E
NV0022870	910	Southland Corp - #20084		0.002	0.00	I-5E
NV0021679	910	Stallion Mountain Country Club	5700		0.00	I-5B/E
NV0000060	910	Titanium Metals (TIMET)	698	3	8.73	I
NV0022781	910	Tomiyasu Basement Dewatering	3500	0.068	0.99	I-5E
NV0022420	910	Union Oil Company	ND	ND		I-5E
NV0021865	910	US NPS - Callville Bay	Cancelled			M
NV0021873	910	US NPS - Echo Bay WTP	Cancelled			M
NV0021881	910	US NPS - Las Vegas Bay WTP	Inactive			M
NV0021890	910	US NPS - Overton Beach	Cancelled			M
NV0022543	910	USA #100	Inactive			I-5E
NV0022195	910	Valley Hospital	992	0.0047	0.02	I-5E
NV0022888	910	Venetian, The	744	0.0148	0.05	I-5E
NM0000019	801	ARIZONA PUBLIC SERVICE CO. - FOUR CORNER	742	8.500	26.32	I-5B*
NM0028193	801	BHP MINERALS NAVAJO COAL	0	0.000	0.00	
NM0028142	801	Bloomfield Municipal Schools	705	0.002	0.006	I*
NM0030350	801	Bloomfield Water	n/a	n/a	n/a	I-1*
NM0029319	801	Central Consolidated School District	730	0.050	0.152	I*
NM0020168	801	City of Aztec	520	1.00	2.17	M*
NM0020770	801	City of Bloomfield	306	0.80	1.00	M*
NM0000043	801	City of Farmington	-	-		I*
NM0023396	900	City of Ramah	-	0.058	-	M-7*
NM0028584	801	CONSOLIDATION COAL CO.	0	0.000	0.00	I-1*
NM0000051	801	Farmington Drinking Water	n/a	n/a	n/a	I-1*
NM0029572	801	Farmington Municipal Op.	n/a	n/a	n/a	I-1*
NM0028258	801	Farmington Sand & Gravel Co.	-	-	-	I-2*
NM0020583	801	Farmington WWTP	387	5.00	8.10	M*
NM0027995	801	Four Corners Materials, Inc./DBA	562	0.45	2.30	I*
NM0020672	900	Gallup WWTP	275	2.40	2.75	M*
NM0029025	801	Harper Valley Subd.	348	0.025	0.037	I*
NM0020630	900	NTUA CROWNPOINT WWTP	-	0.000		M*
NM0030333	801	NTUA LAKE VALLEY				M-6*
NM0020613	900	NTUA NAVAJO WWTP	-	0.000		M-6*
NM0020621	801	NTUA SHIPROCK WWTP	-	0.000		M*
NM0030325	900	PINE HILL SCHOOL				M-6*
NM0028606	801	Public Service Co of NM - San Juan	-	-	-	I-2*
NM0020524	900	QUIVIRA MINING COMPANY - CHURCH ROCK	0	0.000	0.00	I-1*
NM0029505	801	San Juan Coal Co. - La Plata	-	-	-	I-2*
NM0028746	801	San Juan Coal Company - San Juan	-	-	-	I-2*
NM0000027	801	San Juan Concrete Co.	n/a	n/a	n/a	I-1*
NM0020401	900	United Nuclear Corp.	n/a	n/a	n/a	I-1*
NM0028550	900	United Nuclear Corp.	n/a	n/a	n/a	I-1*
NM0026751	801	USBIBIA - Jicarilla Agency, Dulce	-	0.236	-	M-3*
NM0020869	801	USDIBIA, CRYSTAL BOARDING SCHOOL	-	0.000		M*

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NM0021016	801	USDIBIA, LAKE VALLEY BOARDING SCHOOL	-	0.000		M-2*
NM0020800	801	USDIBIA, NENAHNEZAD BOARDING SCHOOL	-	0.000		M-6*
NM0020991	801	USDIBIA, PUEBLO PINTADO BOARDING SCHOOL	-	0.000		M-6*
NM0020958	900	USDIBIA, WINGATE BOARDING SCHOOL	-	0.000		M-2*
NM0029432	801	Yampa Mining Co. (De-na-zin Mine)	-	-	-	I-2*
NM0029475	801	Yampa Mining Co. (Gatew.)	-	-	-	I-2*
UT0021091	610	Altamont, City of	0	0	0	M-1
UT0000167	510	American Gilsonite Co.	-	-	3.5	I-5B*
UTG040007	600	Andalex Wildcat Loadout	0	0	0	I-2
UTG040008	600	Andalex-Pinnacle Coal Mine	0	0	0	I-2
UT0025453	600	Ark Land Co.	0	0	0	I-1
UT0024511	411	Ashley Valley Sewer Board	1100	0.2	0.9174	M
UTG640003	411	Ashley Valley Water & Sewer, IDWTP	0	0	0	M-2
UT0025348	411	Ashley Valley Water & Sewer, Mechanical	490	2.1	4.29	M
UTG640019	802	Blanding Culinary Water Treatment	0	0	0	M-6
UT0025500	905	Blue Bunny Ice Cream	1500	0.08	0.5	I
UTG040011	600	Canyon Fuel Co.- Banning Loadout	0	0	0	I-2
UT0024759	600	Canyon Fuel Co.- Dugout Mine	1900	0.5	4	I
UT0023540	600	Canyon Fuel Co.- Skyline Mine	862	6.12	18.98	I
UT0022918	700	Canyon Fuel Co.- SUFCo Mine	733	5.6	17.12	I-5E
UT0023680	600	Canyon Fuel Co.-Soldier Creek Coal	0	0	0	I-2
UT0023663	710	Castle Valley SSD-Castle Dale	1360	0.2	1.13	M-5A
UTG790017	610	Chevron-Myton Pumping Station (Earthfax Eng.)	3230	0.017	0.23	I-1
UT0021768	411	CIMA-Sonoma	-	0.336	-	I-3
UT0022616	700	Consolodated Coal Co.-Underground	2989	0.54	6.73	I-5E
UTG040006	700	CO-OP Mining Co.	380	0.02	0.032	I
UTG040016	600	Cypres Blackhawk	0	0	0	I-1
UT0023736	600	Cyprus Plateau Mining Co.(Star Point Mine)	0	0	0	I-2
UT0020095	610	Duchesne City Corp.	1234	0.28	1.44	M
UTG640014	411	Dutch John	0	0	0	M-2
UTG640012	600	E. Carbon City-Sunnyside CWTP	0	0	0	M-2
UT0020052	710	Ferron, City of	834	0.56	1.95	M-5A
UT0024368	710	Genwal Resources, Inc.-Crandall	450	0.9	1.69	I-5E
UT0025232	600	Green River, City of	0	0	0	M-1
UT0023094	600	Hiawatha Coal Co.	688	0.23	0.66	I-5E
UT0021792	411	Hollansworth & Travis	2000	0.147	1.23	I-5E
UTG040019	600	Horizon Coal	458	0.504	0.96	I
UT0021296	710	Huntington, City of	2080	0.25	2.17	M-5A
UT0024015	411	Intermountain Concrete	1700	0.25	1.77	I-5A
UT0023922	300	Intermountain Uranium Rim Mine	0	0	0	I-2
UTG040013	600	IPA Horse Canyon	0	0	0	I-2
UT0025488	600	J.W. Operating Corp.	930	0.0625	0.242	I
UT0025534	710	James Canyon Well System	203	6.02	5.096	I
UT0025259	510	Lexco, Inc.	-	-	1	I*
UT0024945	802	MK-Ferguson (Mexican Hat Umtra)	-	-	-	I-7*
UT0020419	300	Moab, City of	450	1.2	2.25	M
UT0024503	802	Monticello	0	0	0	M-2
UTG640015	802	Monticello City (Culinary WTP)	0	0	0	M-2
UTG040004	600	Mountain Coal Co.-Gordon Creek Mine	0	0	0	I-2

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UT0020133	803	Mountain States Petroleum	-	-	-	I-7*
UTG040010	600	NEICO	0	0	0	I-2
UT0023001	610	Neola Town Water & Sewer Assoc.	-	0.88	-	M-3
UTG790014	600	Olsen-Durrant (Former Bulk Fuel Facility)	-	0.032	-	I-3
UT0000094	600	PacifiCorp-Carbon	2190	0.187	1.71	I-5B
UT0023604	710	PacifiCorp-Deer Creek	971	1	4.05	I-5E
UT0023591	710	PacifiCorp-DesBeeDove	0	0	0	I-2
UT0023426	710	PacifiCorp-Hunter	0	0	0	I-1
UTG040009	710	PacifiCorp-Hunter Coal Prep	0	0	0	I-2
UTG040003	710	PacifiCorp-Trail Mountain	0	0	0	I-2
UT0022896	710	PacifiCorp-Wilberg	755	0.04	0.126	I-5E
UTG640035	600	Price City WTP	0	0	0	M-2
UT0021814	600	Price River Water Imp. Dist.	1064	1.32	5.84	M
UTG640034	600	Price River WTP	0	0	0	M-6
UTG040012	600	RAG Plateau Mining Corp.	0	0	0	I-2
UTG130016	700	Road Creek Trout	0	0	0	I-1
UTG040005	600	Savage Industries Coal Terminal (CV-Spur)	3500	0.15	2.19	I-5A
UT0025224	905	Springdale	815	0.2	0.68	M
UT0024686	905	St. George, City of	1128	7.96	37.44	M
UTG040025	600	Star Point Refuse Pile(Sunnyside Cogen)	272	0.0432	0.049	I
UT0024759	600	Sunnyside Cogen.	0	0	0	I-2
UT0025399	710	Talon Resources	0	0	0	I-2
UTG640002	610	Tridell-Lapoint Water IDWTP	0	0	0	M-2
UTG130003	700	UDWR-Egan/Bicknell FH	186	10.14	7.87	I-5D
UTG130007	700	UDWR-Loa FH	174	8.9	4.17	I-5D
UTG130012	610	UDWR-Whiterocks	216	4.4	3.96	I-5D
UT0020338	411	USBOR-Flaming Gorge Dam	-	0.00265	-	M-3
UTG130001	411	USFWS-Jones Hole NFH	174	7	5.08	I-5D
UTG640006	700	USNPS-Capitol Reef WTP	0	0	0	M-2
UTG640004	700	USNPS-Glen Canyon WTP	0	0	0	M-2
UTG040024	710	Utah American Energy-Lila Canyon Mine	0	0	0	I-2
UTG040023	600	West Ridge Mine	1153	0.206	0.99	I
UTG040021	600	White Oak Mine	0	0	0	I-2
UT0000035	411	Whiting Oil & Gas (fornerly Equity Oil)	1330	1.21	6.71	I-5E
UT0000124	411	Whiting Oil & Gas (fornerly Equity Oil)	1430	1.31	7.81	I-5E
UT0023868	510	Ziegler Chemical and Mineral	-	-	1	I*
WY0032727	401	ANADARKO PETROLEUM CORPORATION	0	0	0	I-2
WY0022888	500	BAGGS, TOWN OF	0	0	0	M-2
WY0020133	401	BIG PINEY, TOWN OF				M-3
WY0028886	401	BLACK BUTTE COAL COMPANY	0	0	0	I-2
WY0030261	401	BLACK BUTTE COAL COMPANY				I-3
WY0033448	411	BP AMERICA PRODUCTION COMPANY	0	0	0	I-2
WY0030350	401	BRIDGER COAL COMPANY	0	0	0	I-6
WY0032697	411	CHEVRON, INC	0	0	0	I-2
WY0023132	411	CHURCH AND DWIGHT COMPANY, INC	0	0	0	I-6
WY0021938	500	DIXON, TOWN OF				M-7
WY0036021	500	DIXON, TOWN OF, (WTP)				I-6
WY0035858	500	DOUBLE EAGLE PETROLEUM AND MINING CO.	0	0	0	I-2
WY0042145	500	DOUBLE EAGLE PETROLEUM AND MINING CO.	0	0	0	I-2

NPDES PERMITS
Colorado River Basin Salinity Control Forum
Through December 31, 2004

NPDES #	REACH	NAME	CONCENTRATION MG/L	FLOW RATE MGD	SALT LOAD TONS/DAY	EXPLANATION CODE
WY0048437	500	DOUBLE EAGLE PETROLEUM AND MINING CO.	0	0	0	I-2
WY0032450	401	EXXON MOBILE OIL CORPORATION	0	0	0	I-2
WY0032689	401	EXXON MOBILE OIL CORPORATION	0	0	0	I-2
WY0022071	411	FORT BRIDGER SEWER DISTRICT				M-3
WY0022373	411	GRANGER, TOWN OF	0	0	0	M-2
WY0020443	401	GREEN RIVER, TOWN OF	705	0.762	2.2	M
WY0000027	401	GREEN RIVER/ROCK SPRINGS JPWB	0	0	0	I-2
WY0051152	401	HEDDER, JAMES	0	0	0	I-2
WY0000116	411	KEMMERER-DIAMONDVILLE JPB (WTP)				I-7
WY0020320	411	KEMMERER-DIAMONDVILLE JPB (WWTP)	615	0.4865	1.25	M
WY0022080	401	LABARGE, TOWN OF	708	0.069	0.2	M
WY0020117	411	LYMAN, TOWN OF	628	0.265	0.69	M
WY0021997	401	MARBLETON, TOWN OF	817	0.157	0.54	M
WY0022896	411	MOUNTAIN VIEW, TOWN OF	603	0.227	0.57	M
WY0023124	401	MOUNTAIN VILLAGE PARK	0	0	0	M-2
WY0052515	401	NEWPARK ENVIRONMENTAL SERVICES	0	0	0	I-7
WY0020311	411	PACIFICORP	1242	1.304	6.75	I-5B
WY0020656	401	PINEDALE, TOWN OF	116	0.79	0.38	M
WY0027626	411	PITTSBURGH AND MIDWAY COAL MINING CO.	0	0	0	I-2
WY0052311	401	PTI PREMIUM CAMP SERVICES	0	0	0	I-7
WY0035947	500	QUESTAR EXPLORATION AND PRODUCTION CO.	471	0.004	0.01	I
WY0022128	401	REGENCY OF WYOMING, INC	160	0.052	0.035	M-4B
WY0023825	401	ROCK SPRINGS ROYALTY COMPANY	0	0	0	I-2
WY0022357	401	ROCK SPRINGS, CITY OF	824	2.31	7.93	M-5
WY0033111	411	SF PIPELINE, LLC	638	0.011	0.03	I
WY0000051	411	SOIS-OSAGE, INC	0	0	0	I-3
WY0026671	401	SUMMIT LODGING	458	0.006	0.01	M
WY0021806	401	SUPERIOR, TOWN OF	0	0	0	M-2
WY0024546	500	THOROFARE RESOUCES	3470	0.002	0.03	I
WY0036153	411	TRAVEL CENTERS OF AMERICA	0	0	0	I-6
WY0000086	401	WYOMING GAME & FISH DEPARTMENT				I-7
WY0000094	401	WYOMING GAME & FISH DEPARTMENT				I-7

For additional information please contact:

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