NEVADA DIVISION OF WATER PLANNING

Carson River Chronology

A Chronological History of the Carson River and Related Water Issues

The information contained in Part I--Overview of this *Carson River Chronology* constitutes a general background and informational description of the Carson River system and the Carson River Basin and its geophysical, geologic, and hydrologic characteristics and attributes. Part II--Pre-Twentieth Century and Part III--Twentieth Century of this chronology contain a relatively detailed listing of some of the more important events associated with the Carson River Basin, the Carson River, the Carson River's East and West Forks, the Carson River Basin's interconnection with the Truckee River Basin via Derby Dam and the Truckee Canal, the Newlands Irrigation Project, the Lahontan Valley wetlands, the Carson Sink and Desert, and related water supply, use, development, water rights, water quality, and water-related environmental issues.

Part I--Overview

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Introduction

The Carson River Basin encompasses an area of approximately 3,966 square miles (2,538,230 acres)(1) in the states of California and Nevada. The basin stretches in a generally north and then northeast direction from its headwaters located south of the Lake Tahoe Basin and just north of Sonora Pass in the Sierra Nevada Mountains to its terminus in the Nevada desert. The Carson River Basin lies south of the Lake Tahoe and Truckee River basins(2) and north of the Walker River Basin.(3) The upper portion of the Carson River Basin, which is drained by the Carson River's East and West forks, is mostly contained within Alpine County, which forms part of California's North Lahontan Hydrologic Region of California.(4) The Carson River's two forks merge in the northern part of Carson Valley, located in Douglas County, Nevada, and form the Carson River mainstem, which then continues on towards the river system's terminus in the Carson Sink. Of the Carson River Basin's total surface area, approximately 606 square miles (387,840 acres), or just over 15 percent lie within the State of California, while the remaining 3,360 square miles (2,149,680 acres), or almost 85 percent, lie within the State of Nevada.(5) [See Table 1, Nevada Hydrographic Areas in the Carson River Basin, for a description of the hydrographic areas and sub-areas contained within the Nevada portion of the Carson River Basin.]

Similar to the adjacent Truckee River Basin and the Walker River Basin, the vast majority of the Carson River Basin's surface area, and certainly most of its demands for water resources, lie within the State of Nevada. However, most of the basin's precipitation and high alpine storage reservoirs are located in the State of California.(6) Not surprisingly, this extreme geographic separation between the Carson River Basin's principal supply of water and its principal demands for water has tended to exacerbate some of the controversies surrounding the rights to, and the uses of, water resources within the Carson River Basin and shared between these two states.

According to the California-Nevada Interstate Compact, approved by the respective state legislatures in September 1970 (California) and March 1971 (Nevada), Nevada is entitled to 80 percent of the additional (future) yields developed within the Carson River Basin (i.e., new water yields in excess of those required to satisfy existing beneficial uses), with the remaining 20 percent belonging to the State of California. This interstate compact also specifically states that the waters of the Carson River shall not be used in areas outside the Carson River Basin. Although this compact was never ratified by Congress, thereby making it law, its terms have been enforced through a "gentlemen's agreement" and individual state legislative action.(7) Furthermore, many of the provisions of this compact pertaining to the allocation of the waters of Lake Tahoe and the Truckee and Carson rivers have been incorporated into the 1990 Negotiated Settlement Act (Public Law 101-618).(8)

While flowing a relatively short 184 miles from the headwaters of its East Fork, located below Sonora Pass in the Sierra Nevada Mountains, the Carson River has experienced more than its share of controversy and holds the dubious distinction of being the cause of the longest-running litigation (1925-1980, 55 years) over water rights

adjudication ever waged by the United States Government against private interests.(9) Ultimately, water rights issues with respect to the Carson River were adjudicated through the Alpine Decree, initially filed on May 11, 1925 (*United States* v. *Alpine Land and Reservoir Company, et al.*), and issued on October 28, 1980.(10) Even so, major issues still remain relative to interstate water rights in the Carson River Basin and the failure to secure Congressional approval of the California-Nevada Interstate Compact.

A Hydrologic Overview of the Carson River Basin

Major hydrologic characteristics of the upper Carson River Basin include the Sierra Nevada Mountains, which serve as the basin's primary source of precipitation, snowpack, and runoff, a number of relatively small high

1995 (September) Douglas County began developing financing plans to purchase the 9,868 acre Slash Bar H

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NEVADA DIVISION OF WATER PLANNING

Carson River Chronology

Part III--Twentieth Century

1900 The annual Irrigation Congress of western states met in Chicago, Illinois. This was the first time that such a meeting was held outside of a western state and represented a lobbying effort by westerners to win over Mid-West agricultural interests which, along with Eastern agricultural interests, had effectively blocked reclamation appropriations in Congress. Due to an illness in the designated key-note speaker (Spanish-American war hero General Nelson A. Miles), U.S. Congressman Francis G. Newlands(1) gave a speech which symbolized his rise to national prominence within the reclamation movement.(2)

1901 Upon the assassination of President William McKinley in September 1901, Theodore ("Teddy") Roosevelt became the 26th President of the United States (1901-1909) and ushered in a new era of Populism, a democratic movement supporting "the greatest good for the greatest number" and, among other things, public ownership of utilities, an income tax, and support of labor and agriculture. On behalf of the western states, Roosevelt committed himself to the stalled reclamation movement and applied the powers of his office to charm, plead, or coerce eastern Republican legislators into support for, or at least the tolerance of, a national reclamation act which challenged the vested interests of eastern and mid-western agriculturalists.(3) From these initial efforts came some of the most significant spending programs for water projects and dam building in the history of the United States.

1902 Carson Valley's "One Third Agreement" came into existence around this time after H.F. Dangberg's purchase of the Van Sickle and Cohn ranches. Prior to this time, reduced flows of the Carson River East Fork after July 15th meant that those ranchers with water rights prior to 1860 (approximately 4,800 acres along the East Fork) typically received only a portion of their rights, while others with later water rights would be deprived of water altogether. With the purchase of some 3,500 acres with 1858-1859 water rights, Dangberg was entitled to 80 percent of the East Fork's flow during the low water period. By the "One Third Agreement," however, Dangberg exchanged his right to 80 percent of the East Fork's flow during this typically low-flow period for one-third of the river's flow whenever he required it for the improvement and expansion of the irrigated acreage of his desert land. This agreement became widely supported by custom alone and was not written down, noted, or recognized by state officials or the courts.(4)

1902 Work began by H.F. Dangberg and his sons in Carson Valley to use the surplus waters of the Carson River

in this year.

1935 Calpine Corporation of Los Angeles, California, began subsurface sulfur mining at the Leviathan Mine site off the Carson River East Fork approximately nine miles up Bryant and then Leviathan creeks. An extensive system of underground tunnels was developed and up until 1941, when Calpine Corporation gave up its lease, approximately 5,000 long tons of sulfur were produced. The operation was noted as being extremely hazardous due to the highly flammable nature of sulfur. (101)

21. Flood damage from the East and West forks above Carson Valley was greater in this flood period than in 1937. One individual flying over Carson Valley on November 21st described the valley as "...a large lake dotted here and there with islands of soggy land on which cattle, sheep, and horses had huddled to escape the flood." A cloud burst precipitated the third flood event of the year, dropping nearly 6 inches of rain at Woodfords in a 24-hour period on December 3rd and producing another flood crest in Carson Valley. The final flood event of the year followed the previous one only by a couple of days, producing the third flood crest in Carson Valley during the November-December time frame. Damage to roads, bridges, fields and structures was extensive. During these series of floods, the peak flow of the East Fork in Carson Valley was recorded at 13,500 cfs (capacity 2,500 cfs) and the peak flow of the West Fork at Woodfords was recorded at 3,300 cfs (capacity 600 cfs).(115)

1951 The Anaconda Copper Mining Company purchased the Leviathan Mine in Alpine County, California, for sulfur mining by open-pit methods. The sulfur was to be used for processing Anaconda's copper ore at its Weed Heights mine near Yerington, Nevada in Mason Valley (Lyon County). Isabell Construction Company was hired for the excavation of the Leviathan Mine site, and the following year it began stripping away some 22 million tons of overburden. The overburden was dumped in three spoil areas, one of which consisted of a 26-acre site more than 130 feet in depth in the Leviathan Creek canyon. The waste consisted of low grade sulfur ore. Water from Leviathan Creek flowed around and seeped through these deposits, creating extensive acid mine drainage in Leviathan Creek and killing virtually all plant and animal life in this creek and Bryant Creek all the way downstream to the East Fork of the Carson River. Waters in this reach would remain largely toxic until remediation efforts were completed by the State of California in 1985. Mining operations began at the site in 1953 and continued through 1962 when Anaconda sold the mine. No mining was done at this site after that date.(116)

1954 (April) An extensive fish kill occurred in Leviathan Creek below the Leviathan Mine site, along Bryant Creek and in the Carson River East Fork itself when a slug of acidic water was released from Anaconda's Leviathan Mine when overburden removal operations collapsed an old mining tunnel. Downstream ranchers became concerned about the mining operations when they noticed poor crop growth from diverted irrigation water and increased cattle mortality.(117)

1954 The USBR formally released its feasibility study for its Washoe Project. This project was intended to build additional upstream reservoir sites on both the Carson and Truckee rivers to serve (primarily) Nevada agricultural interests and provide hydropower. Flood control needs were also incorporated into the USBR's study.(118) The Washoe Project contained proposals for both the Carson River Basin and the Truckee River Basin, including:(119)

[1] *Carson River Basin*--Watasheamu(120) Dam and Reservoir (and Watasheamu Power plant), Dressler Diversion Dam and Afterbay, Carson Canal, Paiute Dam and Reservoir, and the enlargement of Stillwater Point Reservoir;

[2] *Truckee River Basin*--Prosser Creek Dam and Reservoir, Stampede Dam and Reservoir, Marble Bluff Dam

provide hydropower. While all the projects proposed for the Truckee River Basin were completed, none of those water projects proposed for the Carson River Basin were ever funded.

1956 The Fish and Wildlife Act was passed giving additional impetus to the federal wildlife refuge program by authorizing the USFWS to acquire land for refuge purposes for all kinds of wildlife.(128)

1957 In a letter written by California Department of Fish and Game Warden Artie G. Brown, he stated that

Leviathan Creek, a tributary to Bryant Creek and the Carson River East Fork, was always polluted downstream of the Leviathan Mine as evidenced by yellow colored water and yellow sediment ("yellowboy")[129] deposited on the bottom of the stream bed. Therefore, mining activity may have only worsened a pre-existing condition. Even so, fish were reportedly caught in Bryant Creek as late as May 1953, indicating that such a condition was not nearly as severe prior to the commencement of mining operations at this location.[130]

1958 (January and July) Two bioassay studies were performed in this year with cutthroat trout to show the toxic impacts of Leviathan Mine discharges on Leviathan and Bryant creeks. The first study was performed at the Verdi Fish Hatchery (Nevada) in aquarium tanks, and the second on site in live boxes constructed of wire mesh. Both studies showed toxicity in the head waters of Bryant Creek (at the confluence of Mountaineer and Leviathan creeks). The in-stream study also indicated that toxicity existed along the entire reach of Bryant Creek all the way to the Carson River East Fork. The results of these studies confirmed impairment of cold fresh water habitat, a beneficial use designated for both Leviathan and Bryant creeks.[131]

1959 (November) Another massive fish kill on the East Fork of the Carson River was caused by acid mine drainage from the Leviathan Mine in Alpine County, California in the upper Carson River Basin. A breach in Anaconda's containment pond dike released approximately five million gallons of acid mine drainage into Leviathan Creek, which then flowed into Bryant Creek, and finally on to the East Fork, where the fish kill was reported as far as ten miles below Bryant Creek's entry into the East Fork. The absence of trout among the fish killed indicated that continuous discharges from the mining site had already eliminated the more sensitive trout species that had existed before the open-pit operations had begun in 1953.[132]

1962 As part of the original Washoe Project, the USBR officially announced its intention to construct the Watasheamu Dam and Reservoir on the Carson River East Fork below Bryant Creek. The project envisioned by the USBR called for a dam 300 feet high resulting in a reservoir containing approximately 160,000 acre-feet and extending upstream for approximately nine miles, actually crossing the state line into California. Plans also included (see 1955 entry) an afterbay below the Watasheamu Dam at the present Ruhenstroth site, the construction of a canal (the Carson Canal) connecting the East Fork to the West Fork, an 800 kilowatt power plant and some drainage laterals within Carson Valley. The estimated cost of the project (current dollars) was $23 million. Carson Valley farmers, having seen the subsequent controversy tied to Lahontan Dam and Reservoir, and still in litigation with the federal government (*U.S. v. Alpine Land and Reservoir Company, et al.*) were reluctant to subscribe to the USBR's project proposal.[133]

1963 (February) Major flooding occurred in Carson Valley and the Carson River Basin. While recorded total flood damages of this flood event exceeded those of the 1955 flood event (estimated at $1,012,210 in 1963 versus an estimate of $835,822 in 1955), strict comparison is not possible or realistic due to different levels of development and changing replacement costs.[134]

1964 The U.S. Secretary of the Interior formed a task force to study and report on methods to resolve the

National Environmental Policy Act (NEPA) enjoining the United States from taking over the Newlands Project or from enforcing the USDI's operating criteria (1973 Gesell Opinion and new OCAP) in the absence of compliance with the provisions of NEPA and the submission of a formal Environmental Impact Statement (EIS). By mutual agreement of the federal government, the Pyramid Lake Paiute Indian Tribe, the Nevada Wildlife Federation, the City of Fallon, and others, the 1973 OCAP was not to be implemented until the completion of the OCAP EIS. On November 4, 1983, as a motion had not been filed, this case was dismissed, without prejudice, even though the EIS was still not final.(180)

1975 (July 16) Pyramid Lake's endangered Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) was reclassified to threatened under the ESA of 1973 because of the successful establishment of additional populations and hatchery rearing programs.(181)

1975 Monitoring data recorded from 1954 (one year after Anaconda began open-pit mining at the Leviathan Mine site in Alpine County, Nevada) to 1975 demonstrated significant mining impacts to water quality in the Leviathan Creek and Bryant Creek drainage areas in the form of high metal and sulfate concentrations, and low pH and dissolved oxygen concentrations in Leviathan and Bryant creeks. Iron and arsenic concentrations exceeded the U.S. Public Health Services's 1962 Drinking Water Standards as far as seven miles downstream from the mine. No fish were found in Leviathan or Bryant creeks between the mine and the East Fork of the Carson River, a distance of approximately nine miles. A bioassay study showed toxicity throughout this entire reach from the mine to the East Fork. Further, stream bottom studies revealed that no invertebrates existed along this reach and that the benthic environment of the East Fork did not fully recover until two miles below the entry of Bryant Creek. Soil samples irrigated by Bryant Creek waters also showed low soil pH that could result in metal toxicity with continued use.(182)

1976 The federal Safe Drinking Water Act (SDWA) was passed establishing uniform drinking water standards for the nation.(183)

1976 (June) In response to a letter from the Department of Justice insisting that the federal watermaster in Reno, Nevada, enforce the terms of the 1944 Orr Ditch Decree with respect to the diversion of water from the Truckee River, the watermaster responded by filing a petition (*Petition of the Watermaster in United States v. Orr Water Ditch Decree*). The federal watermaster wanted to adhere to past practices permitting excess diversions, despite the terms of the decree, if in his opinion, no decreed rights were being adversely affected. Continuance of such practices would, in effect, allow unappropriated Truckee River waters, i.e., flood waters, to be diverted at Derby Dam for use in the lower Carson River Basin (Newlands Project and Lahontan Valley wetlands), as opposed to allowing them to flow into Pyramid Lake.

1977 (October 1, 1996—September 30, 1977) The Carson River's lowest annual average rate of flow, measured near Carson City, Nevada, [USGS gaging station number 10311000] was recorded at 42,352 acre-feet, equivalent to an average annual rate of flow of 58.5 cfs, well below the annual average rate of flow of 284,100 acre-feet

[4] *Segment 4*--The West Fork of the Carson River from the gauge at Woodfords to the California-Nevada state line;

[5] *Segment 5*--The West Fork of the Carson River (and Brockliss Slough) between the California-Nevada state line and the confluence of the East and West forks of the Carson River;

[6] *Segment 6*--The main stream of the Carson River from the confluence of the East Fork, West Fork and Brockliss Slough to the gauge at Carson City;

[7] *Segment 7*--The main stream of the Carson River from the Carson City gauge to Lahontan Reservoir. This segment is further subdivided for administration into autonomous subsegments:

(a) Mexican Ditch, Dayton and the reach between Rose Ditch and Cardelli Ditch, inclusive;

(b) Gee Ditch;

(c) Koch Ditch;

(d) Houghman and Howard Ditches;

(e) Buckland Ditch.

[8] *Segment 8*--The area below the Lahontan Dam.

1981 The USGS began a two-year monitoring project at the Leviathan Mine site on Leviathan Creek in Alpine County, California. Forty-five monitoring sites, both above and below the mine site, were sampled at least once during the 1981-1982 monitoring period, and samples from 26 sites were analyzed for major cations, anions, and a wide range of minor constituents. The following water quality samples were recorded for above the mine site, below all mine impacts, and at Bryant Creek, approximately two miles downstream from the mine, respectively (constituents are for dissolved concentrations only and presented in milligrams per liter--mg/l): (1) *pH*--[7.4 / 3.3 / 4.6]; (2) *Sulfate*--[13.4 / 769.4 / 362]; (3) *Iron*--[0.5 / 81.9 / 19.5]; (4) *Arsenic*--[0.004 / 0.3 / 0.1]; (5) *Aluminum*--[0.3 / 29.8 / 9.9]; and (6) *Nickel*--[0.01 / 0.7 / 0.3].(194)

1981 (October 1) A period of wet years began in the water basins of northwestern Nevada. This period, which included the record "High Water Year" of 1983 for the Carson River Basin, would last through 1986. During this 1982-1986 (water year) period,(195) the Carson River Basin recorded an average annual snowpack water content 138 percent of normal, ranging from a low of 85 percent of normal (1985) to 206 percent of normal (1983).(196)

1982 Further amendments were made to the Endangered Species Act.(197)

government on behalf of the Pyramid Lake Indian Tribe in 1973 to open the Orr Ditch Decree based on the "reservation doctrine" and obtain additional waters for the Pyramid Lake fisheries, the U.S. Supreme Court ruled in favor of the existing water right holders that the Orr Ditch Decree was final and binding on all parties and that it should not be reopened on the reserved rights issue (1908 Winters Doctrine).(208)

1983 (June) After assuming control for remediation efforts with respect to the Leviathan Mine site, located on Leviathan Creek in Alpine County, California, the California Regional Water Quality Control Board (Lahontan Region) opened bids for the construction of the Leviathan Mine Pollution Abatement Project. As all the bids

exceeded available state funds, the state attorney general initiated legal action under the 1980 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) against Anaconda Minerals, a wholly-owned subsidiary of ARCO, to recover funds for the cleanup and abatement of water pollution generated by the Leviathan Mine. Agreement was reached and a construction contract was awarded on August 15, 1983.(209)

1983 (August 8) Based on the suit (*TCID v. Secretary of the Interior*) filed by TCID against the Secretary of the Interior in March 1974 for the cancellation of its contract, the U.S. District Court in Reno, Nevada, decided in favor of the federal government stating that: (1) the Secretary of the Interior had the authority to issue Operating Criteria and Procedures pursuant to the 1926 contract; (2) the Secretary had properly terminated the 1926 contract; and (3) the United States had a right to possession and control of the Newlands Project. TCID appealed this decision to the Ninth Circuit Court of Appeals.

1983 (August 22) Construction of the Leviathan Mine Pollution Abatement Project was begun to reduce the acid mine drainage into Leviathan Creek, a tributary of Bryant Creek and the Carson River's East Fork. With two winter shutdowns, the project would not be completed until 1985. Though some of the problems encountered during construction went unsolved, the completed project achieved several important objectives that would significantly enhance downstream water quality. For example, infiltration in the pit was reduced, Leviathan Creek was channelized to prevent contact with mining wastes, and acid mine drainage was being stored in evaporation ponds to reduce volumes of such drainage discharged and to coincide discharges with periods of high creek flows. These site improvements were expected to reduce the length of stream impacted and reduce contaminant loads.(210)

1983 (December 19) Alpine Mining Enterprises, the owner of the Leviathan Mine site located in Alpine County, California, deeded the last of 23 patented lode claims and the Leviathan Mill site claim to the State of California. The State Public Works Board had authorized the acquisition of the Leviathan Mine with a resolution dated January 31, 1984, and subsequently transferred jurisdiction of Leviathan Mine to the State Water Resources Control Board in a letter dated August 20, 1984. California would now undertake the task of developing a work program to continue monitoring this contamination site and attempt to improve on-going remediation efforts.(211)

1983 (December 31) USFWS reported that more water was received (496,000 acre-feet) in the Stillwater Wildlife Management Area, located near the mouth of the Carson River, in calendar year 1983 than in any of the previous 38 years.(212) By September 1984, the surface-water altitude in the Carson Sink was 3,876.2 feet MSL, a level probably the highest in more than 100 years (see 1868 entry on the reported "joining" of the Carson and Humboldt sinks). Between July 1984 and February 1985 the lake formed in the Carson Sink inundated about 330 square miles (212,000 acres) to a maximum depth of 12 feet, making it the largest areal extent of any water body in the State of Nevada.(213) By late 1986, the subsequent effects of these inflows, which were more than eight times normal, along with high constituent levels and dissolved solids (salts), freezing weather, and rapid evaporation, combined to wreck havoc on fish and wildlife in this area.

freshwater sloughs and marshes to brackish-water marshes and alkali flats. Each habitat hosts a unique assemblage of plants and invertebrates, which in turn attracts more than 160 bird species and many other animals.(261) Due to the frequently poor quality of waters entering this area, consisting primarily return flows from upstream Newlands Project irrigation, the area has experienced periodic fish and wildlife kills.(262)

1991 (April 1) Carson River Basin snow water content recorded at 63 percent of normal. Truckee River Basin snow water content was 60 percent of normal while Lake Tahoe's was 64 percent of normal.(263)

1991 (May) Due to persistent drought conditions and below normal snow water content in the Carson and Truckee River basins, Churchill County commissioners requested Nevada Governor Bob Miller to declare the county a disaster area. Fallon-area farmers would get only 30 percent of their normal water deliveries for this year.(264)

1991 (June) Nevada Governor Bob Miller declared 11 Nevada counties agricultural disaster drought areas. Crop and livestock losses were expected to total approximately $70 million.(265)

1991 (September 4) Following the completion of the Leviathan Mine Pollution Abatement Project in 1985, the U.S. EPA, in conjunction with the California Regional Water Quality Control Board, Lahontan Region, conducted a toxicity study in Leviathan and Bryant creeks. Retention Pond 4 was not spilling into Leviathan Creek at the time of the sampling. Bryant Creek showed neither acute or chronic toxicity below the confluence of Leviathan and Mountaineer creeks, a point approximately two miles below the Leviathan Mine. The study demonstrated that the pollution abatement project substantially reduced the length of downstream waters made toxic by Leviathan Mine discharges during periods when pond overflows do not occur.(266)

1992 (January) The USBR issued its revised *Initial Bench & Bottom Land Map & Criteria* report for the Newlands Project. The report opened with a quote by Professor James N. Luthin of the University of California at Davis, which noted the fallacy in assuming that soils such as those of the Newlands Project, underlain with sandy layers and having been idle for centuries, would be safe from waterlogging (establishment of an artificially high water table).(267) It was noted that the Newlands Project had been hampered by water logging soon after the start of irrigation. The criteria used to classify lands as to either bench or bottom included two aspects: (1) the available water-holding capacity in the top five feet of the soil profile (AWHC5), and (2) the seasonal high water table (SHWT). By this classification system, of the total 73,789 acres recorded as being within the Newlands Project, there existed 64,233 acres of bottom lands (water duty of 3.5 acre-feet per acre per year) and 9,556 acres of bench lands (water duty of 4.5 acre-feet per acre per year).(268)

1992 (April) The De Bruyn report was issued relative to an efficiency study of the Newlands Project and related matters. It was proposed that with upgraded facilities, extensive (and very costly) canal lining, and more precise diversion measuring capabilities, total potential water conservation within the project could total as much as 212,000 acre-feet per year, out of a total annual water diversion of 275,000 acre-feet. It was also estimated that

the restoration of Pyramid Lake and the Lahontan Valley wetlands remained unresolved.(295)

1995 (March 30) After allowing for the filing of comments (January 30, 1995), the EPA issued a Record of Decision (ROD) with respect to the Carson River Mercury Superfund Site. The EPA decided it would remediate five areas through excavation (removal of contaminated soil and backfilling), four of these being in Dayton and one in Silver City. The sixth area, the ditch conveying water from Gold Canyon to the Carson River, was marked for fencing; however, based on concerns raised by the community and the State of Nevada, and given the relatively low levels of mercury concentrations measured in these areas, the EPA decided not to fence the area. However, this area was marked for future sampling and, if necessary, development of a better alternative.(296)

1995 (April 1) A very good year, hydrologically, for the Carson River. The Carson River Basin's snow water content was recorded at 157 percent of normal for this time of year, after only 43 percent of normal in 1994. The Lake Tahoe and Truckee River basins, where flows and storage reservoirs are critical to the hydrology of the lower Carson River Basin, also enjoyed an exceptional water year. The Truckee River Basin's snow water content was measured at 184 percent of normal and Lake Tahoe's snow water content was recorded at 168 percent.(297)

1995 (May 12) The U.S. District Court in Reno, Nevada, heard arguments on the question of whether that court had subject matter jurisdiction and personal jurisdiction to hear the Pyramid Lake Paiute Indian Tribe's petition to declare that certain water rights in both *U.S. v. Alpine Land and Reservoir Company, et al.*, and *U.S. v. Orr Water Ditch Company, et al.*, had been lost through non-perfection, forfeiture, or abandonment. The petition concerned approximately 1,700 respondents with water rights in the Newlands Project: 1,200 respondents as part of the Alpine Land Petition (Carson River); and 500 respondents as part of the Orr Ditch Petition (Truckee River).

1995 (June 28) In biological sampling done at several stream sites in the Bryant Creek and Leviathan Creek (Leviathan Mine) drainage system, it was noted that these streams, which had been exposed to acid mine drainage for over 40 years (1953), showed little if any indication of recovery. Acid pH (ranging from 2 to 3 below the mine), elevated heavy metals, and deposits of ferric hydroxide ("yellowboy"--$Fe(OH)_3$) continued to contaminate this watershed. It was found that on Leviathan Creek and the upper portions of Bryant Creek, contamination by "yellowboy" precipitate was extensive and sediments contained far higher contents of heavy metals including aluminum, arsenic, cadmium, and copper than on the reference stream sites (primarily Mountaineer Creek). Habitat and biological conditions were found to be most degraded below the mine site to between 3.5 and 7.5 miles downstream, where biota began to show signs of recovery (the total distance between the mine and the East Fork of the Carson River is approximately nine miles). It was also found that at times, especially during spring snow-melt runoff, the waters of these streams ran orange with the "yellowboy" ferric hydroxide precipitate, including plumes along the side of the East Carson River receiving inflow from Bryant Creek. Previous studies, e.g., Wilson (1957),(298) Davis (1969),(299) and Hammermeister and Walmsley (1985),(300) showed similar results, indicating that acid mine drainage impacts from Leviathan Mine are chronic and have continued to cause

impaired biological conditions in this watershed with little or no sign of recovery.(301)

1995 (July) A near-record water year of precipitation in the Carson and Truckee River basins did much to recharge groundwater and replenish near-empty reservoirs. Lake Tahoe rose 5.97 feet from its most recent low point on October 31, 1994 of 6,221.01 feet MSL (1.99 feet below its natural rim) to a peak surface elevation of 6,226.99 feet MSL on July 29, 1995 (3.99 feet above its natural rim and 2.11 feet below its maximum allowable elevation of 6,229.1 feet MSL). The total increase in Lake Tahoe's storage was estimated to be 726,410 acre-feet