Lake Tahoe Case Study

Master Bibliography

In the process of data compilation for the assessment of current and historic ecosystem conditions and trends, we compiled a digital bibliography. This was done using the bibliographic database program EndNote 2. There are over 1,200 references in the database and an output file of them follows. The data are also contained in the ~ADDENDUM/~A_C07DAT directory in three formats: EndNote 2 database (LT_BIB.EN2), ASCII text (LT_BIB.TXT), and Microsoft Word 6.0 (LT_BIB.DOC).

Emerald Bay Camp, Lake Tahoe. [San Francisco?, distributed by the Peck-Judah Co.].

(1899). Lake Tahoe miscellany. San Francisco, CA, [A factitious collection with title and numbering supplied by The Bancroft Library, UC Berkeley].: 9 nos. in 1 v.

(1900). Tallac, Lake Tahoe : the summer resort of the world. South Lake Tahoe, CA, [publisher unknown].

(1906). Lake Tahoe, California. San Francisco, CA, Southern Pacific Co.

(1940). Camp Richardson, Lake Tahoe : fun on the beach at Camp Richardson. South Lake Tahoe, CA, Camp Richardson Resort.

(1940s). Lake Tahoe Meeks Bay Resort : an ideal white sand bathing beach on the shore of Meeks Bay. South Lake Tahoe, CA?, Meeks Bay Resort?

(1950). Citizens (Group pictures): P - R. View of family at picnic table. In background, people sunbathing [Zephyr Cove, Lake Tahoe].

(1957). Camino, Placerville and Lake Tahoe Railroad, and the Michigan-California Lumber Company. Western Railroader. San Mateo, CA. 21: 15 p.

(1959). Folder of newspaper clippings and miscellany on water quality and pollution control in San Francisco Bay, Sacramento-San Joaquin Delta, Lake Tahoe, and Klamath River Basin.

(1960). Photographs of the Lake Tahoe Region. [Photographs apparently for publication project of the Sierra Club documenting the human impact on the Lake Tahoe Region].

(1969). Lake Eutrophication--Water Pollution Causes, Effects and Control. 'Save the Lakes Symposium', Detroit Lakes, Minnesota, Water Resources Research Center, University of Minnesota, Minneapolis, MN.

Papers presented at 'save the lakes symposium' held at detroit lakes, minnesota, august 18-19, 1969, focused on lake pollution and eutrophication: what it is, what causes it, the technology needed and available to control it, and the type of community action that can and must be taken for effective control and improvement. the purpose is to make facts available to the public and to clarify the cooperative role of citizens and government. the life cycle of a lake is described. improved methods of lake management may be uncovered in fundamental studies dealing with present sources of pollution, municipal sewage and diffuse sources, such as agricultural operations, fallout and washout from air, drainage, and the technical problems involved. the history and diversion of wastes at madison, wisconsin, lake tahoe and lake washington is described. besides the scientific areas, the major problems are lack of political leadership necessary for proper evaluation of water quality and providing financing necessary for solution. the geological history of the detroit lakes is given. there are many means of alleviating eutrophication: ecological control, biological control, chemical control, and mechanical control.

(1970). Map of South Lake Tahoe and vicinity. California, s.n.

(1971). New Sewage Disposal System At Tahoe City. Water And Sewage Works 118(1): 6-8.

The 1968 california's law requiring the exportation of all sewage from the lake tahoe basin by january 1, 1972 inspired tahoe city to come up with this imaginative disposal system. it utilizes three high speed pumps to lift the effluent 1400 ft. to the 'cinder cone' disposal area. this effluent is the outcome of a primary treatment plant which chlorinates and clarifies the sewage. the sludge cake is trucked 20 miles away and buried. the effluent flows to well compacted holding ponds and is then lifted to the 'sponge like', trench laced disposal area. various studies were carried out and are still being conducted on the area and the draining springs. so far an increase of volume was detected with no adverse effects. (rayyan-texas)

(1973). Limnology of Shallow Waters. Symposia Biologica Hungarica, Tihany, Hungary, Akademiai Kiado: Budapest, Hungary.

Production processes in shallow water ecosystems are examined. The 1st group of papers focuses on primary production. Production was studied in Lake Balaton (Hungary), Lake Tahoe (USA), Lake Warniak (Poland), the Masurian lakes of Poland, Lake Szelid (Hungary) and the lake at Palic (Yugoslavia). The 2nd group of articles study secondary production, including the effect of fluctuating temperatures on palnkton rotifers; zooplankton biomass; characteristics of bacteria and plankton in Lake Castoria (Greece); macrofaunal biomass in Lake Velence (Hungary); and participation of bacteria in organic production in Lake Ohrid (Yugoslavia). Effects of pollution and protection of water ecosystems are considered in many articles.--Copyright 1975, Biological Abstracts, Inc.

(1975). Tahoe, then & now--a look back today. Tahoe Daily Tribune. South Lake Tahoe, CA, Tahoe Daily Tribune: ca. 50 pages in various paginations.

(1975). Tahoe--then & now : the Tribune today turns back the pages of history. Tahoe Daily Tribune. South Lake Tahoe, CA, Tahoe Daily Tribune: ca. 50 pages in various paginations.

(1975). . Lake Tahoe Research Seminar, Sands Vagabond Convention Center, South Lake Tahoe, California, NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VA.

Lake tahoe research seminars are held quarterly to inform the public and interested researchers of current research projects and to develop lines of communication among those interested and involved in solving the problems of the tahoe basin. topics discussed at the research seminar ii (september 27, 1974) included: 'preliminary study of experimental system for ammonia removal at south lake tahoe advanced wastewater treatment plant,' 'the scientist and decision-making at lake tahoe,' 'conifer damage and death associated with the use of highway deicing salt in the lake tahoe basin of california and nevada,' 'air quality of the tahoe basin,' 'weather modification in the lake tahoe basin,' and 'erodibility of tahoe soils.'

(1975). Wastewater Treatment Process Sends Nutrients Back to the Land. Engineering News Record 195(22): 18.

A 4.8 mgd advanced waste water treatment plant is under construction near north lake tahoe, california, and will be the first to include the ammonia removal and recovery process (arrp). the process begins with a series of selective ion exchange beds that follow activated carbon treatment and includes closed-air towers and ducts in its stripping and absorption modules. as influent passes over 4-ft deep beds of clinoptilolite, the ammonium ions (concentrated at about 15 to 20 ppm) will be adsorbed. the remaining effluent will then pass through an 18-inch diameter pipe for chlorination and disposal. while all the waste water passes over the clinoptilolite, only the spent regenerant, enriched to an ammonium concentration of 300 ppm, is pumped to the stripping towers. there, sodium hydroxide converts the ammonium ions to ammonia gas, which is ducted to a smaller absorption tower and dissolved and concentrated. the liquid is pumped to storage tanks when the ammonium sulfate concentration reaches 40%. the solution leaving the absorption tower contains about 9% available nitrogen, suitable for direct irrigation by farmers or for blending by commercial fertilizer manufacturers. (kramer-firl)

(1976). Land use plan, Truckee-Little Truckee Rivers Planning Unit, Dept. of Agriculture, Forest Service, Tahoe National Forest, Toiyabe National Forest.

(1976). A salute to Tahoe's pioneers inside today. Tahoe Daily Tribune. South Lake Tahoe, CA, Tahoe Daily Tribune: ca. 50 pages in various paginations.

(1976). Tahoe ... then and now : a look at Tahoe's historical past in today's Tribune. Tahoe Daily Tribune. South Lake Tahoe, CA, Tahoe Daily Tribune: ca. 50 pages in various paginations.

(1976). Converting Sewage Into Savings. Chemical Week 118(2): 47.

Producing ammonium sulfate fertilizer will help defray the operating costs of a new tertiary treatment plant being built on lake tahoe. the ammonia removal and recovery process produces 40% concentration ammonium sulfate solution from the regeneration stream from the plant's ammonia-stripping ion-exchange beds. the solution contains about 9% available nitrogen, suitable for direct irrigation of sprinkler system application by farmers or for blending by commercial fertilizer manufacturers into ammonium sulfate. the north lake tahoe plant will produce between 2.5 and 5 tons of fertilizer per day. the cost of installing the process is about 10% of the total construction cost of the new plant, but the designers say the sale of fertilizer materials will cut operating expenses by 60%. ammonia is removed from the waste stream by passing over a bed of clinoptilolite. the bed is then flushed with a concentrated sodium chloride solution which 'bumps' the ammonia ions into a regeneration solution. with an ammonium concentration of about 300 ppm, the solution is pumped into clarifiers where sodium hydroxide is added to convert the ammonium ions into ammonia gas. in an absorption tower the gas is converted into a 40% solution of ammonium sulfate. the ammonia removal and recovery process is part of a $20 million waste treatment system that includes pure-oxygen-activated sludge treatment, two-stage lime addition for the removal of phosphorus, dual-media filtration, activated carbon adsorption, ion-exchange for ammonia removal, and chlorination for disinfection. (loustau-firl)

(1977). Final Report on the Pyramid Lake Pilot Project, 1970-1975, Volume 2, Appendices, Nevada Univ. System, Reno. Lab. of Atmospheric Physics.

The fourteen appendices are entitled: Rare and Endangered Wildlife Species of the Lake Tahoe Region; Remote Controlled Mobile AgI Aerosol Generator; Observed or Actual Storm Periods, 1972-75; Typical Synoptic Examples of Sierra Nevada Storms; Total Seasonal Precipitation October 1 to May 31; Control Center Operations Summaries; Daily Record of Weather Modification Activities; Record Structure; Control Center Data; Non-Recording (True) Precipitation Measurements; Major Computer Programs Developed for Data Acquisition and Processing; Data Set 5; Precipitation Amounts for 11 Selected Stations; Data as Used in Analysis (d); and Sample Teletype Messages as Transmitted Between Desert Research Institute and Berkeley Statistical Laboratory.

(1978). Project Skywater: Skywater Conference X Report. The Sierra Cooperative Pilot Project Design. Skywater X Conference, South Lake Tahoe, CA, North American Weather Consultants, Goleta, CA.

The proceedings from the Skywater X Conference are reported. The conference was sponsored by the Bureau of Reclamation to discuss the status of preliminary studies and design work performed for the Sierra Cooperative Pilot Project (SCPP), a part of the Skywater Program. The overall project goal is the development of an effective weather modification technology, that is scientifically and socially acceptable, for precipitation management to serve a portion of the country's water needs. SCPP is studying the physical processes of precipitation formation to identify those conditions that provide the best potential for winter precipitation augmentation in the Sierra Nevada. Objectives include: improving current operational cloud seeding methods, transferring the techniques and results to concerned groups, and enhancing public confidence in their use. Topics of discussion at the conference included: environmental impact, the Sierra Ecology Project, preliminary project design, meteorological support measurements, and radar and aircraft data collection and analysis. Detailed presentation were given on the proposed design for SCPP continuation including extended areas of effect, tracers and contamination, and hypotheses.

(1978). Sewerage Study Hits South Tahoe AWT Costs. Engineering News Record 201(4): 11.

South Lake Tahoe, Nevada, has been advised by the engineering firm of Culp, Wesner, Culp, of El Dorado, California, to convert from advanced waste water treatment to secondary tratment with irrigation disposal. Designs for expanding the 7.5 mgd tertiary treatment plant to 10 mgd demonstrated that secondary treatment with land application would require $20 million in capital expenditures and $1.4 million annually for operation and maintenance. This expense represents an annual savings of 27% plus an additional 50% energy consumption reduction. Nitrogen removal sould require $32 million in capital expenditures and $2.7 million for maintenance; expansion to nitrification would require capital expenditure of $25 million with annual maintenance costs of $2.5 million. A 1 mgd reverse osmosis water reclamation demonstration plant in addition to secondary treatment and land application was also considered; capital and operating costs were estimated at $2.5 million, respectively. (Lisk-FIRL)

(1979). Nationalizing Lake Tahoe. Santa Clara Law Review 19(3): 681-717.

As a result of urbanization in the Northern California and Northwestern Nevada area, concern arose for the preservation of the Lake Tahoe Basin area as a beautiful recreation attraction. In response to this concern, a planning board, the Tahoe Regional Planning Agency (TRPA), was created pursuant to an agreement between California and Nevada with Congressional approval. Recently, the TRPA's effectiveness has been questioned. Any resolution of the problem has been stymied due to the disagreement between the two states' legislatures. Federal intervention has been threatened to resolve the dispute. Various methods of federal intervention are examined. The creation of a national recreation area is stressed with the imposition of federal land use controls as a means to protect the basin, in the absence of effective state land management controls. There is a wealth of federal power available to affect the area's growth. Apparently, Congress has the constitutional power to impose direct federal land use control to protect any federal land. At the very least, a congressional declaration of the national interest in Lake Tahoe should be made.

(1981). Lake Tahoe Preservation Bill Enacted. National Parks 55(2): 23.

Legislation was enacted to preserve Lake Tahoe (PL96-586) during the closing days of the 96th Congress. The bill provided for the sale of Bureau of Land Management property around Las Vegas, with 85% of the proceeds from the sales to be used to buy land in the Lake Tahoe Basin. The bill was weakened by two amendments. The first removed the Secretary of Agriculture's authority to acquire lands to protect air and visual qualities. The second required that before any land could be condemned, the Tahoe Regional Planning Agency would have to concur. The bill is a positive step toward resolving the lake's problems. (Small-FRC)

(1981). Tahoe-Truckee Water Reclamation Plant, California. Journal of the Water Pollution Control Federation 53(3): 398-400.

The Tahoe-Truckee Sanitation Agency was formed in May, 1972, to implement a California State law which required exportation of all wastewater from the Lake Tahoe Basin. The Agency was charged with planning, designing, and constructing a regional system for transporting all wastewater from areas on the California shore of Lake Tahoe to a regional facility. The treatment facility, which receives only domestic and commercial wastewaters, provides primary treatment, pure oxygen activated sludge, lime treatment with two-stage recarbonation, dual media filtration, carbon adsorption, and ion exchange for ammonia removal and recovery. While effluent quality was relatively good from the start of operations in February, 1978, the quality gradually improved during the initial months of operation. Fairly stable operation was achieved between July and December, 1978, with consistent production of effluent of excellent quality. All of the very stringent discharge requirements were met except those for total dissolved solids and chloride concentration. Monitoring of the Truckee River, into which the effluent is discharged, has demonstrated that the plant is achieving its primary goals of returning reclaimed water to the basin while maintaining exceptional water quality. Construction costs for the plant were high due to the location. Operation and maintenance costs were about $450 per 1000 cubic meters during the first year of operation. Methods of reducing operating costs and/or improving plant performance are being investigated. (Carroll-FRC)

(1991). Battle rages over Lake Tahoe dredging. World Dredg. Min. Constr. 27(6): 16.

An environmental battle is brewing at Lake Tahoe in the California Sierra-Nevada, over whether or not marina operators should be allowed to dredge their channels to counter-act lower lake levels brought on by five years of drought. With lake level at 6,222.40 feet above sea level (as of May 13), down from a previous average of 6,226, 57 marinas have naturally been affected. The Lake Tahoe Marina Association, an organization representing the area's marinas, has proposed dredging to remedy the current situation.

Abbott, M. R., T. M. Powell, et al. (1980). The effects of transect direction on observed spatial patterns of chlorophyll in Lake Tahoe. Limnol. Oceanogr. 25(3): 534-537.

Horizontal transects of fluorescence measurements have been used extensively to investigate phytoplankton patchiness. Variance spectra have been calculated from these data, thus quantifying spatial heterogeneity as a function of length scale. Analysis of such fieldwork and associated theoretical investigations is based on the assumption that horizontal patchiness is isotropic. Three transects done in Lake Tahoe (California-Nevada) in different directions on the same day resulted in variance spectra that were significantly different from each other. The possibility of windrows appears consistent with the spectra. Although the exact cause of the differences is unclear, the results do violate the assumption of isotropic horizontal phytoplankton patterns.

Abbott, M. R., T. M. Powell, et al. (1982). The relationship of environmental variability to the spatial patterns of phytoplankton biomass in Lake Tahoe. J. Plankton Res 4(4): 927-942.

Horizontal transect measuring phytoplankton biomass and temperature were made in Lake Tahoe in the nearshore epilimnion in 1976 and 1977, near the deep chlorophyll maximum in midlake in 1977, and in the deep thermocline in 1976. Variance spectra from these transects indicate that large length scale patchiness depends on large-scale habitat variability, manifested as nitrate patchiness, caused by stream inflow in the nearshore epilimnion and by differential transport processes in the deeper water.

Abbott, M. R., P. J. Richerson, et al. (1982). In situ Response of Phytoplankton Fluorescence to Rapid Variations in Light. Limnol. Oceanogr. 27(2): 218-225.

Phytoplankton chlorophyll a fluorescence responded to rapid fluctuations in light intensity in Lake Tahoe at three depths: 10, 35, and 60 m. Fluorescence yield was negatively correlated with surface irradiance at all depths, but there was a strong depth dependence in the intensity of this response. Phytoplankton at 35 m reacted more strongly to fluctuations than those at 10 or 60 m and therefore could show a noticeable response to more rapid variations. This may have been due to near-optimal levels at 35 m, light inhibition at 10 m, and light limitation at 60 m.

Abbott, M. R., K. L. Denman, et al. (1984). Mixing and the dynamics of the deep chorophyll maximum in Lake Tahoe. Limnol. Oceanogr. 29(4): 862-878.

Chlorophyll-temperature profiles were measured across Lake Tahoe about every 10 days from April through July 1980. Analysis of the 123 profiles and associated productivity and nutrient data identified three important processes in the formation and dynamics of the deep chlorophyll maximum (DCM): turbulent diffusion, nutrient supply rate, and light availability. Seasonal variation in these three processes resulted in three regimes: a diffusion-dominated regime with a weak DCM, a variable-mixing regime with a pronounced, nutrient supply-dominated DCM, and a stable regime with a deep, moderate light availability-dominated DCM.

Adam, D. P. (1988). Correlations of the Clear Lake, California, Core CL-73-4 Pollen Sequence with Other Long Climate Records. Late Quaternary Climate, Tectonism, Sedimentation in Clear Lake, Northern California Coasts. Geological Society of America, Boulder, CO 1988: 81-95.

Clear Lake core CL-73-4 records fluctuating abundances of oak pollen during the last glacial/interglacial cycle that correlate remarkably well with fluctuations in extensive pollen records from Grande Pile in France and Tenaghi Phillipon in Macedonia, as well as with the oxygen-isotope records from deep-sea cores. The record correlates less closely with other extensive records, including those for Lake Biwa, Japan, and Sabana de Bogota, Colombia. Correlation of the record with the early Weichselian climatic sequence of northwestern Europe is excellent; both sequences show a series of five cryomer/thermomer fluctuations between the end of the last interglaciation (Eemian/Konocti, which is correlated with the end of marine oxygen-isotope Stage 5e) and the onset of full continental glaciation at the end of Stage 5a. The fluctuations correlate both in their relative durations and in their relative amplitudes. The Clear Lake record also correlates with various North American sequences. The Sangamon interval of the mid-continent area correlates with the entire Konocti thermomer and early Pomo cryomer interval, and correlations with the glacial sequences of the Sierra Nevada and Rocky Mountains suggest that some Tahoe, Mono Basin, and Bull Lake moraines may be of Sangamon age. The proposed correlations of the Clear Lake record with other sequences have not been proved. The overall impression, however, is one of remarkable consistency, and it is likely that further work will provide more evidence in support of the sequence of five cryomer/thermomer cycles between the end of the last interglacial period and the onset of full glacial conditions about 70,000 years ago. This sequence is much more complicated than has been generally recognized, although parts of it have been known for many years. The sequence, which has now been found in several widely separated areas, should no longer be ignored. (See also W89-10137) (Author's abstract)

Adams, V. D., M. L. Cleave, et al. (1983). Indian Creek Reservoir sediments. Water Res 17(11): 1709-1712.

Indian Creek Reservoir (ICR) was originally designed to hold the effluent from the South Tahoe Public Utility District (STPUD) advanced wastewater treatment plant during the winter months and to release the impounded water during the irrigation season. The original use of the reservoir has been modified extensively, and in addition to the agricultural uses, the reservoir has become a popular recreational facility. Changes in the use of the reservoir have resulted in changes in the standards imposed upon the STPUD and ICR. Because of the unique nature of the influent to ICR, unusual claims are frequently made about the characteristics of the water and sediments. Sediment samples collected from four diverse sites in the reservoir were analysed for phosphorus, carbon, nitrogen, volatile content, and chlorophyll content. The results of the analyses showed that the sediments are typical of those found in any eutrophic lake or reservoir.

Alberts, A. (1990). Organic Superconductors In South Lake Tahoe Jt Advanced Materials. 2(12): 609-611.

Allen, A. W. (1978). Sierras Boast Most Modern Treatment Plant. Western Construction 53(4): 22-24.

A $20 million tertiary treatment plant in California will treat 4.85 mgd of wastes from the Lake Tahoe Basin area, Truckee, and several other areas. The effluent receives conventional secondary treatment by primary and secondary settling with oxidation. Phosphorus and some suspended solids are then precipitated with lime, followed by polymer dosage in rapix-mix and flocculation tanks. The effluent is then injected with carbon dioxide gas in recarbonation basins for calcium removal and pH adjustment. The treated effluent is pumped to two ballast tanks with a total volume of 1.2 million gallons before the wastes are filtered, adsorbed on activated carbon towers, and stripped of ammonia on ion exchange beds and three ammonia removal and recovery modules for ammonium sulfate fertilizer production. The effluent is discharged into a series of subsurface ditches for percolation through the glacial soil into the Truckee River. Sludge is thickened, dewatered, conditioned with lime and polymers, filtered on a horizontal press operated by 3 variable speed pumps, and disposed of in a landfill. Carbon dioxide is generated on-site by compre ssed gas from the digester boilers and by carbon dioxide stripping during oxygenation of the wastes; supplementary liquid carbon dioxide is stored on-site. Oxygen is also generated on-side by Union Carbide's Pressure-Swing Adsorption process. The plant design includes enclosed piping and electrical corridors which provide passage from one building to another and a complete laboratory. (Lisk-FIRL)

Aloi, J. E. (1986). The Ecology and Primary Productivity Of the Eulittoral Epilithon Community: Lake Tahoe, California-Nevada (Algae, Periphyton), University Of California, Davis (0029).

This dissertation is an investigation into the factors affecting the community dynamics of an epilithic diatom community in Lake Tahoe. Although Lake Tahoe is characterized by extremely low phytoplankton primary productivity, the productivity of the eulittoral (0-2 m) periphyton community is much higher than would be expected in this extremely oligotrophic lake. The eulittoral periphyton community is structured by a stalked diatom, Gomphoneis herculeana, and rosettes of Synedra ulna, with small diatoms living within this matrix. Growth commences in this highly seasonal zone during late winter, and reaches maximal biomass and primary productivity during the spring. Following this peak, most of the algal mat sloughs off, leaving only a small understory. This seasonal cycle of the eulittoral epilithon was monitored through three growing seasons. Biomass was measured once or twice per month at 12-17 sites. Eulittoral primary productivity was also measured monthly at one site, using in situ C(‘14) methodology. Significant and consistent differences in epilithon biomass were found between sites adjacent to land-based development and sites far from disturbance. To determine the physical and chemical parameters responsible for both the seasonal periodicity and the site-to-site differences in epilithon biomass and primary productivity, field measurements were combined with laboratory experiments. These experiments indicated that the diatom community is adapted for maximal productivity under the wide variety of light intensities and temperatures occurring throughout the year. Although nutrient additions did not significantly stimulate primary productivity in short term experiments, there was a close correlation between nutrient levels in the lake and periphyton growth rate. The site-specific nutrient loading and associated periphyton biomass evidences that nutrient stimulation acts to increase periphyton productivity and biomass over a longer time scale (perhaps up to a month). Finally, in situ methods of measuring periphyton biomass and primary productivity were compared to traditional methods using artificial substrates. These experiments indicate that in situ methods are preferable for the naturally occurring periphyton community. However, artificial substrates may be more appropriate to detect sources of local enrichment particularly where the natural substrate is not uniform. Order No: AAC 1329334 ProQuest - Dissertation Abstracts

Aloi, J. E., S. L. Loeb, et al. (1988). Temporal and Spatial Variability of the Eulittoral Epilithic Periphyton, Lake Tahoe, California-Nevada. Journal of Freshwater Ecology JFREDW 4(3): 401-410.

The temporal and spatial variability of an epilithic diatom community in the eulittoral zone of Lake Tahoe was monitored for three years. Lake Tahoe is a deep, subalpine lake in the Sierra Nevada Mountains of California and Nevada. Although the lake is considered to be oligotrophic, the productivity of the eulittoral (0-2 m) epilithic periphyton is very high, reaching a peak biomass at one site of 58 g C/sq m in spring of 1985. More typical annual maxima were in the range of 15-25 g C/sq m at more productive sites. The epilithon shows great temporal and spatial variation in biomass. To quantify this variability, total particulate carbon was measured monthly or biweekly at 8 sites between 1983 and 1985. Annual regrowth of the eulittoral epilithon began during late winter, and reached maximal biomass during the spring and early summer months. Following this peak, most of the algal mat sloughed, leaving only a small understory. In addition, significant and consistent differences in epilithon biomass were found between sites adjacent to land-based development and disturbance, and sites far from disturbance. Several sites adjacent to disturbed areas had up to 20 times greater biomass than sites far removed from disturbance. (Author's abstract)

Alverson, F. B. (1900). The Brockway Hotel, Lake Tahoe, California. Brockway, CA, [publisher unknown]: 1 sheet.

Anderson, S. B. and J. L. McLain (1987). Successful erosion control combines engineering and vegetation expertise at the Ridge Tahoe, Nevada. Erosion control : your're gambling without it, Conference XVIII International Erosion Control Association, Reno, NV, International Erosion Control Association, Pinole, CA.

Antonucci, D. C. and F. D. Schaumburg (1975). Environmental Effects Of Advanced Wastewater Treatment At South Lake Tahoe. Journal Water Pollution Control Federation 47(11): 2694-2701.

The results of an assessment of direct and indirect energy requirements and environmental impacts associated with the operation of the full-scale advanced waste water treatment plant at south lake tahoe, california, are reviewed. although the installation effectively removes organic materials and nutrients from domestic waste water, it requires large amounts of energy and treatment chemicals. a number of contaminants are released on land and in the air. it is impossible to tell, despite quantitative data on energy and materials consumption and on contaminant emissions, if advanced waste treatment processes significantly reduce the net level of degradation in the total environment. a common denominator should be found with which different types and quantities of pollutants released in the environment could be quantitatively compared. (waltner-firl)

Arnold, W., J. W. Young, et al. (1972). Constructing nonlinear dynamic models for socio-environmental decisionmaking: a methodology. Davis, CA, University of California, Davis.

A methodology for the development of socioeconomic system submodels which could be integrated into environmental impact studies is presented. the so-called method of 'quasilinearization' is incorporated into the model building procedure in order to obtain values of unknown and important parameters. as an example illustrating application of techniques proposed in the model construction methodology, the socioeconomic system of the lake tahoe basin is modeled and unknown parameters in the model identified. it is concluded that social systems experts with little or no mathematical background can be included in the model building process, parameter identification schemes can be employed to determine selected model parameters, re-evaluation of the model after data collection is critical, and methods used for interpretation of some data is a major weakness in the present version of the model. some topics suggested for future study, based on this research, include integration of the socioeconomic model with environmental submodels to determine the impact of urbanization on the environment, improvement of the quasilinearization scheme, and the development of numerical techniques to reduce long computer run times for systems of large appended state vectors using quasilinearization.

Atassi, M. Z. and H. Bachrach (1985). Immunobiology of proteins and peptides III : viral and bacterial antigens. Third International Symposium on the Immunobiology of Proteins and Peptides, Tahoe City, CA, Plenum Press, New York, NY.

Ayer, J. (1970). Water Quality Control At Lake Tahoe: Dissertation On Grasshopper Soup. California Law Review 58(6): 1273-1331.

Tahoe is an oligotrophic lake; its attraction as a resort, however, endangers the water quality of the lake. agencies of both nevada and california are involved in preventing eutrophication. the federal government is also involved to a limited extent. inadequate sewage disposal has proven to be the most serious threat to lake tahoe. attempts to create a combined local, state, and federal sewage disposal effort have been unsuccessful, although all agreed that treated sewage must somehow be exported from the lake tahoe area. as a result, parallel sewage export lines exist. the major difficulty with sewage export has been financing; ad valorem taxation has provided insufficient revenue to meet the needs. sedimentation also endangers the water quality of lake tahoe. the sedimentation problem may, however, be alleviated through a soil conservation program. other threats to the water quality of the lake are shore-line construction, disposal of solid wastes, and excessive enrichment from use of fertilizer in the surrounding area. various frustrated attempts to export water from lake tahoe have also threatened water quality. one plan advocates limiting the population and commercial growth of the tahoe area to prevent eutrophication. all plans agree, however, that some sort of regional approach is necessary to return lake tahoe's oligotrophic state. (hart-florida)

Azuma, D. L. (1985). Estimating Snow Load in California for Three Recurrence Intervals. Research Note PSW 379(6): 1.

A key to designing facilities in snowbound areas is knowing what the expected snow load levels are for given recurrence intervals. In California, information about snow load is available only for the Lake Tahoe Basin. About 280 snow courses in the State were analyzed, and snow load estimated and related to elevation on a river basin and statewide level. The tabulated snow load was estimated for three recurrence intervals - 25, 50, and 100 years - for each snow course. No relationship was found between elevation and snow load on either a statewide or river basin level. (Author's abstract)

Baccus, D. and Lake Tahoe Environmental Education Consortium (1974). Species list of the Lake Tahoe Basin, [publisher unknown].

Bailey, R. G. (1971). Geomorphic Analysis of the Lake Tahoe Basin, Tahoe Regional Planning Agency and USDA Forest Service.

Bailey, R. G., United States Forest Service, et al. (1974). Land-capability classification of the Lake Tahoe Basin, California-Nevada : a guide for planning. South Lake Tahoe, CA, U.S. Forest Service.

Since the late 1950's the lake tahoe basin, covering 500 square miles, has been subjected to rapid development which has been responsible for many improper land development procedures, including failure to recognize hydrologic and topographic limitations, unnecessary destruction of vegetal cover, realignment and pollution of streams, encroachment on flood plains, and disruption of drainage. this study classified the land according to 'land tolerance' as a measure of capability which is defined as a level of use an area can tolerate without sustaining permanent damage through erosion and other causes. the capability classes are estimated by the degree to which potential hazards arising from improper use are absent. principal factors used in distinguishing the seven land capability ranks shown on the final map were: soil type (along with erosion hazards, hydrologic-soil group, soil drainage and rockiness and stoniness); and geomorphic setting including 6 groups: glaciated granitic uplands, glaciated volcanic flowlands, streamcut granitic mountain slopes, streamcut volcanic flowlands, depositional lands, and oversteeped slopes. the 7 classes fall into 3 general categories each with implications for land use: high hazard lands, lands that should remain in their natural condition; moderate hazard lands, lands that are permissive to certain uses but not others; and low hazard lands, lands that are most tolerant to urban-type uses. in addition each of the classes is given a single numerical index indicating the percentage, ranging from 1 to 30 percent, of the land which can be used for impervious cover if environmental balance is to be maintained.

Baker, J. A., W. E. Davis, et al. (1976). Siltation evaluation investigation for the Lake Tahoe basin, California Regional Water Quality Control Board, Sacramento, CA.

Baldwin, E. J., R. H. Lloyd, et al. (1892). Elias Jackson Baldwin papers, 1892-1900, (Includes two letters to his attorney, Reuben H. Lloyd (one concerning proposed sale of Lake Tahoe property) and printed copy of map of Santa Anita Rancho.).

Bankert, S. F., S. D. Bloom, et al. (1973). Rapid Determination Of Very Low Nitrogen Levels In Water. Nature 242(5395): 270-271.

A new approach to n-14 assay is associated with the evaporated detritus of less than 4 ml of water. this method, termed charge particle (nuclear) activation analysis (cpaa), has an activation and subsequent decay of minus 5.9 mev and 71.0 s, respectively. the presence of nitrogen is measured by counting the number of 2.31 mev gamma rays emitted in the decay reaction. the present overall accuracy is about plus or minus 25 percent at concentrations greater than 20 mg/kg; the test is sensitive down to 20 mg/kg. the testing time per sample is about 3 min without any destruction of the sample. the method has been applied to water samples from lake tahoe, the sacramento river, municipal wells, and public drinking fountains. (holoman-battelle)

Barker, P. F., United States Lake Tahoe Basin Management Unit, et al. (1988). Final environment impact statement, Lake Tahoe Basin Management Unit : forest land and resource management plan : El Dorado, Placer, and Alpine counties, California [and] Washoe and Douglas counties and Carson City rural area, Nevada, United States Department of Agriculture, Forest Service, Pacific Southwest Region, Berkeley, CA.

Barone, J. B., University of California - Davis Crocker Nuclear Laboratory Air Quality Group, et al. (1979). Further investigation of air quality in the Lake Tahoe basin : final report to the California Air Resources Board on contract no. A6-219-30, University of California - Davis Crocker Nuclear Laboratory Air Quality Group, Davis, CA.

Barshinger, R. (1992). How Not to Land At Lake Tahoe. American Mathematical Monthly 99(5): 453-455.

Bartlett, L. and E. G. Schmiedel (1909). Lake Tahoe water level.

Bartlett, L. (1931). Papers, bulk 1931-1945, (Lawyer and mayor of Berkeley, Calif. Correspondence, reports, documents, and memoranda, relating to California's Central Valley Project, Lake Tahoe, East Bay Municipal Utilities District, Pacific Gas and Electric Company, and public water and power supply system for other California municipalities.).

Barton, A. M. and California-Nevada Interstate Compact Commission (1900). Lake Tahoe water levels and monthly discharge totals, California-Nevada Interstate Compact Commission.

Barton, A. M. and Lake Tahoe Interstate Water Conference Committee (1952). Preliminary report, issued as a public service for the information of interested Tahoe property owners in the states of California and Nevada. Sacramento, CA, Lake Tahoe Interstate Water Conference Committee: 17 leaves.

Barton, A. M. and California-Nevada Interstate Compact Commission (1957). Your stake in the water problems of Lake Tahoe, California-Nevada Interstate Compact Commission.

Bateman, R. L., A. B. Cunningham, et al. (1974). Arid Basin Management Model With Concurrent Quality and Flow Constraints - Phase I, University of Nevada -Reno, Center for Water Resources Research.

Aim is development of an inorganic water quality-flow management model in which both water supply and quality criteria are considered for formulation of operating rules. truckee-carson system of northwest nevada is being used as a prototype. evaluation of flow and quality data show that the carson system is generally amenable to application of the type of inorganic quality-simulation model previously developed on the tahoe-truckee portion of the truckee-carson system. preliminary predictive relations of the type utilized in the quality simulation model are developed for several sites within carson system. problems encountered in development of sound predictive relations in river reaches where intensive irrigated agriculture is practiced are discussed. results of an attempt to improve stochastic generation of flows byincorporating responses which may be attributable to long-term systematic climatic behavior are reported. tentative correlation is made between historic annual streamflow and tree growth. results of this and previous work indicate that final correlations (gamma values) can be expected to be on the order of 0.7 to 0.8.

Baum, F. G. (1908). California-Nevada Electric Power Company. San Francisco, CA, [publisher unknown]: 1 v.

Baxter, L. (1974). Regional politics and the challenge of environmental planning. Davis, CA, Institute of Governmental Affairs, University of California, Davis.

Beauchamp, D. A., B. C. Allen, et al. (1992). Lake trout spawning in Lake Tahoe: Egg incubation in deepwater macrophyte beds. N. Am. J. Fish. Manage. 12(3): 442-449.

Although most populations of lake trout Salvelinus namaycush spawn over rocky shoals, use of these substrates by lake trout has not yet been found in Lake Tahoe. Large cobble substrate exists at depths < 20 m and steep, fractured, rocky substrate can be found in isolated areas from the surface down to at least 100 m. At least a portion of the population spawns on deepwater mounds (40-60 m deep) over beds of the macrophyte Chara delicatula . This is the first known report of lake trout spawning over macrophyte beds. This population may have originated from a deep-spawning stock and that the macrophyte beds provide some of the best deepwater incubation habitat in the lake. Although egg predation by intermediate sizes of lake trout was substantial, the mounds appeared to be a refuge from the potentially more effective invertebrate and small vertebrate egg predators. The oxygen and temperature regime within the macrophytes was suitable for egg development, and the eggs that infiltrated deeply among the plant strands were anchored against currents and were presumably protected from further predation by lake trout.

Beauchamp, D. A., P. E. Budy, et al. (1994). Timing, Distribution, and Abundance Of Kokanees Spawning In a Lake Tahoe. Great Basin Naturalist 54(2): 130-141.

Bell, J. (1988). Tahoe's gilded age, 1890-1917 : a photographic portfolio. Auburn, CA, El Toyon, Ltd.

Bell, J. W., R. J. Watters, et al. (1989). Engineering Geology of the Reno-Lake Tahoe Area, Nevada. Engineering Geology of Western United States Urban Centers. Los Angeles, California to Denver, Colorado, June.

Reno is located at the western edge of the Great Basin province along the foot of the Sierra Nevada. The varied geology, hydrology, and physiography of the area contribute to a wide range of engineering geologic conditions which can significantly influence land-use considerations in this rapidly growing urban area. Although there are numerous engineering geology topics of interest-including expansive soils and groundwater resources--this study focuses on several of the more important, and interesting, aspects: earthquake hazards of the Reno-Carson City urban corridor; slope stability characteristics of the Reno-Lake Tahoe area, including the 1983 landslide and associated waterflood at Slide Mountain; and surface runoff characteristics in the Lake Tahoe area. Five principal creeks in the Incline Village area, First Creek, Second Creek, Wood Creek, Third Creek, and Incline Creek have a cumulative drainage of 46 sq km and furnish a yearly average of about 18.5 cu hectometers of runoff to Lake Tahoe. For the 4 year period 1970-1973, annual runoff from the individual streams ranged from 0.567 to 8.717 cu hectometers, and discharges ranged from 0.0057 to 3.1 cu m/sec. During the 4 years, the five streams delivered about 28,000 metric tons of sediment, which averaged about 75% gravel and sand, 15% silt, and 10% clay, to the lake. Annual quantities ranged from 1,360 to 9,980 tons. The 1982/83 winter was noted for a record snow pack in the Sierra Nevada. At mid-day of May 30, 1983, a large mass of rock detached from the southeast side of Slide Mountain, NV. The lowest part of the slide entered Upper Price Lake, a small reservoir. The sudden movement of landslide debris into the lake created a surge of water that rapidly exited the pond and flowed into Lower Price Lake. This wave of water immediately flushed Lower Price Lake, and the cumulative contents of both lakes, about 0.025-0.037 cu hectometers of muddy water, rushed down the steep canyon of Ophir Creek below the lakes. After about 8-9 minutes of travel, this debris wave, with a leading edge about 9 m high, reached the canyon mouth where the channel abruptly widened and flattened. At the canyon mouth, the boulder-laden flood wave encountered and destroyed 2 homes. Maximum depth of fill across an old roadway was about 2.7 m. (Lantz-PTT)

Benedict, N. B. (1983). Snow Vegetation Interactions in the Lake Tahoe Region : Phase I Final Report, [publisher unknown].

Berg, N. (1985). Snow chemistry in the central Sierra Nevada, California. International Symposium On Acidic Precipitation, Muskoka, Ontario.

Precipitation and snowpack basal outflow event samples were analyzed for pH and NO sub(3) and SO sub(4) concentrations at a site near Lake Tahoe, California. The Seasonal minimum pH from basal outflow was synchronous with a rain-on-snow event in 1984. Outflow pH reflected the low ionic concentrations of precipitation at the site. There was no evidence for a pulse of acidified meltwater at this site either during a mid-February melt induced by high air temperatures in 1985 or during 1984 or 1985 main spring melt periods. During the mid-February 1985 melt, however, an alkalinity pulse occurred in basal outflow.

Berg, N., R. Osterhuber, et al. (1991). Rain-induced Outflow from Deep Snowpacks in the Central Sierra Nevada, California. Hydrological Sciences Journal HSJODN 36(6): 611-629.

In many mountainous areas of the Pacific coast of North America, rainfall onto snowpacks causes massive floods, probably the single greatest cause of change in channel morphology and lotic habitats. To understand and model this hydrometeorological phenomenon better, process-response hypotheses were developed for snowpack outflow amount, duration and rate, and the time lags from the beginning of rainfall to the initial and peak outflow. The hypotheses were evaluated by correlation and regression analyses based on measurements of 20 rain-on-snow events monitored between 1984 and 1990 at forested and open plots near Lake Tahoe, California. Precipitation amounts ranged from 3 to 247 mm, and rainfall comprised at least 90% of the precipitation during 65% of the events (precipitation during 9 of the 20 was entirely rain). Although the bulk of the storms occurred during the snowpack accumulation phase (late November to mid-March), four ablation-period events were monitored. Except for one late-season event, snowpack depths were always greater at the open plot. Taking the 20 events collectively, outflow amount was about as variable (measured by the coefficient of (variation) as precipitation amount, but in several events outflow amount was much greater than precipitation amount. Snow (in mixed rain and snow storms) increased pack depth and reduced outflow amount relative to precipitation. The mean duration of outflow was slightly longer than the mean duration of precipitation, and the summary statistics for precipitation and outflow rate were similar. Outflow amount correlated significantly with the precipitation amount, duration and rate, snow depth, and melt potential. Many of these variables also correlated significantly with outflow duration and rate and lag time to peak outflow. Regression models explained 80-90% of the variation in outflow amount and duration. Significant differences were not identified between the forest and open plots for any of the outflow attributes. (Fish-PTT)

Berggren, G. and J. R. Harrill (1985). South Lake Tahoe Quadrangle: Vegetation Map, Nevada Bureau of Mines and Geology, U.S. Geological Survey, Carson City, NV.

This map shows vegetation types and urban areas in California and Nevada southeast of Lake Tahoe. It was compiled from a previous publication, infrared satellite imagery, color satellite imagery, and color aerial photographs and followed by field checking. Land areas are categorized as forest, shrub, riparian, alpine, disturbed, or urban. Forest areas are shown as pure pine, mixed conifer, fir, or lodgepole pine. Shrub areas are subdivided into big sagebrush/bitterbrush/rabbit brush/mule ears or mondtaine chaparral. Riparian areas may be deciduous or meadow/marsh. Alpine areas are defined as low-growing grasses/herbs/shrubs/scattered trees. Disturbed areas are relatively large areas that have been denuded in recent years by some natural or man-caused disturbance. Some of them are being successfully revegetated with grasses and chaparral species. Urban areas are land where natural vegetation associations have been significantly altered by man. (Shidler-PTT)

Berry, M. E. (1990). Soil-Geomorphic Analysis Of Late-Quaternary Glaciation and Faulting, Eastern Escarpment Of the Central Sierra Nevada, California, University Of Colorado At Boulder (0051).

Late-Quaternary faulting along the eastern escarpment of the Sierra Nevada, California, between Bishop and Lake Crowley, was evaluated using soil-geomorphic analyses to estimate ages of faulted and unfaulted Quaternary surficial deposits. Thermoluminescence (TL) and $\sp{14}$C dating methods were also used to date fault-scarp colluvium. The study focused on the four glaciated drainages of McGee (N), Pine, McGee (S), and Bishop Creeks, and on an alluvial fan on the flanks of Mt. Tom. In these areas, fault scarps are well preserved on the Hilton Creek (HCF), Wheeler Crest (WCFZ), and Coyote Warp (CWFZ) fault zones. The faulted deposits are correlated with the Tioga (about 10.5-25 ka) and Tahoe (about 140 ka) glaciations, and a pre-Tahoe (190$\sp{+}$ ka) glaciation based on soil development, weathering, and geomorphology. The Tioga deposits typically have well-preserved moraine morphology, A/Bw/Cox soil profiles, and minor clast weathering. The Tahoe deposits typically have subdued moraine morphology, A/Bt/Cox soil profiles, and a two-fold or more increase in the degree of clast weathering. Pre-Tahoe deposits, which are present in two areas, are more extensively weathered than the adjacent Tahoe moraines. Surface faulting on the range-front faults (HCF and WCFZ) has displaced Tioga deposits 6.5-26 m, Tahoe deposits 52-130 m, and a pre-Tahoe deposit 81 m. Preferred slip rates for the faults are 0.4-1.3 mm/yr for the last 10.5-25 ka, and 0.4-1.0 mm/yr for the last 140 ka. The higher rates are for the HCF at McGee (N) Creek, near the Long Valley caldera. The soil development, weathering, and dates for the deposits, plus the scarp morphology and amounts of surface offset across the faults, indicate that large surface-faulting events have occurred on the WCFZ, and probably on the HCF, during the Holocene. In contrast to the HCF and WCFZ, no surface rupture has occurred on the faults in the CWFZ for 15-25 ka, and possibly not for 100 ka. Order No: AAC 1342209 ProQuest - Dissertation Abstracts

Birkeland, P. W. and R. G. Miller (1962). Pleistocene History Of the Truckee Area, North Of Lake Tahoe, California, Stanford University (0212) Stanford University (0212).

Blackburn, D. J. (1992). Saving the Sierra, master plan for the range of light. California Journal 23(2): 103-105.

Bliss, D. L. and H. H. Bancroft (1887). Data concerning the Virginia & Truckee Railroad, and those who planned and carried out that work, 1887.

Bliss, W. S. and Grant Horace Smith Estate ([n.d.]). Biography of Duane L. Bliss, [unpublished].

Boardman, H. P., Truckee Basin Water Committee, et al. (1959). Some interesting and important facts about Lake Tahoe, Tahoe Basin Water Committee, and Nevada Cooperative Snow Surveys, Committee of State Association of Soil Conservation Districts.

Bollman, F. H. (1985). Water quality protection: The crucial and contested key to adequate environmental management of Lake Tahoe. Shiga Conference ‘84 on Conservation and Management of World Lake Environment, Otsu, Japan.

A review is presented of the environmental management experiment in Lake Tahoe basin, in order to trace the evolution of concepts that have been guiding inthe pursuits of an effective policy of nondegradation of the basin’s environment. Principal issues involving different levels of government responsibility for water quality management are identified.

Bonham, H. F. and Nevada Bureau of Mines & Geology (1976). South Lake Tahoe folio: geologic map. Reno, Nevada Bureau of Mines and Geology, Carson City, NV.

Bowman, A. and Geological Survey of California (1870). Map showing outlines of former glaciers : [in the Sierra Nevada in the vicinity of Lake Tahoe].

Bronson, W. (1971). It's About Too Late For Tahoe. Audubon 73(3): 49-80.

The tahoe regional planning agency (trpa), originally created to prevent the degradation of the tahoe basin, has failed to control the rush of urban development. the forest cover of the area, combined with ecological factors such as meadows, streams, lakes and talus slopes provide habitats for many vertebrates. however, trpa's zoning plans could permit an increase in population in the area from a 1970 level of 28,000 to a possible 335,000. water quality has been the primary environmental concern at lake tahoe, and the threat of water pollution triggered steps toward basin-wide pollution controls. algae blooms have occurred due to excessive nutrient contribution and the entrance of turbid water through streams where development is proceeding in the watershed. correction of the problem can only occur by controlling man-caused erosion in the watershed. however, serious siltation is predicted to continue, and if unabated will result in eutrophication of the lake. trpa, a bi-state commission ratified by congress in 1969, has done little to prevent the continuing development of the area, and environmentalists are now looking for the federal government to save lake tahoe, which is federally owned. (ritchie-florida)

Brooks, L. (1992). Beyond the Sierra Summit : first step is a centralized databank. California County Jan.-Feb.: 30-31.

Brown and Caldwell (1959). South Tahoe sewerage survey : a report for the South Tahoe Public Utility District on the collection, treatment and disposal of sewage in the South Tahoe area. San Francisco, CA, Brown & Caldwell: 145 p.

Brown and Caldwell (1961). Water works program for South Tahoe. San Francisco, CA, Brown & Caldwell: 193 p.

Brown, J., W. Howe, et al. (1973). Nutrient and Sediment Production From Forested Watersheds, Nevada agricultural experiment station, Reno, NV.

An effort to determine and quantify relationships between drainage basin characteristics and certain water quality parameters is reported. beginning august 1970, monthly concentrations of suspended sediments, nitrate nitrogen, organic nitrogen, and dissolved orthophosphate were determined for 25 forested watersheds of the lake tahoe-truckee river system. quantified watershed characteristics of soils, geology, geomorphology, vegetation, and land use for each watershed are assumed to act in combination to determine nutrient and sediment discharges from a drainage area. correlation and regression analyses were used to test this assumption. suspended sediment production is largely dependent upon two criteria: (1) sources of sediment and (2) energy to move it. energy is evidently more important in this region, with overland slope and stream discharge dominating the relationship. nitrogen production exhibits excessive seasonal variability and is apparently determined by watershed characteristics which reflect sources of nitrogen and influence of watershed drainage patterns throughout the year. phosphorus production, on the other hand, is much more uniform and is primarily determined by factors affecting base flow relations, regardless of season.

Brown, R. L. (1977). Monitoring Water Quality by Remote Sensing, California State Dept. of Water Resources, Sacramento, CA.

Results of a study to determine the applicability of remote sensing for evaluating water quality conditions in San Francisco Bay-Delta area and Lake Tahoe, California, are presented. Coincident ground truth was obtained during LANDSAT and U-2 flights and correlated with the remote sensing images to establish a data comparison base line. Images were analyzed for apparent surface anomalies which might indicate water quality problems. It is concluded that: (1) for most water quality monitoring applications, LANDSAT imagery is too infrequent and of too small a scale to be useful in routine monitoring programs; (2) imagery from U-2 and conventional aircraft can be effectively used to monitor gross water quality changes; (3) with the present state-of-the-art in image analysis and the large amount of ground truth needed, remote sensing has only limited application in monitoring water quality; (4) California water quality conditions are improving as a result of the Porter-Cologne Water Quality Act and provisions of P.L. 92-500; an (5) in complex and dynamic systems such as the San Francisco Bay and Delta, large amounts of ground truth data must be collected to support remote imagery; spatial and temporal variations of the parameters are so great that approaches other than synoptic (synchronized multi-point sampling) do not provide enough information to evaluate patterns observed in specific images. (Seip-IPA)

Brown, R. L. and California Dept. of Water Resources (1979). Lake Tahoe water quality : a summary of available data, California Dept. of Water Resources.

Brown, D. L. (1987). Nitrate Cycling and Hydrologic Transport Mechanisms In a Sierra Nevada Headwaters Watershed (California; Groundwater Pollution), University Of Nevada, Reno.

The primary non-point source pollutant impacting Lake Tahoe is nitrate-nitrogen. This paper presents the results of four years of research that address nitrate transport and cycling characteristics at the watershed level. Water quality was monitored in an undeveloped 79.6 ha headwaters watershed to delineate nitrate concentrations in precipitation, stream discharge, soil moisture and groundwater. The flow and storage in these systems was measured using an extensive instrumentation network. Nitrate cycling mechanisms including denitrification and uptake by periphyton, conifers and macrophytic vegetation were studied in the field, and estimates were made of nitrogen-fixation and nitrification. The results show that the study watershed removes virtually 100% of the nitrate derived from all sources. A simplified conceptual model is presented to describe the temporal interactions between removal and hydrologic transport mechanisms. Order No: AAC 1331798 ProQuest - Dissertation Abstracts

Brubaker, J. M. (1980). Space-Time Scales Of Temperature Variability In the Seasonal Thermocline Of Lake Tahoe, Oregon State University.

The objectives of this work are to characterize and, when possible, to interpret temperature finestructure and microstructure observations made with vertical profiling instruments in the upper thermocline of Lake Tahoe during late summer stratification. From the finestructure data (observations with the TD instrument) the following characteristics of temperature variability in the Tahoe thermocline were found. Over time scales of days to weeks, or over horizontal scales of several km, relatively large amplitude temperature fluctuations were observed. In contrast, for sampling limited to 2 1/2 hours and to about 200 m horizontally, the ensemble variability was of smaller magnitude. Vertical wavenumber spectra of temperature fluctuations fell steeply. Results on scales of variability represent only a first step toward development of a full frequency-wavenumber spectrum for the temperature field, but should provide some perspective and organization structure for future work. Similarities of some features of the Tahoe spectra (and cross spectra) to oceanic results support the idea that similar dynamics control the small-scale structure in both environments. Thus, Tahoe could find extensive use as a ‘laboratory’ for studying some oceanic phenomena. (Sinha-OEIS)

Brust, R. A. and L. E. Munstermann (1992). Morphological and genetic characterization of the Aedes (Ochlerotatus) communis complex (Diptera: Culicidae) in North America. Ann. Entomol. Soc. Am. 85(1):1-10.

Morphometric comparisons were made of seven populations and electrophoretic comparisons of nine populations of the Aedes communis complex in North America. Of 27 loci surveyed, 3-10 diagnostic loci were found to separate three species of this complex: A. communis sens. str., Aedes churchillensis , and Aedes nevadensis . A Lake Tahoe, Calif., collection showed unusually low genetic variability (< 5%) and was significantly different from the other three species at 6 of 19 loci. Mean measurements of six larval and five adult morphological characters of the Lake Tahoe population also differed significantly from A. communis s.s. Originally this population was described by Dyar (1916) as Aedes tahoensis , but he later synonymized it under A. communis DeGeer. We resurrect A. tahoensis Dyar as a valid species based on genetic and morphological differences with A. communis s.s.

Bryon, E. R., P. E. Sawyer, et al. (1986). Recurrence of Daphnia rosea in Lake Tahoe: Analysis of a Population Pulse. .

Following the disappearance of all Lake Tahoe cladocera in 1970, Daphnia rosea reappeared in the lake during the summer and fall of 1983. Since the introduction and population increase of the omnivorous opossum shrimp, Mysis relicta, was heavily implicated in the initial disappearance, the D. rosea recurrence with respect to fluctuating M. relicta abundance and steadily increasing primary productivity was studied. An analysis of D. rosea population dynamics, fecundity, feeding characteristics and M. relicta feeding selectivity, suggested that D. rosea was able to coexist with M. relicta in 1983 only because D. rosea birth rates were substantially higher than historical levels due to the increase in algal productivity since 1970. The variation of cladoceran success in lakes M. relicta introductions may be due, in large part, to variations in primary productivity. (Author's abstract)

Bunch, R. L. and M. B. Ettinger (1967). Biodegradability Of Potential Organic Substitutes For Phosphates. 22nd Industrial Waste Conference, Lafayette, IN.

The undesirable eutrophication of waters may be considerably reduced by replacing phosphates in industrial processes and detergents with biodegradable chelating agents, such as nitriloacetic acid (nta) and hydroxyethyliminodiacetic acid (heida). the use of detergents containing non-phosphate builders is suggested, especially for extreme situations, such as lake tahoe. the use of non-biodegradable agents which complex heavy metals will depend upon their effect on waste treatments, softening water, drinking water, and calcium metabolism of man. (wilde-wisconsin)

Burcar, S. A. (1992). Seasonal Preferential Flow and Nutrient Transport In Selected Sierra Nevada Soils, University Of Nevada, Reno.

Little work has focused on groundwater, its quality, and potential affect on Lake Tahoe water quality. This study investigated seasonal infiltration, preferential water flow, and NH$\sb4\sp+$ and NO$\sb3\sp-$ transport in 2 Sierra Nevada soil types under forest and meadow conditions using rainfall simulation. Soil water repellency was clearly shown to induce preferential infiltration. The finer textured volcanic soil demonstrated continuous preferential flow with depth, whereas preferential flow rapidly dissipated in the coarser textured granitic soil. Wetting patterns showed greater instability and preferential flow in the forested areas in the late summer/early fall. Applied NH$\sb4\sp+$ was effectively adsorbed by the soil matrix suggesting that unstable wetting occurred by preferential flow in wettable portions of the soil matrix and not by macropore flow. Nitrate moved through the granitic soil at applied concentrations but was attenuated with depth in the volcanic soil as the latter demonstrated NO$\sb3\sp-$ adsorption.

Burco, R. A. (1970). Policy and planning in the Lake Tahoe Basin: the case of transportation. Davis, CA, Institute of Governmental Affairs, University of California.

Burco, R. A., C. D. Henderson, et al. (1971). Transportation planning alternatives in the Tahoe Basin : final report.Menlo Park, CA, Stanford Research Institute: ca. 200 p.

Burco, R. A. (1973). Policy and planning in the Lake Tahoe Basin : the case of transportation, Institute of Governmental Affairs, University of California, Davis.

Burnett, J. L. and California Division of Mines & Geology (1967). Preliminary geologic map of the Lake Tahoe basin, southern half. Sacramento, CA, California Division of Mines and Geology.

Burnett, J. L. (1968). Geology of the Lake Tahoe Basin. Geologic Studies in the Lake Tahoe Area, California and Nevada. J. R. Evans and R. A. Matthews. Sacramento, Geological Society of Sacramento: 1-13.

Bursik, M. I. (1989). Late Quaternary Volcano-Tectonic Evolution Of the Mono Basin, Eastern California, California Institute Of Technology.

The Mono Basin of eastern California provides an ideal laboratory in which to study the interaction of volcanic and tectonic processes. The late Quaternary record of volcanic activity and range-front faulting is relatively complete. Range-front faults of the Sierra Nevada offset dateable late Pleistocene glacial moraines, thus affording the opportunity to estimate range-front slip rates. The first two chapters concern dating of moraines that are offset by range-front faults. In Chapters 1 and 2, I discuss the ages of the glacial moraines of the Mono Basin and the correlation of them between canyons. I dated the moraines by studying their morphology and the relative weathering of granitic boulders atop their crests, and by use of the clast-sound velocity (CSV) dating technique. I also dated the moraines at Lee Vining Canyon with the use of a new dating method based on quantitative modelling of moraine degradation. Moraines in all major canyons from Lee Vining south were correlable with the standard late Pleistocene sequence of Tioga, Tenaya, Tahoe and Mono Basin deposits. At Lundy Canyon, however, Tahoe and Tenaya moraines are poorly if at all preserved. In Chapter Three, I use moraine ages determined in Chapters 1 and 2 to estimate slip rates of range-front faults. For Chapter Three, I measured fault-scrap profiles on the dated lateral moraines of the Mono Basin to determine fault slip rates. I compared these data with what can be deduced about the extension rate due to dike intrusion underneath the Mono Craters. I then considered extension rates in the context of regional strain patterns to infer the mode of deformation and strain relief in the Mono Basin during late Quaternary time. The extension-rate data indicate that dikes are being intruded underneath the Mono Craters in response to crustal stretching, and because of this, are now accomodating elastic strain that was once accomodated by range-front normal faulting. Consideration of the extension rates in the context of regional tectonic strain patterns suggest that the Mono Craters are forming along one of the extensional boundary structures of a pull-apart basin, the other extensional boundary of which is the deactivated range-front segment. (Abstract shortened with permission of author.)

Byron, E. R., P. T. Whitman, et al. (1983). Observations of copepod swarms in Lake Tahoe. Limnol. Oceanogr. 28(2): 378-382.

During summer 1980, dense swarms of the calanoid copepod Diaptomus tyrrelli formed during midday in several areas of the nearshore surface of Lake Taboe, California-Nevada. Swarms were most consistently found immediately adjacent to rocks in pools protected from wave action. Swarms were as dense as 11,354 copepods multiplied by liter super(-1) and composed primarily of adult males. Swarming copepods have greater mating success than midlake copepods. Swarming may offer some protection from fish predation.

Byron, E. R., C. L. Folt, et al. (1984). Copepod and cladoceran success in an oligotrophic lake. J. Plankton Res 6(1): 45-65.

Cladocerans have proved to be much less successful members of the Lake Tahoe limnetic community than the calanoid copepods. An analysis of temporal and spatial heterogeneity of the cladoceran Bosmina longirostris and the herbivorous calanoid copepod Diaptomus tyrrelli revealed important differences between the two types of zooplankton. Although the productivity of both species is limited to varying degree by the abundance of certain algal species and the availability of particulate nitrogen, they differ strongly in the mechanisms responsible for mortality. Correlation analysis suggests that B. longirostris is severely limited temporally and spatially by predation from the omnivorous calanoid copepod Epischura nevadensis . In contrast, D. tyrrelli is not noticeably limited by predators. Instead, abiotic seasonal events and starvation control its population dynamics. Mortality and natality differences between Bosmina and Diaptomus in Lake Tahoe help to explain the general lack of success of cladocerans in oligotrophic lakes.

Byron, E. R., P. E. Sawyer, et al. (1986). The recurrence of Daphnia rosea in Lake Tahoe: Analysis of a population pulse. J. Plankton Res 8(4): 771-783.

Following the disappearance of all Lake Tahoe Cladocera in 1970, Daphnia rosea reappeared in the lake during the summer and fall of 1983. Since the introduction and population increase of the omnivorous opossum shrimp, Mysis relicta , was heavily implicated in the initial disappearance, the authors investigated the D. rosea recurrence with respect to fluctuating M. relicta abundance and steadily increasing primary productivity. An analysis of D. rosea population dynamics, fecundity, feeding characteristics and M. relicta feeding selectivity, suggested that D. rosea was able to coexist with M. relicta in 1983 only because D. rosea birth rates were substantially higher than historical levels due to the increase in algal productivity sine 1970.

Byron, E. R. and C. R. Goldman (1989). Land-use and water quality in tributary streams of Lake Tahoe, California-Nevada. J Environ Qual 18(1): 84-88.

We examined land-use and water quality monitoring data for 10 watersheds of tributary streams to Lake Tahoe, California-Nevada, to describe relationships between watershed disturbance and water quality degradation from nonpoint sources. Discharge-weighted annual average concentrations of nitrate (as NO3-N), soluble P, total P and suspended sediment were plotted against the proportion of each watershed represented as disturbed and imperviously covered land of various land-use classes. Comparisons between land-use and runoff water quality demonstrated significant relationships between increased coverage and disturbance in the watersheds and decreased water quality. The concentrations of NO3-N, total P, and suspended sediment in the streams increased significantly with the disturbance of high hazard lands (erodible soils, steep slopes, stream environment zones). Increased disturbance of lower hazard lands (less erodible soils) resulted in increases in the concentrations of soluble and total P. The patterns of significance and slopes of the relationships demonstrated increased nonpoint source water quality degradation with increased land disturbance in these Sierra Nevada watersheds. AGRICOLA (1984 - 12/91)

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Byron, E. R., R. P. Axler, et al. (1991). Increased Precipitation Acidity in the Central Sierra Nevada. Atmospheric Environment ATENBP(2): 271-275.

Bulk precipitation has been collected continuously for chemical analysis on a storm event basis since 1979 at the Ward Valley Bench Station at Lake Tahoe, California. The station is 300 m higher than the lake, 6.8 km from the shore, and is only 3 km east of the Sierra Nevada divide. The 4 m high tower holding the sampler is in an extensive subalpine meadow surrounded by pine/fir forests; the closest development is low density housing 1 km to the northeast. Between 1979 and 1986, precipitation acidity increased significantly on the crest of the central Sierra Nevada. Variation in precipitation pH was closely associated with change in nitrate concentrations but not with sulfate. This area of the Sierra Nevada crest contains many acid-sensitive, poorly buffered lakes and ponds that can be adversely affected by increasing precipitation acidity. (Mertz-PTT)

C. E. Erickson & Associates (1966). Map of Lake Tahoe recreational area. Berkeley, CA, C.E. Erickson & Associates.

C. E. Erickson & Associates and South Lake Tahoe Chamber of Commerce (1970). Map of Lake Tahoe recreational area, California, Nevada. Berkeley, CA, C.E. Erickson & Associates.

Caen, H. (1991). Charmed Life At the Lake Of the Sky (Lake Tahoe). Architectural Digest 48(5): 54+.

Cahill, T. A. (1974). Air Quality In the Lake Tahoe Basin. Lake Tahoe Research Seminar II, Sands Vagabond Convention Center, South Lake Tahoe, CA.

Lake tahoe is over twenty miles long, yet we expect to see the mountains on the far side--an important part of the scenic value. thus, a significant part of the recreational value of the lake is based upon visibility greater than thirty miles most of the time. the problem of area-wide degradation of visibility is one which is vital to lake tahoe's future. other sites in california show that fine sulfur particulates are likely to be responsible for the hazes presently seen at lake tahoe on many summer days. there are four sources of fine sulfur aerosols that could cause problems: (1) fuel oil combustion in the basin; (2) the conversion of residual sulfur in gasoline into fine sulfur particulates, an unfortunate byproduct of the epa mandated catalytic converters on new cars sold in california; (3) the landing-take off cycle of a boeing 727, which produces as much sulfur oxides as about 500 cars driving from meyers to stateline; and (4) transport of fine sulfur particulates present in the sacramento valley or reno area into the basin.

Cahill, T. A. and California Air Resources Board Research Division (1977). Sources of visibility degradation in the Lake Tahoe Air Basin : final report, California Air Resources Board Research Division.

Cairns, J., W. Munk, et al. (1979). On the dynamics of neutrally buoyant capsules: an experimental drop in Lake Tahoe. Deep Sea Res 26(4a): 369-381.

The motion of a neutrally buoyant capsule launched into Lake Tahoe exhibited several interesting and peculiar features. The authors interpret an initial slow sinking and a late downward settling in terms of entrapped air. Otherwise the descent was consistent with a square drag. After reaching equilibrium depth, an overshoot and subsequent oscillations occurred at the expected frequency, but the oscillations were damped much more rapidly than the authors can explain.

California Air Resources Board (1974). Air quality in the Tahoe Basin : summer 1973, California Air Resources Board, Sacramento, CA.

California Air Resources Board - Air Analysis Branch (1977). Lake Tahoe air basin emission inventory, 1975, Air Resources Board, Sacramento, CA.

California Bureau of Sanitary Engineering (1962). Lake Tahoe Basin water quality survey -- 1961, California Bureau of Sanitary Engineering, Sacramento, CA.

California Bureau of Vector Control Solid Waste Management (1969). Future of solid waste managment in the Lake Tahoe area, California Dept. of Public Health, Sacramento, CA.

California Commission on Interstate Cooperation (1963). 1961-1963 report of the California Commission on Interstate Cooperation, Senate of the State of California, Sacramento, CA. This report relates discussions between Nevada and California which sought to formulate a bi-state plan to develop public recreational areas at Lake Tahoe.

California Department of Parks and Recreation (1971). Sugar Pine Point State Park, California Department of Parks and Recreation, Resources Agency, State of California, Sacramento, CA.

California Department of Parks and Recreation (1988). Lake Valley State Recreation Area General Plan, California Department of Parks and Recreation, Resources Agency, State of California, Sacramento, CA.

California Department of Public Health and California Legislature Assembly Committee on Natural Resources/Planning/Public Works (1964). Statement of California State Department of Public Health on Future Development of Lake Tahoe Basin.

California Dept. of Alcohol Drug Programs -Audit Services Section (1989). County of El Dorado Drug Program,Tahoe Human Services, Inc., July 1, 1987 through June 30, 1988, State of California, Dept. of Alcohol and Drug Programs, Audit Services Section, Sacramento, CA.

California Dept. of Boating and Waterways (1991). Safe boating hints for Lake Tahoe, State of California, The Resources Agency, Dept. of Boating and Waterways, Sacramento, CA.

California Dept. of Conservation, Lake Tahoe Area Council, et al. (1969). Tahoe vegetation-soil protection symposium : summary and proceedings, California Dept. of Conservation.

California Dept. of Finance - Program Evaluation Unit (1977). Regional planning at Lake Tahoe : an analysis : a staff reference report., California Dept. of Finance - Program Evaluation Unit, Sacramento, CA.

California Dept. of Finance/Financial Performance/Accountability (1987). California Tahoe Conservancy, review of the system of internal accounting control and fiscal procedures, Financial and Performance Accountability, Dept. of Finance, State of California, Sacramento, CA.

California Dept. of Finance/Fiscal Management/Audits (1979). California Tahoe Regional Planning Agency : examination of financial statements for the period July 1, 1977 to June 30, 1978, Fiscal Management Audits, Dept. of Finance, State of California, Sacramento, CA.

California Dept. of Fish and Game (1957). A report on Lake Tahoe and its tributaries : fisheries management vs. trial and error, California Dept. of Fish and Game, Sacramento, CA.

California Dept. of Navigation and Ocean Development (1970). Safe boating hints for Lake Tahoe, California Dept. of Navigation and Ocean Development, Sacramento, CA.

California Dept. of Parks & Recreation (1967). Tahoe Parkway, California Dept. of Parks & Recreation, Sacramento, CA.

California Dept. of Public Works - Division of Highways (1958). Emerald Bay : development of State Highway route 38 for all year travel along the west side of Lake Tahoe in the vicinity of Emerald Bay. Sacramento, CA, California Dept. of Public Works: 1 v. (various pagings).

California Dept. of Public Works - Division of Highways (1900). Lake Tahoe wagon road field notes, state surveys of 1900 & 1907, California Dept. of Public Works - Division of Highways, Sacramento, CA.

California Dept. of Public Works - Division of Highways (1950). Visual comparison of Emerald Bay routes, [publisher and place published unknown].

California Dept. of Public Works - Division of Highways (1957). Emerald Bay : report and recommendation with respect to development State highway route 38 for all year travel on the west side of Lake Tahoe in the vicinity of Emerald Bay. Sacramento, CA, California Dept. of Public Works: 5, 8 p.

California Dept. of Public Works - Division of Highways (1960). Emerald Bay route studies : state legislative route 38, California Dept. of Public Works - Division of Highways, Sacramento, CA.

California Dept. of Public Works - Division of Highways (1961). Proceedings of the public meeting held for the purpose of discussing the proposed freeway routings between Tallac Creek and .5 mile north of Bliss State Park, Bijou, California, September 29, 1961, California Dept. of Public Works - Division of Highways, Sacramento, CA.

California Dept. of Public Works - Division of Highways (1963). Report of route studies relative to the location of State sign route 89 between 0.5 mile north of D.L. Bliss State Park and State sign route 28 near Tahoe City, and the location of State sign route 28 between State sign route 89 near Tahoe City and 0.2 mile east of Bunker Road. Sacramento, CA, California Dept. of Public Works: [11] p.

California Dept. of Transportation - District 03 Office of Planning and Public Transportation (1982). The San Francisco-Sacramento-Lake Tahoe transit corridor study, California Dept. of Transportation - District 03 Office of Planning and Public Transportation, Marysville, CA.

California Dept. of Water Resources and South Tahoe Public Utility District (1970). Indian Creek Dam and Reservoir Project : findings on the application of South Tahoe Public Utility District for grants under the Davis-Grunsky Act, State of California, Resources Agency, Dept. of Water Resources, Sacramento, CA.

California Division of Beaches and Parks and California Commission on Interstate Cooperation (1962). A proposal for creating the Lake Tahoe Interstate Park Authority : status report as of August 17, 1962, California Division of Beaches and Parks, California Commission on Interstate Cooperation,.

California Division of Beaches and Parks (1963). Emerald Bay, D.L. Bliss State Parks, California Division of Beaches and Parks, Sacramento, CA.

California Division of Beaches and Parks (1965). Lake Tahoe region study, California Division of Beaches and Parks, Sacramento, CA.

California Division of Small Craft Harbors (1959). Boating facilities and needs on Lake Tahoe, California Division of Small Craft Harbors, Sacramento, CA.

California Division of Soil Conservation (1969). Sedimentation and erosion in the Upper Truckee River and Trout Creek Watershed, Lake Tahoe, California, California Division of Soil Conservation, Sacramento, CA.

California Division of Water Resources and Nevada State Engineer (1949). Joint report on the use of water in the Lake Tahoe watershed, California Division of Water Resources.

California Environmental Protection Agency - Air Resources Board (1993). Public meeting to consider the approval of the carbon monoxide air quality plan for the Lake Tahoe air basin, California Environmental Protection Agency - Air Resources Board, Sacramento, CA.

California Forest Range Experiment Station and United States Work Projects Administration (1942). Lumbering history of the Truckee River Basin : 1856-1936, California Forest and Range Experiment Station.

California Governor (1985). Agreement ending litigation over the future of 77 acres of environmentally sensitive land in the Lake Tahoe Basin, Office of the Governor, Sacramento, CA.

California Highway Transportation Agency, C. L.-A. I. C. o. N. Resources/Planning, et al. (1964). Statement of State highway policies and planning procedures in the Lake Tahoe Basin : presented to the Assembly Interim Committee on Natural Resources, Planning and Public Works in Brockway, Lake Tahoe, September 10-11, 1964.

California Lake Bigler Forestry Commission (1884). Report of the Lake Bigler Forestry Commission to Governor George Stoneman, made in accordance with Assembly concurrent resolution no.31, passed by the 25th session of the legislature of the state of California. Sacramento, CA, [publisher unknown]: 15 p.

California Legislature - Senate Select Committee on Tahoe (1984). Hearing, California Legislature, Senate Select Committee on Tahoe in the matter of land acquisition and land use in the Lake Tahoe Basin, Peters Shorthand Reporting Corporation [available from] Joint Publications Office, Box 90, State Capitol, Sacramento, CA.

California Legislature - Assembly Committee on Natural Resources and Conservation (1972). Transcript of proceedings; hearing on regional planning in the Lake Tahoe basin: implementation of adopted Tahoe Regional Plan, December 18-19, 1972, Stateline, Nevada, California Legislature - Assembly Committee on Natural Resources and Conservation, Sacramento, CA.

California Legislature - Assembly Committee on Natural Resources/Planning/Public Works (1964). Regional planning in the Lake Tahoe basin; transcript of proceedings. Brockway, California, September 10-11, 1964, California Legislature - Assembly Committee on Natural Resources/Planning/Public Works, Sacramento, CA.

California Legislature - Assembly Committee on Natural Resources/Planning/Public Works (1967). Transcript of proceedings. Hearing on regional planning in the Lake Tahoe Basin: West Shore Parkway and transportation planning. Bijou, California, October 26, 1967, California Legislature - Assembly Committee on Natural Resources/Planning/Public Works, Sacramento, CA.

California Legislature - Assembly Committee on Natural Resources/Planning/Public Works (1967). Report of the Assembly Committee on Natural Resources, Planning, and Public Works. Part V, Highway beautification, Beautification and maintenance of the Capitol Mall, Highway and fr eeway planning, Regional planning in the Lake Tahoe Basin, The filling of San Francisco Bay, California Legislature - Assembly Committee on Natural Resources/Planning/Public Works, Sacramento, CA.

California Legislature - Assembly Committee on Rules (1977). A User fee system for the California Tahoe Conservancy, California Legislature - Assembly Committee on Rules, Sacramento, CA.

California Legislature - Assembly Committee on Water (1969). A report on the California-Nevada interstate compact; an interim study of the Assembly Committee on Water pursuant to HR 443, 1969 session, California Legislature - Assembly Committee on Water, Sacramento, CA.

California Legislature - Assembly Interim Committee on Water (1966). The legislative action program for Lake Tahoe pollution control, California Legislature - Assembly Interim Committee on Water, Sacramento, CA.

California Legislature - Assembly Interim Committee on Water (1966). New horizons in California water development, California Legislature - Assembly Interim Committee on Water, Sacramento, CA.

California Legislature - Senate Committee on Transportation (1981). California/Nevada loop road connection : transcript of proceedings : public hearing before the Senate Committee on Transportation : January 23, 1981, California Legislature - Senate Committee on Transportation, Sacramento, CA.

California Legislature - Senate Fact Finding Committee on Public Health and Safety (1962). Hearing before Senate Fact Finding Committee on Public Health and Safety in the matter of recreational use of domestic water supplies ... Al Tahoe, California, September 18, 1962, California Legislature - Senate Fact Finding Committee on Public Health and Safety, Sacramento, CA.

California Legislature - Senate Select Committee on Tahoe (1984). In the matter of land acquisition and land use in the Lake Tahoe basin: hearing, Joint Publications Office, State Capitol, Sacramento, CA.

California Legislature Assembly Committee on Natural Resources/Planning/Public Works (1966). Executive session, 1965-67 interim studies, Los Angeles, December 16, 1966, California Legislature Assembly Committee on Natural Resources, Planning, and Public Works, Sacramento, CA.

California Legislature Assembly Interim Committee on Natural Resources/Planning/Public Works (1964). Transcript of proceedings, Assembly Committee on Natural Resources, Planning and Public Works : regional planning in the Lake Tahoe Basin, Brockway Hot Springs Hotel, Brockway, Lake Tahoe, California, September 10-11, 1964, California Legislature Assembly Interim Committee on Natural Resources/Planning/Public Works.

California Legislature Assembly Interim Committee on Natural Resources/Planning/Public Works (1965). Report of the Assembly Interim Committee on Natural Resources, Planning, and Public Works. Part 2, Regional planning in the Lake Tahoe Basin, Filling of San Francisco Bay, Control of outdoor advertising, Administration of tide and submerged lands, Old Sacramento State Park, Land acquisition policies and procedures, Recreational boating, Riding and hiking trails, California Legislature Assembly Interim Committee on Natural Resources/Planning/Public Works, Sacramento, CA.

California Regional Water Quality Control Board--Lahontan Region (1966). Lake Tahoe water quality control policy, California Regional Water Quality Control Board.

California Regional Water Quality Control Board--Lahontan Region (1967). Lake Tahoe water quality control policy. Addendum regarding implementation, adopted May 1967, California Regional Water Quality Control Board.

California Regional Water Quality Control Board--Lahontan Region and California State Water Resources Control Board (1971). Interim water quality control plan for the North Lahontan Basin (basin 6-A), California State Water Resources Control Board.

California Regional Water Quality Control Board--Lahontan Region (1985). Staff report : triennial review of water quality standards in the water quality control plan for the North Lahontan Basin (6A). South Lake Tahoe, CA, California Regional Water Quality Control Board - Lahontan Region: 1 v. (various pagings).

California State Automobile Association (1910). Automobile roads from Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, California State Automobile Association.

California State Automobile Association (1927). Automobile roads from Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, California State Automobile Association.

California State Automobile Association (1928). Automobile roads from Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, California State Automobile Association.

California State Automobile Association (1929). Automobile roads from Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, California State Automobile Association.

California State Automobile Association (1930). Automobile roads from Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, California State Automobile Association.

California State Automobile Association (1936). Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, The Association.

California State Automobile Association (1937). Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, The Association.

California State Automobile Association (1940). Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, The Association.

California State Automobile Association (1949). Sacramento and Stockton to Lake Tahoe and vicinity. San Francisco, CA, The Association.

California State Automobile Association (1953). Lake Tahoe resorts. San Francisco, CA, The Association.

California State Automobile Association (1954). Lake Tahoe region. San Francisco, CA, Csaa.

California State Automobile Association and C. Automobile Club of Southern (1958). VIII Olympic Winter Games : Squaw Valley-Lake Tahoe, California. San Francisco, CA, California State Automobile Association.

California State Automobile Association and C. Automobile Club of Southern (1958). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association and C. Automobile Club of Southern (1962). Lake Tahoe resorts. San Francisco, CA, Csaa.

California State Automobile Association and C. Automobile Club of Southern (1962). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association and C. Automobile Club of Southern (1964). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association and C. Automobile Club of Southern (1967). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association and C. Automobile Club of Southern (1970). Lake Tahoe region. San Francisco, CA, California State Automobile Association.

California State Automobile Association and C. Automobile Club of Southern (1971). Lake Tahoe resorts. San Francisco, CA, Csaa.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1971). South Lake Tahoe. San Francisco, CA, Csaa.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1973). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1973). South Lake Tahoe. San Francisco, CA, Csaa.

California State Automobile Association. Cartographic, D. (1974). Lake Tahoe communities. San Francisco, CA, California State Automobile Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1977). Lake Tahoe communities. San Francisco, CA, California State Automobile Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1980). Lake Tahoe communities, Truckee and vicinity. San Francisco, CA, California State Automobile Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1980). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1980). Northern Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1982). Lake Tahoe communities, Truckee and vicinity. San Francisco, CA, The Assn.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1983). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1986). Lake Tahoe communities, Truckee and vicinity. San Francisco, CA, California State Automobile Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1986). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association. Cartographic, D. (1988). Lake Tahoe communities, Truckee and vicinity. San Francisco, CA, Csaa.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1989). Lake Tahoe Region. San Francisco, CA, California State Automobile Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1991). Lake Tahoe communities, Truckee and vicinity / Cartographic Department ; Issued by California State Automobile Association and Automobile Club of Southern California. San Francisco, CA, The Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1991). Lake Tahoe region. San Francisco, CA, The Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1993). Bay and Mountain section. San Francisco, CA, California State Automobile Association.

California State Automobile Association. Cartographic, D. and C. Automobile Club of Southern (1993). Lake Tahoe communities, Truckee and vicinity. San Francisco, CA, Csaa.

California State Automobile Association. Map Drafting, D. and C. Automobile Club of Southern (1967). South Lake Tahoe. San Francisco, CA, Csaa.

California State Lands Commission (1971). U. S. Forest Service, Valhalla Pier Site, California State Lands Commission, Sacramento, CA.

California State Lands Commission (1972). Report on beach dedication to public use at Lake Tahoe, California State Lands Commission, Sacramento, CA.

California State Lands Commission (1972). Star Harbor Company - W8696: Wildlife Conservation Board - PRC 2754.9, California State Lands Commission, Sacramento, CA.

California State Lands Commission (1989). Pier extension : proposed negative declaration, State of California, State Lands Commission, Sacramento, CA.

California State Lands Commission (1989). Buoy permit : proposed negative declaration, State of California, State Lands Commission, Sacramento, CA.

California State Lands Commission (1989). Boathouse reconstruction : proposed negative declaration, State of California, State Lands Commission, Sacramento, CA.

California State Mining Bureau (1909). Map of El Dorado County, California : showing boundaries of the national forests. San Francisco, CA, The Bureau.

California State Personnel Board - Cooperative Personnel Services (1969). City of South Lake Tahoe, classification and salary survey, California State Personnel Board, Sacramento, CA.

California State Water Resources Control Board (1970). News & views : Lake Tahoe, California State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1971). Lake Tahoe, report on 1969 use of water within Lake Tahoe Basin, California. Sacramento, CA, California State Water Resources Control Board: 1 v. (various pagings).

California State Water Resources Control Board (1974). Tahoe Basin studies report : a compendium of reports to the California State Water Resources Control Board, California State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1979). Summary report on water use and water rights, Lake Tahoe basin, California State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1979). Report on water use and water rights : Lake Tahoe Basin, California State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1979). Appendices for the Report on water use and water rights, Lake Tahoe Basin, California State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1980). Lake Tahoe Basin Water Quality Plan, Summary, California State Water Resources Control Board, Sacramento, CA.

This summary describes the Lake Tahoe Basin Final Water Plan, in which erosion control is seen as the principal factor in protecting Lake Tahoe's clarity and water quality, and in preventing further deterioration of the lake. Also described are: the erosion threats to the lake; the five water quality control alternatives, with a full description of Alternative C (Proposed Alternative, Less Restrictive Adherence to Land Capability); costs of remedial projects and management options; development controls possible to prevent erosion; program impacts; and implementation plans. Them summary includes the changes to the Lake Tahoe Water Quality Plan since its publication in January 1980.

California State Water Resources Control Board (1980). Lake Tahoe Basin Water Quality Plan, Final Plan, California State Water Resources Control Board, Sacramento, CA.

Lake Tahoe is an outstanding natural resource. The exceptional clarity and purity of the waters of the lake are priceless as both a scientific and scenic treasure. Federal law requires that the high quality of the lake be maintained. Erosion control is seen as the principal factor in protecting Lake Tahoe's clarity and water quality, and in preventing further deterioration. The Final Water Plan, submitted in accordance with requirements of Section 208 of the Federal Clean Water Act, describes the adverse effects of human activity on the lake. Rapid development in the Basin over the past two decades is causing a deterioration of the lake's water quality, including a doubling of the algal growth. The principal control measures outlined are: (1) erosion and urban runoff control; (2) on-site surface runoff control; (3) controls on development; and (4) policies involving forest practices. The report suggests funding sources and describes implementation procedures, including liaison with Nevada authorities.

California State Water Resources Control Board (1980). Lake Tahoe basin water quality plan : summary of public comments, State of California, State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1980). Lake Tahoe basin water quality plan : summary, State of California, State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1980). Lake Tahoe basin water quality plan : final plan, California State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1984). Policy for water allocation in the Lake Tahoe Basin, California State Water Resources Control Board, Sacramento, CA.

California State Water Resources Control Board (1984). Policy for water allocation in the Lake Tahoe Basin : summary of draft environmental impact report, California State Water Resources Control Board, Sacramento, CA.

California Tahoe Area Land Acquisition Commission and California Resources Agency (1983). A Preliminary analysis of possible objectives, issues, and approaches involved in implementation of the Lake Tahoe Acquisition Bond Act of 1982 : a background document, California Resources Agency, Sacramento, CA.

California Tahoe Area Land Acquisition Commission and California Resources Agency (1984). The implementation of the Lake Tahoe Acquisitions Bond Act of 1982 : final report and recommendations of the Tahoe Area Land Acquisition Commission, California Resources Agency, Sacramento, CA.

California Tahoe Conservancy (1987). A Report on soil erosion control needs and projects in the Lake Tahoe Basin, California Tahoe Conservancy, South Lake Tahoe, CA.

California Tahoe Conservancy (1991). Progress report, 1985-1991, California Tahoe Conservancy, South Lake Tahoe, CA.

California Tahoe Regional Planning Agency and California Resources Agency (1975). Draft environmental impact report for the California Tahoe Regional Planning Agency, California Tahoe Regional Planning Agency, South Lake Tahoe, CA: 1 v. (various pagings).

California Tahoe Regional Planning Agency (1975). Land use ordinance, California Tahoe Regional Planning Agency.

California Tahoe Regional Planning Agency (1975). Regional plan for Lake Tahoe, California, August 29, 1975, California Tahoe Regional Planning Agency, South Lake Tahoe, CA.

California Tahoe Regional Planning Agency (1977). Criteria for development and expansion of ski areas, Lake Tahoe Basin. South Lake Tahoe, CA, California Tahoe Regional Planning Agency: 27 p.

California Tahoe Regional Planning Agency (1977). An analysis of the carrying capacity of the California/Tahoe Region. South Lake Tahoe, CA, California Tahoe Regional Planning Agency: 2 v.

California Tahoe Regional Planning Agency (1977). Summary of an analysis of the carrying capacity of the California/Tahoe region, California Tahoe Regional Planning Agency, South Lake Tahoe, CA: [21] p.

California Tahoe Regional Planning Agency (1977). Draft environmental impact report, long range regional transportation plan, California Tahoe Regional Planning Agency, South Lake Tahoe, CA.

California Tahoe Regional Planning Agency (1977). Final environmental impact report, regional transportation plan, California Tahoe Regional Planning Agency, South Lake Tahoe, CA.

California Tahoe Regional Planning Agency and Tahoe Regional Planning Agency (1977). Regional transportation plan, California Tahoe Regional Planning Agency, South Lake Tahoe, CA.

California Tahoe Regional Planning Agency (1978). Ordinances, California Tahoe Regional Planning Agency, South Lake Tahoe, CA.

California Tahoe Regional Planning Agency (1978). Rules and regulations, California Tahoe Regional Planning Agency, South Lake Tahoe, CA.

California Tahoe Regional Planning Agency, Sierra Pacific Power Company, et al. (1979). Draft environmental impact report for the Sierra Pacific Power Company, Lake Tahoe basin electrical transmission system master plan, Grove-Boand & Associates, Tahoe City, CA.

California Tahoe Regional Planning Agency (1980). Draft regional plan update : CTRPA 1980 plan. South Lake Tahoe, CA, California Tahoe Regional Planning Agency.

California Tahoe Regional Planning Agency (1980). Draft regional transportation plan : CTRPA 1980 plan. South Lake Tahoe, CA, California Tahoe Regional Planning Agency.

California Tahoe Regional Planning Agency (1980). Final environmental impact report on the CTRPA regional plan, California Tahoe Regional Planning Agency, South Lake Tahoe, CA.

California Tahoe Regional Planning Agency (1980). Final environmental impact report : CTRPA 1980 plan--regional plan update. South Lake Tahoe, CA, California Tahoe Regional Planning Agency: 1 v. (various pagings).

California Tahoe Regional Planning Agency (1980). Regional plan update : regional transportation plan, California Tahoe Regional Planning Agency, South Lake Tahoe, CA.

California Taxpayers Association (1972). A study of factors relative to building a new school in the Lake Tahoe Unified School District. Sacramento, CA, California Taxpayers Association.

California Water Resources Control Board (1980). Lake Tahoe Basin Water Quality Plan, Summary, California State Water Resources Control Board, Sacramento, CA.

This summary describes the Lake Tahoe Basin Final Water Plan, in which erosion control is seen as the principal factor in protecting Lake Tahoe's clarity and water quality, and in preventing further deterioration of the lake. Also described are: the erosion threats to the lake; the five water quality control alternatives, with a full description of Alternative C (Proposed Alternative, Less Restrictive Adherence to Land Capability); costs of remedial projects and management options; development controls possible to prevent erosion; program impacts; and implementation plans. The summary includes the changes to the Lake Tahoe Water Quality Plan since its publication in January, 1980. The principal control measures detailed in the Final Water Plan are summarized in this report. They are: (1) erosion and urban runoff control; (2) on-site surface runoff control; (3) controls on development; and (4) measures involving forest practices. Remedial erosion control projects are estimated to cost $95 million in 1979 dollars. The report suggests funding sources and summarizes implementation procedures, including liaison with Nevada authorities.

California Water Resources Control Board (1980). Lake Tahoe Basin Water Quality Plan, Final Plan, California State Water Resources Control Board, Sacramento, CA.

Lake Tahoe is an outstanding national resource. The exceptional clarity and purity of the waters of the lake are priceless as both a scientific and a scenic treasure. Federal law requires that the high quality of the lake be maintained. Erosion control is seen as the principal factor in protecting Lake Tahoe's clarity and water quality, and in preventing further deterioration. The Final Water Plan, submitted in accordance with requirements of Section 208 of the Federal Clean Water Act, describes the adverse effects of human activity on the lake, such as erosion from road cuts and off-road vehicles, destruction of natural filtering zones by development, construction on both 'high erosion hazard' lands and stable lands, and impact on runoff absorption when development covers excessive land. Rapid development in the Basin over the past two decades is causing a deterioration of the lake's water quality, including a doubling of the algal growth. The principal control measures outlined are: (1) erosion and urban runoff control; (2) on-site surface runoff control; (3) controls on development; and (4) policies involving forest practices. The report suggests funding sources and describes implementation procedures, including liaison with Nevada authorities.

California-Nevada Governors' Programs for Progress (1963). Joint statement on Lake Tahoe pollution, California-Nevada Governors' Programs for Progress.

California-Nevada Interstate Compact Commission (1958). Lake Tahoe faces water problems : adequate water supply, high water damage, sewage disposal, California-Nevada Interstate Compact Commission.

California-Nevada Interstate Compact Commission (1958). Public opinion sought : Lake Tahoe faces a water problem, California-Nevada Interstate Compact Commission.

California-Nevada Interstate Compact Commission and Field Research Company (1958). Property owners in the Lake Tahoe basin appraise proposed water level plans for the lake : a public opinion survey conducted for the California-Nevada Interstate Compact Commissions of California and Nevada, California-Nevada Interstate Compact Commission.

California-Nevada Interstate Compact Commission (1960). First draft of Compact Articles approved in principle by action of the Joint California-Nevada Interstate Compact Commission for referral to the drafting committee, California-Nevada Interstate Compact Commission.

California-Nevada Interstate Compact Commission (1970). Lake Tahoe water surface elevations & releases, California-Nevada Interstate Compact Commission.

California-Nevada Interstate Compact Commission of California (1958). Lake Tahoe faces water problems. Sacramento, CA.

Calkins, S. and Lake Tahoe Area Council (1960). Lake Tahoe Airport, Lake Tahoe Area Council, Reno, NV: 7 leaves.

Camp Agassiz - Tallac, C. (1902). A guide to the Lake Tahoe region : an account of the scenery, geology, natural history, the fishing, hunting and resorts. Tallac, CA, W.W. Price.

Campana, M. E. and R. L. Boone (1986). Hydrologic Monitoring of Subsurface Flow and Groundwater Recharge in a Mountain Watershed. Proceedings of the Symposium: Cold Regions Hydrology, University of Alaska-Fairbanks, Fairbanks, Alaska, American Water Resources Association, Bethesda, Maryland.

A small-scale study in a Sierra Nevada watershed just east of Lake Tahoe utilized four major groups of instruments to delineate infiltration, recharge and subsurface flow contributions to streamflow. Foremost among these groups was an automated tensiometer-transducer system. Tensiometers were linked to a central scanning valve via hydraulic tubing, which was buried to protect against freezing. The investigation indicated that deep percolation/groundwater recharge occurred beneath the snowpack during the winter months, but could not determine how much of it discharged locally and how much flowed off-site, perhaps as part of a deeper system. The major conclusion of this study is that deep percolation and groundwater recharge occurred beneath the snowpack during the winter months. In addition, rain-on-snow events provide additional pulses of infiltration superimposed on the steady downward deep percolation. (See also W90-10434) (Lantz-PTT)

Cannon, H. W. (1971). Statement In Support Of the Clean Lakes Act Of 1971. Congressional Record 117(24).

The proposed clean lakes act of 1971 would be of great value in improving and maintaining the unique purity and clarity of lake tahoe. this glacier lake is 22 miles long and 12 1/2 miles wide, but its depth of 1645 feet is being diminished by algae and mud expanding in its waters as a result of man's disturbance of watershed soil. due to the increasing population and recreation demands upon lake tahoe, it is in danger of prematurely aging--a process called eutrophication. in the last 10 years the fertility of the lake has increased by 72%. this fertilization process has been speeded up by community development projects, lumbering, roadbuilding, and land clearing. a regional planning agency is already establishing standards and controls over air and water pollution, zoning, building and the general development of the lake and the surrounding land area. however, the lake needs immediate attention from past neglect. the proposed act would direct the environmental protection agency to provide technical and financial assistance to states and cities and to conduct a comprehensive program of pollution control and redevelopment of the lake and the surrounding land.

Carlson, J. R. and J. C. Buckwalter (1974). Native plants studied in Lake Tahoe area. [Erosion control]. Soil-Conserv 40(2): 10-11.

Carlucci, A. F. and P. M. Bowes (1972). Determination Of Vitamin B12, Thiamine and Biotin In Lake Tahoe Waters Using Modified Marine Bioassay Techniques. Limnol Oceanogr 17(5): 774-776.

Seawater bioassays for dissolved vitamin b12, thiamine and biotin were modified for freshwater samples. the assay algae are: b12, cyclotella nana; thiamine, monochrysis lutheri; and biotin, amphidinium carterae. the lowest detectable levels of dissolved vitamins are: b12, 0.1 ng/l; thiamine, 4 ng/l; and biotin, 0.4 ng/l. summer and winter samples in a water column near the center of lake tahoe, california, were assayed using this method, and, with one exception, vitamins were found only in the euphotic zone.--copyright 1973, biological abstracts, inc.

Carney, H. J. (1987). Phytoplankton Dynamics In Large Temperate and Tropical Lakes: Two Case Studies (Titicaca; Peru; Bolivia; Tahoe; California; Nevada), University Of California, Davis.

This dissertation includes seven papers on studies of phytoplankton of Lake Titicaca (Peru/Bolivia) and Lake Tahoe (California/Nevada). The introduction discusses these papers in relation to current progress in the fields of ecology and limnology. Lake Titicaca has received relatively little study. Thus, two papers focus on initial phases of limnological work. One describes a new diatom species, Cyclotella andina, which at times is a dominant species in the plankton. The other provides a species list which includes 128 new records for the lake and compares the flora and other structural aspects of Lake Titicaca to other tropical and temperate lakes. A third paper reports a combination of assays which test for nutrient limitation, one of the more important factors which control the dynamics of these organisms. Lake Tahoe has received much more study. This combined with the lake's proximity to the University has allowed more sophisticated work to be done. One paper focuses on the seasonality, demographic characteristics (growth and loss processes) and competitive interactions of dominant phytoplankton species. Another describes field tests of interspecific resource-based competition among these species. A third paper discusses the application of concepts of succession to Lake Tahoe, in particular r- and K-selection theory. The dissertation closes with a look to the future. This includes a paper on autoradiography, one of the techniques which holds promise for linking studies of the dynamics of populations, communities and ecosystems.

Carney, H. J. (1987). Field tests of interspecific resource-based competition among phytoplankton. Proc Natl Acad Sci USA 84(12): 4148-4150.

Carney, H. J., P. J. Richeson, et al. (1988). Seasonal phytoplankton demographic processes and experiments on interspecific competition. Ecology 69(3): 664-678.

Population dynamics of Lake Tahoe phytoplankton species were studied during 1985. Four dominant diatoms were examined: Cyclotella glomerata, Cyclotella ocellata, Synedra amphicephala , and Synedra radians . All three tests indicated that resource-based competition was important. Species clearly segregated with thermal stratification and nutrient depletion in the epilimnion. C. glomerata packed within the epilimnion (0-20 m), S. radians became dominant in the deep chlorophyll maximum region (60-90 m), and the other species peaked at intermediate depths. Resource-limited growth was a dominant process during this time, and sinking and natural death were significant losses. Primary productivity nutrient-enrichment bioassays and growth kinetic assays (phosphate, nitrate, light) also indicated that phosphate and light limitation were important bases of species interactions.

Carney, H. J. and C. R. Goldman (1988). Seasonal Phytoplankton rho- and K-selection in Oligotrophic Lake Tahoe. Internationale Vereinigung fuer Theoretische und Angewandte Limnologie. 23(2): 672-676.

Lake Tahoe is a large (400 sq km surface area), deep (505 meters maximum, 313 meters mean depth) lake. The watershed is small (1.6:1 ratio of drainage basin to lake surface area) and consists primarily of nutrient poor soils which overlie granitic bedrock. Because of these watershed characteristics and the morphometry of the lake, Lake Tahoe has been ultraoligotrophic for thousands of years. The unusual features of this lake provide a rigorous test for the generality of the rho- and K-selection concept. Rho refers to the intrinsic rate of increase, and rho-selected organisms are small, fast-growing, short-lived and opportunistic species which rapidly occupy resource-rich areas. K refers to the carrying capacity, and K-selected organisms are the larger, slow-growing, long-lived and highly competitive species which use limiting resources efficiently. Data collected during a 1984-85 study were examined to test whether phytoplankton seasonality in Lake Tahoe agrees with the concept of rho- and K-selection. Several factors are generally consistent with this concept during the spring and summer: increasing water column stability, reduced nutrient concentrations, declining primary productivity and specific growth rate, and a shift from smaller short-lived cells to larger and more persistent forms. The most striking difference of this lake is its muted seasonality, which may be caused by some combination of the following factors: low nitrogen and phosphorus loadings and lack of silica depletion, unusual depth, and relatively low grazing pressure. If cultural eutrophication of this lake continues, the rate of seasonal succession will probably increase and become more typical for a north temperate lake.(Davis-PTT)

Carson Jr., W. D. (1980). Effluent Charges for Water Pollution Cont rol in California.

This report stems from a research project to identify an area of the water pollution control program in California where the application of effluent charges could be effective and beneficial. The project incorporates a case study of Lake Tahoe as an example of potential application of effluent charges and a model for answering difficult questions of implementation of such charges. Taxes or charges are seen as preferable to direct controls, except in terms of political acceptability. The report attempts to improve political acceptability by clarifying certain issues. It recommends (1) that charges be administered by the Regional Boards, since water quality management problems are regional in nature, and (2) that monitoring be a combination of self-reporting by the discharger and random audits by the Regional Boards. Numerous questions regarding implementation of effluent charges are examined. The report suggests that effluent charges can be applied to water quality control problems only in a simulation model that requires information on technology, pollution transfer, water quality, and treatment costs. Simulation studies of effluent charges applied to industrial point sources of water pollution have also shown effluent charges to be more efficient than uniform percentage reduction. Suggested uses of generated revenue, relevant federal legislation, administrative costs, and an extensive bibliography are included.

Cartier, K. D., L. A. Peltz, et al. (1994). Development and documentation of spatial data bases for the Lake Tahoe basin, California and Nevada, U.S. Dept. of the Interior, U.S. Geological Survey Earth Science Information Center, Open-File Reports Section, Denver, CO.

Carville, J. S. (1989). Lingering in Tahoe’s wild gardens : a guide to hundreds of the most beautiful wildflower gardens of the Lake Tahoe region. Chicago Park, CA, Mountain Gypsy Press.

Cave, D. L. (1987). Geochemical Reactions Between Primary-Treated Sewage and Volcanic Phase Assemblages Near Tahoe City, California, University Of Nevada, Reno (0139).

Volcanic terrain near Tahoe City, California, was utilized from 1970 to 1978 as a land disposal medium for primary-treated sewage. Prior to effluent application, the primary geochemical process occurring in the latite flow system was weathering of aluminosilicates; feldspars were the dominant reactants, contributing 82 percent of total ions (Ca, Na, K) to solution. During effluent application, dissolution of plagioclase feldspars increased 260 percent; Ca concentrations in solution increased proportionately, but Na and K levels decreased. Cation exchange and adsorption were not viable mechanisms for continual removal of high sodic concentrations from solution; therefore, formation of disordered clays appears to have been the principal sink for Na, K and silica in the flow system. Cation concentrations in solution and resultant clay precipitation were controlled by: (1) aluminosilicate dissolution and resultant cation ratios in solution; (2) anion concentrations; and (3) aluminum concentrations in solution. Order No: AAC 9224917 ProQuest - Dissertation Abstracts

Cefalu, J. (1987). Tahoe's economic environment crippled : regional government's impact. California County May-June: 25+.

CH2MHill and Tahoe-Truckee Sanitation Agency (1978). Sewage disposal study for the North Tahoe - Truckee area. Redding, CA, CH2MHill.

Chang, C., J. Kender, et al. (1991). super(113m)Cd in Lake Tahoe. The 34th Conference of the International Association of Great Lakes Research, Ann Arbor, MI.

The fallout isotope super(113m)Cd (t sub(is equivalent) = 14.6y, 99% beta super(-), E sub(max) 0.59MeV) has been detected in preliminary studies of water and sediment from Lake Tahoe. A hollow fiber filtrator was used to dewater ca. 1 g of Fe(OH) sub(3) freshly precipitated from 750 L of lake water that had been amended with a stable Cd recovery tracer. super(113m)Cd isolated on this precipitate was decontaminated from other beta super(-) emitters using the procedure developed earlier, and determined using a "pancake" proportional counter. Duplicate samples averaged 500 +/- 210 x 10 super(-6) Bq/L. Naturally-occurring Cd in the lake ranges around 20 pM, giving a mean specific activity of similar to 0.2 MBq/g. In sediment cores from near midlake, super(113m)Cd activity exhibits a pronounced subsurface maximum between 2-3 cm, reaching about 17 mBq/g dry weight. This value agrees well with the sedimentation rate derived from the unsupported super(210)Pb profile.

Chang, C. C. Y., J. S. Kuwabara, et al. (1992). Phosphate and iron limitation of phytoplankton biomass in Lake Tahoe. Can. J. Fish. Aquat. Sci. 49(6): 1206-1215.

Field measurements and bioassay experiments were coupled to investigate the interdependent processes affecting phytoplankton biomass at Lake Tahoe using a trace metal protocol. Water samples were analyzed for suspended particular matter, dissolved organic carbon, major ions and macronutrients, adenosine triphosphate, and phytoplankton abundance. Concentrations of total Cd (less than or equal to 18 pM), Cu (2.25-8.85 nM), and Fe (22-49 nM) were similar to or lower than those reported for other oligotrophic lakes. Bioassays were carried out to assess the response of inoculated, single-species diatom populations (Cyclotella meneghiniana and Aulocosiera italica) to additions of synthetic chelators (EDTA, EDDHA), and phosphate. A chemical speciation model along with the field data was also used to predict how trace metal speciation, and hence bioavailability, was affected by the chelator additions. Results suggest that phosphate was limiting to phytoplankton biomass. Other solutes, Fe in particular, may also exert controls on biomass. Nitrate limitation seems less likely, although Fe-limiting conditions, as suggested by the biomass, may have led to an effective N limitation because algae require Fe to carry out nitrate reduction. Small perturbations in chemistry may have pronounced effects on phytoplankton biomass in oligotrophic systems where essential nutrients ar at low concentrations.

Chappie, E. A., D. B. Seney, et al. (1990). Oral history interview with Eugene A. Chappie : Member, California State Assembly, 1965-1974; Member, United States House of Representatives, 1981-1986; March 12, 1990, April 3, 1990, April 5, 1990 and April 10, 1990, Placerville, California.

ChartAmerica Corporation (1976). South Lake Tahoe and surrounding area. San Antonio, Texas, ChartAmerica Corporation.

Chatfieldtaylor, J. (1989). Contemporary Traditions On Lake-Tahoe. Architectural Digest 46(10): 270+.

Chilman, K. C. and G. Hampton (1982). A new recreation inventory system to aid land management decision-making: an application at Lake Tahoe Management of dispersed recreation on large wildland areas, National Forests. Symposium on Leisure Research, Minneapolis, University of Minnesota Agricultural Experiment Station.

Christensen, D. R. and R. W. Prettyman (1975). Thickening Of Unwanted Spent Lime Rejects. Water And Sewage Works 122(5): 102-104.

The montgomery county regional advanced waste treatment plant in maryland is planning to treat its lime sludge by separating the unwanted materials (rejects) from the spent lime by centrifugation. the spent lime can be reused following recalcination. the rejects will be further settled in gravity thickeners before being pumped to dewatering equipment prior to final disposal. an investigation was conducted to obtain design data for the gravity thickening units. the tests were conducted with rejects from a centrifuge at the south lake tahoe advanced waste treatment plant in california. rejects from the centrifuge are expected to enter the thickeners at 3% solids. a 24 hr detention time in a 6 ft depth at 4% solids should result in a solids loading rate of 15 lb/sf/day. two 90 ft diameter rejects thickeners with a 10 ft side water depth are the preliminary design recommendations. this design will produce solids loading at a maximum flow of 16 lb/sf/day. (orr-firl)

Christensen, R., R. Eilbert, et al. (1980). An Exploratory Application of Entropy Minimax to Weather Prediction: Estimating the Likelihood of Multi-Year Droughts in California, Entropy Ltd., Lincoln, MA.

A new information theoretic technique was tested for long range forecasting of the probability of extended drought. Time-series data were obtained describing precipitation, stream flow, tree ring indices, atmospheric temperature and pressure, sea surface temperature, Palmer drought severity index, and other variables. The geographical region includes Far Western North America, and mid- and north Pacific Ocean; the time span extends from about 1850 to 1977. These time-series were analyzed for patterns enabling long range prediction of annual precipitation in a 7-station Sacramento-Tahoe region in California. Patterns were found in a randomly selected (training) half of the years enabling prediction of wet versus dry probabilities for the other (test) half with lead times of one, two or three years. The accuracy of the predictions on the test half of the data is 63%, statistically significant at the 94% confidence level. For comparison, the accuracy obtained for a random predictor is 50%, and the accuracy for a one-year persistence hypothesis is 54%, with negligible statistical significance. On extreme years (extremely wet or extremely dry), the predictive accuracy of the patterns rises to 78%, evidence of their physical meaningfulness. On extreme years, the accuracy of the persistence hypothesis, on the other hand, degrades to 51%.

City of South Lake Tahoe (1982). The code of the city of South Lake Tahoe, California : the general ordinances of the city, City of South Lake Tahoe, CA.

City of South Lake Tahoe (1990). City code of the city of South Lake Tahoe, California : codified ordinances of the city, City of South Lake Tahoe, CA.

Clair A. Hill Associates (1965). A preliminary report concerning recommended additions to the sewage treatment plant and Bijou pump station for South Tahoe Public Utility District, Bijou, El Dorado County, California, Clair A. Hill Associates, Redding, CA: 12 p., 2 leaves of plates.

Clarke, R. M. (1991). South Lake Tahoe Gaming: Analysis and History, University Of Nevada, Reno.

The purpose of this thesis is to analyze the gambling industry at the south shore of Lake Tahoe. The study is intended to show how the industry developed, where it is today, and what influences it. The thesis is divided into three sections. The first section is the history of the area's gambling industry development, who and what shaped it. This section is primarily historical, not analytical. The second section is a regression analysis of the exogenous factors that affect the area gaming. The factors found to directly influence gaming were California wages and salaries, seasons, local non-gaming recreational offerings, holidays, and inflation. The third section is an attempt to create a demand-side oriented tourism index for South Lake Tahoe that will give a clear, accurate view of the local tourism trends.

Clontz, J. N. (1974). The Tahoe Regional Planning Agency : problems and perspectives in the Lake Tahoe Basin, University of San Diego, School of Law, San Diego, CA.

Coatney, R. L. (1965). Modal Analysis Of the Granitic Rocks Of the Northern Sierra Nevada Between Yosemite and Lake Tahoe, California, The Pennsylvania State University (0176).

Coats, R. N. (1975). Nitrogen Flux Through a Forested Watershed Near Lake Tahoe, California, University Of California, Berkeley.

Coats, R. N., R. L. Leonard, et al. (1976). Nitrogen uptake and release in a forested watershed, Lake Tahoe basin, California. Ecology - Durham 57(5): 995-1004.

Coats, R. N., R. L. Leonard, et al. (1978). Removal of nitrogen from snowmelt water by the soil-vegetation system, Lake Tahoe Basin, California. West-Snow-Conf., Carson City, NV.

Coats, R. N. (1993). Nitrogen concentration-discharge relationships in streams of the Lake Tahoe basin, California-Nevada. Annual Meeting Abstracts - USA Aslo And Sws.

Lake Tahoe is a large ultra-oligotrophic lake in the Sierra Nevada. Because the Lake is undergoing rapid eutrophication, the input of nutrients from basin watersheds has been studied intensively since the early 1970's. This paper reports on the efforts to develop discharge-concentration models for nitrate-nitrogen in 10 stream in the Lake Tahoe Basin. A simple 2-variable model was developed to compare the water types: "short flow-path water" that dominates during storms and snowmelt, and "long flow-path water" that dominates base flow. Stepwise linear regression was used to fit model parameters to the data. Both independent variables made a highly significant contribution to explaining the concentration variance. The results of this study may be useful for developing predictive models for estimating nutrient input to the Lake, and for guiding policy aimed at controlling that input.

Coats, R. and C. Goldman (1993). Nitrate Transport in Subalpine Streams, Lake Tahoe Basin, California-Nevada, U.S.A. Applied Geochemistry 8(2): 17-21.

Efforts have been taken to develop a linear model which relates nitrate-N concentration to two discharge variables, and to fit the model to the data using multiple regression. The data set comprises >3100 mean daily discharge and nitrate-N concentration values representing 45 watershed-years. The goal was to compare the relative contribution to nitrate-N concentration of two dominant water types: 'short flow-path water' that occurs during storms and snowmelt, and 'long flow-path water' or base flow. The first variable is a reciprocal function of discharge, derived from a mixing model for two water types in an open system. The second variable uses either cumulative water discharge or cumulative nitrate-N load for the water year. Stepwise linear regression was used to fit model parameters to the data. Both independent variables made a highly significant contribution to explaining the concentration variance. Values of R-squared ranged from 0.22 to 0.45. For one catchment, the model was fitted to data for eight separate water years; it explained up to 80% of the variance in nitrate-N concentration. These results indicate that the model can be used to distinguish anthropogenic nitrate sources from the ion pulse associated with early snowmelt, and to develop predictive models for estimating total load.

Cobourn, J. (1989). Cumulative Watershed Effects (CWE) Analysis in Federal and Private Forests in California. Symposium on Headwaters Hydrology. American Water Resources Association, Bethesda, MD.

Resource managers at the State and Federal forestry agencies in California are working to develop CWE analysis methodologies to satisfy legal requirements for consideration of cumulative impacts in watersheds of mixed ownership. The National Environmental Policy Act (NEPA) and the Clean Water Act of 1977, as well as the California Environmental Quality Act (CEQA), require that the effects of past, present, and future management activities be considered together to prevent water quality impacts. Such analysis creates a safety net for water quality--the ultimate best management practice for predicting impacts which might be missed if planning were carried out only at the project proposal level. Some of the most detailed CWE analyses in California are being performed by the hydrologists of the USDA Forest Service (USFS) using the Region 5 Forest Service methodology. Phase one of this approach is the calculation of a Natural Sensitivity Index for each watershed. Phase two is the compilation of the acreage of all management activities, including road surfaces, into a Land Disturbance History. In this phase, the Equivalent Roaded Acre (ERA) is often used as a unit of measure. Phase three is a field investigation, and phase four is an evaluation, based on Phases one, two, and three, of the possibility that the watershed may be at or near its geomorphic Threshold of Concern (TOC), beyond which special measures will be needed to ensure protection against adverse CWE. (See also W90-08822) (Author's abstract)

Cobourn, J. (1989). Application of Cumulative Watershed Effects (CWE) Analysis on the Eldorado National Forest in California. Proceedings of the Symposium on Headwaters Hydrology, American Water Resources Association, Bethesda, Maryland.

The Region 5 Office of the USDA Forest Service has directed the National Forests of California to develop their own applications of the Region's 'Cumulative Off-site Watershed Effects Analysis' methodology. The Eldorado National Forest has developed and implemented such a process. Phase 1 of the process relies heavily on the Soil Survey and the Streamside Management Zones for calculation of a weighted Natural Sensitivity Index (NSI). The second phase of the analysis calls for the district offices to assemble the actual acreages and dates of various management activities, including proposed activities, in a Land Disturbance History (LDH). This summary uses the Equivalent Roaded Acre (ERA) as a unit of measure for normalizing the disturbance caused by various Harvest and Site Preparation activities. Phase 3, a detailed field observation of the channel system, is conducted if phases 1 and 2 indicate a need for concern. Once these phases are complete, phase 4, an estimate of the Threshold of Concern (TOC), is made. The estimated TOC is not a firm number but rather an approximation, such as 10-12% ERA for a very sensitive watershed. This TOC is only one part of a summary statement which attempts to explain management implications in terms of the degree of risk of initiating adverse CWE. (See also W90-08822) (Author's abstract)

Coil, J. A., III (1978). Spatial Heterogeneity Of Selected Nutrients In Lake Tahoe (California-Nevada), University Of California, Davis (0029).

Coleman, E. H. (1950). Map of Fallen Leaf Lodge region, Lake Tahoe, Calif.

Compass Maps (1974). Welcome to North Lake Tahoe. Modesto, CA, Compass Maps.

Compass Maps and El Dorado County Chamber of Commerce (1976). Map of El Dorado County. Modesto, CA, Compass Maps.

Comstock, H. O. and J. B. Goodman (1941). Lake Tahoe. Lake Tahoe, CA, Brockway Hotel and Hot Springs.

Cooley, R. L., J. W. Fordham, et al. (1971). Hydrology Of Truckee Meadows, Nevada, University of Nevada - Reno, Desert Research Institute.

The states of california and nevada and the federal government are involved in the fate of pyramid lake and the newlands irrigation project. truckee meadows, which lies at the base of the carson range (a spur of the sierra nevada) approximately 30 miles northeast of lake tahoe, was studied with regard to its potential as a source for additional water for the system. using the groundwater model, groundwater inflow to the meadows from areas peripheral to the basin was estimated to be about 5,000 acre-feet per year (ac-ft/yr). however, using reasonable extremes for transmissivities, the model indicates inflow could range from 2,000 to 8,000 ac-ft/yr. the estimated recharge rate includes underflow from tributary valleys, recharge on alluvial fans and slopes, and underflow from the bordering mountain ranges. underflow out of truckee meadows occurs in the vicinity of vista and is apparently less than 10 ac-ft/yr. mining groundwater in the meadows would yield about 2 feet of water per 10 feet of saturated material per unit area based on an estimated average specific pumping carries several risks which could overshadow any benefits. lowering water levels in areas of groundwater discharge will increase hydraulic gradients toward the discharge areas and will likely induce movement of poorer quality water into pumpage areas.

Coon, T. G., M. Lopez, et al. (1987). Summer Dynamics of the Deep Chlorophyll Maximum in Lake Tahoe. Journal of Plankton Research 9(2): 327-344.

Vertical profiles of chlorophyll and phytoplankton biomass were measured in Lake Tahoe from July 1976 through April 1977. A deep chlorophyll maximum (DCM) persisted during summer and early autumn (July-October) near 100 m, well below the mixed layer and at the upper surface of the nutricline. The DCM coincided with the phytoplankton biomass maximum as determined from cell counts. In addition, the composition of the phytoplankton assemblage was highly differentiated with respect to depth. Cyclotella stelligera was the predominant species in the mixed layer while the major species in the DCM layer included C. ocellata and several green ultraplanktonic species. In situ cell growth plays a substantial role in maintaining the DCM, but sinking of cells from shallower depths and zooplankton grazing above the DCM persists at the boundary between an upper, nutrient-limited phytoplankton assemblage and a deeper, light-limited assemblage. (Author's abstract)

Cordone, A. J., S. J. Nicola, et al. (1971). The Kokanee Salmon In Lake Tahoe. Calif Fish Game 57(1): 28-43.

Large numbers of kokanee salmon, oncorhynchus nerka, fry were stocked in lake tahoe from 1949 through 1955. kokanee became established but the population remained at a low level until 1963 when a dramatic increase in the number of spawners was observed. a fishery finally developed in 1967. major spawning concentrations occur in taylor creek and along the shores of mckinney bay. in most years from 1960 through 1968 virtually the entire taylor creek run was composed of a single age group from certain strong year classes. presence of strong year classes suggests high survival of naturally-spawned fish. there is some evidence, however, of high egg retention. lake tahoe kokanee grow rapidly and a trend toward increasing growth rates since 1961 is suggested. their length-weight relationship was log w=-3.26090 + 2.91063 log l. their diet consisted mostly of cladocerans. they are widely distributed in the limnetic zone and strongly surface oriented, except during the summer and early fall when large schools form off taylor creek at depths from 50 to 120 ft.--copyright 1971, biological abstracts, inc.

Corps of Engineers (1969). Flood Plain Information, Trout and Bijou Creeks, South Lake Tahoe, California. Corps Eng Flood Plain Report, Corps of Engineers. 23.

Flooding of trout and bijou creeks, south lake tahoe, california, is described in a report of flood plain problems based on records of rainfall, runoff, and historical and present flood heights. maps, photographs, profiles, and cross sections indicate the extent of flooding that has occurred and which may be expected to occur in the future. the information is for use in study and planning ways to minimize vulnerability to flood damages by control of flood plain use by zoning and subdivision regulations, the construction of flood protection works, or by combinations of these approaches.

Corps of Engineers (1969). Flood Plain Information, Upper Truckee River, South Lake Tahoe, California. , Oct, Corps of Engineers. 27.

Flooding of the upper truckee river, south lake tahoe, california is described in a report of flood plain problems based on records of rainfall, runoff, and historical and present flood heights. maps, photographs, profiles, and cross sections indicate the extent of flooding that has occurred and which may be expected to occur in the future. the information is for use in study and planning ways to minimize vulnerability to flood damages by control of flood plain use by zoning and subdivision regulations, the construction of flood protection works, or by combinations of these approaches.

Costantini, E. and K. Hanf (1971). Environmental Concern and Political Elites: A Study Of Perceptions, Backgrounds, and Attitudes, Institute of Governmental Affairs, University of California, Davis.

Inevitably the question of what constitutes unacceptable environmental conditions is a political one. environmental policy is not an irresistible, simple, unchallenged response to empirical or scientific fact alone, but is determined through trial by political combat. environmental policy tends to be a function of the degree of concern for environmental problems on the part of those persons in a position to make or affect relevant decisions. the decision makers in the latke tahoe basin are examined in terms of variations in their level of concern for environmental problems. the relationship between these variations and other environmental perceptions, the background, and political, social and psychological attitudes of the decision makers is discussed. a larger study is concerned with identifying and analyzing the attitudes and interests of the most significant actors concerned with environmental policy in the lake tahoe basin.

Costantini, E. and K. Hanf (1972). Environmental Concern At Lake Tahoe, a Study Of Elite Perceptions, Backgrounds, and Attitudes. Environment And Behavior 4(2): 209-242.

Environmental policy is determined through trial by political combat and is, therefore, among other things, a function of concern for environmental problems on the part of those persons in a position to make or affect relevant decisions. a perspective is needed from which to penetrate this growing but diffuse concern for environmental problems and thus to provide a more differentiated point of departure for the analysis of environmental policy-making. in profile fashion, the perceptions, backgrounds, and attitudes of significant factors affecting environmental decision-making in a limited but environmentally significant local -- the lake tahoe basin -- are explored. on the basis of responses to a series of likert-type questions by some 300 people, who, by virtue of their position, reputation and activity, were identified as significantly affecting environmental decision-making, an environmental concern scale was constructed as a measure of the respondent's concern for environmental quality at tahoe. scores on this scale led to grouping the respondents in terms of variations in levels of concern; these variations were then examined in terms of their relationship with (1) other environmental dispositions and perceptions, (2) the social background, and (3) the political and social psychological attitudes of the decision-makers. significant differences were found between high and low scorers on the concern scale along each of these dimensions. those displaying a relatively high level of environmental concern were more likely to be professionals or governmental officials and less likely to be businessmen or anchored in the tahoe area. (davis - chicago)

Costantini, E. and K. Hanf (1973). The Environmental Impulse and Its Competitors: Attitudes, Interests, and Institutions At Lake Tahoe, Institute of Governmental Affairs, University of California, Davis.

Inevitably, the question of what constitutes unacceptable environmental conditions is a political one: environmental policy cannot be an irresistible, simple, unchallenged response to empirical or scientific fact alone. no matter how weighty the evidence of degradation may be, the environmental impulse inevitably competing, perhaps stronger, impulses. as a consequence, what constitutes unacceptable environmental conditions and what to do about them are political questions, for it is in the political process that disagreement over significant social values and conflicting interests finds expression and seeks some form of resolution. two central ingredients of that process are considered: first, the attitudes and backgrounds of persons critically affecting environmental decision-making in the tahoe basin, and second, the framework of political institutions within which decisions regarding the basin are made. in particular, the extent to which these institutions have been responsive to the values of environmental quality, is examined. the objective is to explore the relationships between political institutions and institution building at tahoe on the one hand, and the environmental impulse and its competitors on the other. (snyder-california)

Costantini, E. and K. Hanf (1974). The politics of ecology and the Lake Tahoe Basin, Institute of Governmental Affairs, University of California, Davis: 85 leaves.

Costantini, E., G. Wandesforde-Smith, et al. (1974). Regional agency voting behavior : the Tahoe experience, Institute of Governmental Affairs, University of California, Davis.

Costantini, E. (1975). The Environmental Impulse and Its Competitors: Attitudes, Interests, and Institutions at Lake Tahoe, University of California, Davis.

A summarized and updated version is presented of a Technical C ompletion Report (See W74-06843). Inevitably, the question of what constitutes unacceptable environmental conditions is a political one: Environmental policy cannot be an irresistible, simple unchallenged response to empirical or scientific fact alone. No matter how weighty the evidence of degradation may be, the environmental impulse inevitably confronts competing, perhaps stronger, impulses. As a consequence, what constitutes unacceptable environmental conditions and what to do about them are political questions, for it is in the political process that disagreement over significant social values and conflicting interests finds expression and seeks some form of resolution. The relationship between political institutions and institution building at Tahoe on the one hand, and the environmental impulse and its competitors on the other is explored. (Snyder-California, Davis)

Court, J. E., C. R. Goldman, et al. (1972). Surface Sediments In Lake Tahoe, California-Nevada. Journal Of Sedimentary Petrology 42(2): 359-377.

Samples from 40 sites in lake tahoe and from six major tributaries were analyzed for mineral and biogenic components and for texture. the areal distribution of volcanic constituents of sand and gravel fractions reflects volcanic sources in the north and northwest parts of the basin. volcanic areas contribute montmorillonite to clay fractions whereas vermiculite and chloritic intergrades are characteristic weathering products of granitic sources. two distinct types of sediment are present. pollen-rich diatomaceous ooze (organic ooze) is characterized by: (a) abundant diatoms and pollen; (b) chloritic intergrades in the clay fraction; and (c) all from flat-lying, well stratified beds. the other sediment type (non-organic) is typified by: (a) diatoms and pollen rare or absent; (b) vermiculite/mica/montmorillonite clay fraction; (c) not present in flat-lying beds; and (d) texturally more varied than organic ooze. non-organic samples represent still-exposed depositional products of the tioga glaciation, reflecting relatively rapid erosion and slumping into deeper parts of the basin. the principal source of non-organic material was the west side where volcanic rocks constitute about half of the area. in contrast, organic ooze samples result from relatively passive post-glacial fluvial erosion. the relative abundance of biogenic components in organic ooze reflects low depositional rates and the clay fraction, rich in chloritic intergrades points to the dominance of granitic source rocks in the present basin-widesource. (knapp-usgs)

Cover, A. E. and L. J. Pieroni (1969). Appraisal Of Granular Carbon Contacting: Phase 1. Evaluation Of the Literature, and Phase 2. Economic Effect Of Design Variables, Swindell-Dressler Co., Pittsburgh, PA.

A literature review of tertiary waste water treatment gives special attention to activated carbon adsorption of chemical oxygen demand (cod), allowable capacity (loading) of carbon with organic waste matter, carbon particle size, and number of regeneration cycles on adsorption capacity and rate. the economic effects of shop fabrication and field erection of vessels, surge designs, plant size, idle carbon inventory, velocity, contact time, particle size, regeneration loss, carbon capacity, material costs, number of contacting stages, and in-place regeneration are discussed. most of the data were collected from carbon treatment plants at pomona (california), lake tahoe (california), nitro (west virginia), washington (new jersey), and lebanon (ohio). recommendations are made for further evaluation and experimental work.

Crescent Books (1987). Lake Tahoe : a picture book to remember her by. New York, NY, Crescent Books.

Crippen, J. R., B. R. Pavelka, et al. (1969). The Lake Tahoe Basin, California-Nevada, U.S. Geological Survey, Menlo Park, CA.

Crippen, J. R., B. R. Pavelka, et al. (1970). The Lake Tahoe basin, California-Nevada, U.S. GPO, Washington, D.C.

Crocker, C. and J. W. Dwinelle (1879). Letter to John W. Dwinelle : San Francisco : ALS, 1879 Oct. 17, (Concerning the meaning of the word Tahoe.).

Croke, E. J. (1973). An Evaluation Of the Impact Of Land Use On Environmental Quality, Argonne National Lab., Illinois Center for Environmental Studies.

Recent federal legislation such as the federal clean air act (1970) and the water pollution control act have mandated pollution control plans reflecting the spatial distribution of pollutant sources for metropolitan regions and river basins. such plans would necessitate the substitution of a comprehensive land use policy for the present technologically oriented pollution control strategy which is seriously hampered by rapid development. any environmental land use policy would have to consider the relationship between the assimilative capacity of an area and environmental quality standards. for example, large quantities of toxic industrial wastes may be contaminating new jersey groundwater due to an inability to assimilate the wastes. lake tahoe and atlanta are cited as two areas where regional development plans have included constraints due to assimilative capacity. current national environmental strategy, however, tends to disregard the particular assimilative capacities of different areas by establishing national emission and environmental quality standards. current land development policy, with projects having a 25-30 year economic lifetime can often lead to socioeconomic irreversibility of the consequent environmental problems. highway systems, airports, and the land development and population distribution they engender are cases in point. in order to insure the inclusion of environmental control in land use decisions by states and localities the federal government has a wide variety of incentives and disincentives at its disposal including the withholding of granting of funds for transportation systems, water treatment facilities and energy distribution systems.

Crow, L. W. and California Energy Commission (1978). California Climatic Thermal Zone 16 near Lake Tahoe related to energy requirements for heating, ventilation, and air-conditioning. Sacramento, California Energy Commission.

Cuenca, R. (1974). Preliminary Study Of Experimental System For Ammonia Removal At South Lake Tahoe Advanced Wastewater Treatment Plant. Lake Tahoe Research Seminar II, Sands Vagabond Convention Center, South Lake Tahoe, CA.

Nitrogen first enters the treatment plant in domestic wastewater in the form of ammonia and organic nitrogen compounds. total nitrogen in domestic wastewater can vary from 20 to 55 mg/1. in the activated sludge treatment process such as that at south lake tahoe, these compounds are first hydrolyzed and then oxidized by microorganisms until all of the nitrogen is converted to aqueous ammonia. as the result of research conducted in south africa and israel, interest was stimulated in a method of ammonia removal which had never been tried at plant scale. the system is basically comprised of four components. following chemical clarification of the lime treated wastewater, the water is transferred to a high ph detention pond. the detention time in the pond varies from 5 to 12 hrs depending on the influent flow rate. this first pond is followed by a second detention pond in series. this pond has installed a system of 46 spray nozzles. following the ponds is a modified stripping tower. installed in the interior of the tower is a system of 24 spray nozzles identical to those in the spray pond. the final step was breakpoint chlorination which had previously been used at south lake tahoe. (see also w76-07793) (sims - isws)

Culp, G. and A. Slechta (1966). Plant Scale Reactivation and Reuse Of Carbon In Wastewater Reclamation. Water And Sewage Works 113(11): 425-431.

At the 2.5 mgd tertiary sewage treatment plant at so. lake tahoe, activated carbon has been very effective in removing organic materials. efficient regeneration of the carbon is provided. for each mg of effluent about 740 lbs of carbon is removed through a 2 in. pipeline to two spent carbon tanks (coal-tar epoxy coating) with screened drain for dewatering the carbon to 43 percent moisture in 1 hr. carbon is moved by a variable speed stainless steel screw conveyor, capacity 40 to 250 lbs/hour, discharging into the top of the regeneration furnace. the carbon moves downward through the six hearths each equipped with gas-air control burners. steam can be added also. the regenerated carbon is discharged from the bottom of the furnace into a quench tank, from which it is pumped to the regenerated carbon storage tank, where it is washed to remove any fine carbon. regeneration is controlled by hourly determination of the apparent density of the carbon - it decreases with destruction of the absorbed organics to a final apparent density of 0.49. ash content is also monitored. carbon loss has averaged less than 10 percent per regeneration cycle. cost to regenerate and make up one pound of carbon was only one-sixth the cost of virgin carbon. regeneration costs are only 3.8 cents per one thousand gallons of effluent. (bean-awwarf)

Culp, R. L. and R. E. Roderick (1966). The Lake Tahoe Water Reclamation Plant. Journal of the Water Pollution Control Federation 38(2): 147-155.

The authors describe the new tertiary sewage treatment plant of south tahoe public utility district which produces a high quality, colorless, odorless effluent. the article presents construction and operating cost estimates for plants of 2.5, 10.0, 50.0, 100.0, and 200.0 mgd capacity, and for varying degrees of treatment. a principal conclusion is that the total cost of providing the maximum quality tertiary treatment with this process would vary from 24 cents to 37 cents/cap/month, depending on the size of the treatment plant. this estimated cost is based upon an average estimated effluent volume of 100 gpd per capita. the authors also conclude that ‘tertiary treatment provides an economic advantage over desalination as a source of water, since wastewater can be renovated for only 10-15 percent of the latest realistic estimates of cost for desalination’.

Culp, R. L. (1967). The Tahoe Process For Nutrient Removal. 7th Industrial Water And Waste Conference, Texas Water Pollution Control Association.

A 2 1/2 mgd water reclamation plant was placed into operation during the summer of 1965 at South Tahoe, California. The process which evolved from the operating experience of this original tertiary plant plus the information gained from this demonstration was the basis for the design of an expanded process capable of handling 7 1/2 mgd. The new process not only removes phosphates, nitrogen, and organics present in waste waters, but also provides for the recovery and reuse of chemicals employed in the process. All solid wastes are reduced to sterile ash by incineration. The total investment to provide tertiary treatment will be almost equal to that for providing secondary treatment at Tahoe.

Culp, R. L. (1969). Disease Due to ‘Nonpathogenic’ Bacteria. Journal Of The American Water Works Association 61(3): 157.

Gram-negative bacteria such as e. coli and p. aeruginosa can, under certain conditions, become pathogenic to man--especially to young infants and premature babies. the advent of sulfonamides and antibiotics has broadened the range of conditions within which these bacteria may act as pathogens. water supplies can be made and kept free of all gram-negative bacteria by chlorination of all water supplies, the covering of all finished water storage reservoirs, filtration of all surface waters, continuous monitoring and recording of chlorine residuals and turbidity in finished water, and elimination of cross connections to water distribution systems. (britton-awwarf)

Culp, R. (1969). Water Reclamation At South Tahoe. Water Wastes Eng 6(4): 36-39.

A 7.5 mgd water reclamation plant which employs advanced wastewater treatment practices has been operating for 9 mos with good results. the water is used for irrigation of alfalfa, other hay, and pasture land. there are plans to use the water for contact sports. the process starts with chlorination for odor control, then continues with a conventional activated sludge treatment with some recirculation of lime sludge for phosphorus removal. the effluent from the conventional treatment receives 5 steps of tertiary treatment: flocculation and coagulation with phosphorus removal (lime), nitrogen stripping, recarbonation, filtration, activated carbon columns, and chlorination. the sludges are incinerated with recovery of lime and carbon dioxide. the plant removes nearly 100 percent of the bod, cod, suspended solids, color, odor, coliforms and turbidity. the removal of phosphorus is about 94 percent and of nitrogen is greater than 50 percent. the spent carbon is regenerated with a loss of about 5 percent per cycle. the water is lifted 270 ft to a storage tank then about 1500 feet more to indian creek reservoir where it is removed for use. (ledbetter-texas)

Culp, R. L. and H. E. Moyer (1969). Wastewater Reclamation and Export At South Tahoe. Civil Eng 39(6): 38-42.

The 7.5-mgd reclamation plant at the south tahoe public utility district is the most advanced full-scale wastewater treatment plant in the world. treatment consists of 2 basic parts, liquid processing and solids handling. the first 2 steps of liquid processing are the conventional ones of primary, or solids separation, and secondary, or biological oxidation. in addition, the advanced treatment provides chemical treatment and phosphorus removal, mixed-media filtration, activated carbon adsorption, and disinfection. the solids handling system provides for incineration of biological sludge, regeneration and reuse of granular activated carbon, and recalcining and reuse of lime, all by means of multiple hearth furnaces equipped with scrubbers and afterburners. results to date indicate that the plant removes all of the suspended solids, color, odor and bacteria; most of the bod, cod, mbas, and phosphorus; and 50 to 98% of the nitrogen. reclaimed water is exported from the tahoe basin and used to irrigate croplands. (knapp-usgs)

Culp, R. L., D. R. Evans, et al. (1971). Advanced waste water treatment as practiced at South Tahoe, Water Quality Office, Environmental Protection Agency, For sale by U.S. GPO, Washington, D.C.

A 7.5 mgd advanced wastewater treatment plant at south lake tahoe, california has been in uninterrupted operation for three years. chemical treatment, mixed media filtration, and granular carbon adsorption have been shown to be efficient, reliable, and economical processes for wastewater treatment. a degree of reliability and flexibility comparable to that achieved in electric power generation and water purification has been achieved by appropriate selection and sequencing of unit processes and proper plant design. plant bypasses have been eliminated. bacteria and viruses have been entirely eliminated from the effluent by small chlorine dosages. lime has been recalcined in a multiple hearth furnace without air pollution, and granular activated carbon has been successfully regenerated and reused, with stack gasses scrubbed to meet air pollution standards. the entire plant produces only clean water, sterile ash, and harmless gases. reclaim ed wastewater has been used to form a recreational lake, certified for all water contact sports by regular testing, and free of algal blooms. the wastewater treatment cost has been approximately twice the cost of conventional wastewater treatment, but the project has demonstrated that man’s wastes need no longer degrade the environment if genuine desire and determination to solve the problem is applied. (lowry-texas)

Culp, R. L. and S. P. Hansen (1980). Carbon Adsorption Enhancement with Ozone. Journal of the Water Pollution Control Federation 52(2): 270-281.

Adding ozone (3 or 10 mg per liter) during activated carbon treatment of secondary effluent did not sufficiently enhance COD removal in pilot plant studies at South Tahoe, California, to warrant installation of a full-scale plant. Tests were continued until COD breakthrough occurred. The best test results showed an 80% increase in adsorptive capacity, but these high results were not duplicated in subsequent runs. Several characteristics of the system in this facility contributed to the negative results--chlorine residuals and low soluble COD in the effluent and low biological activity and normally aerobic conditions on the adsorption bed. Ozone-enhanced activated carbon adsorption has been used successfully in Europe and in Cleveland, where different conditions prevail. It is believed that several factors affect the results of ozone addition--nature of the organic material, amount of organic loading, presence or absence of aerobic conditions, species and growth of bacteria, and pretreatment of effluent. (Cassar-FRC)

Culp/Wesner/Culp (1979). Master plan for the South Tahoe Public Utility District water system. Cameron Park, CA, Culp/Wesner/Culp.

Culp/Wesner/Culp and Tahoe City Public Utility District (1982). Master plan for the Tahoe City Public Utility District water system, Culp/Wesner/Culp, Cameron Park, CA.

Culver, R. H. and R. H. Thomas (1972). Municipal Wastewater Reclamation and Reuse. Regional Workshiop by Science Council of Singapore and National Academy of Sciences of the USA, Water Resources, environment and national development - Volume II, Singapore.

Methods used to reclaim usable water from municipal wastewater are reviewed. the results obtained, the costs of construction and operation, the precautions to be observed in the use of reclaimed water, and alternative potential uses of reclaimed water are considered. the water reclamation projects at santee and south lake tahoe in california, and at windhoek in south west africa are described in detail.

Dake, J. M. K. and D. R. F. Harleman (1969). Thermal Stratification In Lakes: Analytical and Laboratory. Water Resources Research 5(2): 484-495.

Theories are developed for the time dependent vertical temperature distribution in a deep lake during the yearly cycle of solar heating and cooling. a heat flux balance at the water surface, which accounts for back radiation and evaporative heat loss, is formulated as a boundary condition. the linear, second-order heat transfer equation is solved by superposition of solutions for the surface absorbed radiation and the internally absorbed radiation. analytical solutions are given for three different assumptions regarding the time dependence of the incoming radiation and the surface heat losses. at certain times, the resulting temperature and density distribution in the epilimnion are unstable. under these conditions convective mixing and turbulent diffusion are accounted for by generating a surface mixed layer of uniform temperature, the depth determined by a thermal energy balance. the theory shows good agreement with field observations of temperature distributions in lake tahoe. experiments are performed using artificial insolation (mercury vapor and infrared lamps) on a laboratory tank. we conclude that it is possible to simulate the development of thermal stratification under laboratory conditions. (ross-vanderbilt)

David, M. D. C., United States Lake Tahoe Basin Management Unit, et al. (1978). A study of the impacts of alternative land use plans for the Lake Tahoe Basin, David, M. Dornbusch Company, San Francisco, CA.

Davies, R. A., H. J. Kaempf, et al. (1973). Removal Of Organic Material By Adsorption On Activated Carbon. Chemistry And Industry 17: 827-831.

Activated carbon has found widespread use for prepurification of potable and industrial waters and treatment of municipal and industrial waste waters, not only for removal of color, taste, and odor, but also for prevention of pollution by pesticides and other biodegradable and nondegradable organics in general. the physical principles of adsorption on carbon particles and beds are reviewed, and some process engineering considerations are discussed, including costs of granular carbon reactivation, justification of combustion furnaces, and relative merits of powdery vs. granular carbons. the first full-scale application of granular carbon for tertiary treatment was at lake tahoe, where aeration tank effluent is passed through eight parallel adsorbers to reclaim daily 28,000 cu m of irrigation water. at windhoek, south africa, potable water is recovered from sewage in a plant processing 200 cu m/hr. three typical industrial installations where granular carbon finds use in removal of toxic and colored effluent components include a swiss explosive factory, a herbicide factory on the U.S. west coast, and a carpet mill in Pennsylvania.

Davis, R. G. (1970). Regional government for Lake Tahoe : a case study, Institute of Governmental Affairs, University of California, Davis.

Davis, J. B. and R. E. Martin (1987). . Symposium on Wildland Fire 2000, South Lake Tahoe, CA, U.S. Dept of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.

Dean, R. B. (1970). Air Stripping Of Ammonia. Pittsburg Sanitary Engineering Conference, Pittsburgh, PA.

Ammonia can be stripped from a solution by bubbling air through it only if the ph is first raised to 11.0 to convert the free ammonium ion to ammonium hydroxide. ammonia, however, is over 1000 times more soluble in water than is co2, necessitating a theoretical minimum of 220 ft3 of air for 90% ammonia removal from 1 gallon of water at 20c. stripping towers become, in essence, water cooling towers, with subsequent cold weather operation difficulties. also, the solubility of ammonia is increased with decreasing temperature, compounding the problem. actual performance data from the lake tahoe plant indicate that under plant operation conditions, 300 ft3/gallon are actually required. in addition, calcium carbonate scale is formed by reaction with co2 which must be removed. reducing the ammonia content of a fluid from 20 mg/1 to 2 mg/1 would cost 2.3 cents/1000 at ph 11 and 9.9 cents/1000 gallons if the cost of the lime required to raise the ph to 11 is included. these costs are based on a 10 mgd plant, and they do not include scale removal. (see also w71-09450) (lowry-texas)

Dean, R. B. (1970). Re-Use and Disposal Of Alum and Lime Sludges. Pittsburg Sanitary Engineering Conference, Pittsburgh, PA.

Both lime and alum precipitation reactions produce sludge which must be handled in some manner. first of all, the choice must be made as to whether the sludge is to be disposed of or treated for re-use of the chemicals in it. 250 mg/l of lime produces 500-600 mg/l of sludge with and underflow concentration of 2-3% or 2 tons of sludge solids per mgd. this sludge may be used for soil stabilization, fill for roads, or in agriculture. however, by heating the precipitated calcium carbonate, calcium oxide can be recovered and re-used. the cost of lime recovery is the same as the cost of new lime, but disposal costs are significantly reduced. costs reported from dayton, ohio are $10-$12 per ton, while the lake tahoe plant reports lime recovery as costing $20/ton. the results of testing 4 laboratory scale, 75 liter treatment systems are reported and compared with regard to phosphate removal, sluge dewaterability, sludge filterability, and sludge composition. alum sludges contain 2 al:1p and probably some ca plus some organic matter. the sludge will settle to 10% solids, and is amendable to concentration by freezing. the sludge is not biodegradable, and can sometimes cause clogging of the soil when disposed on the land. lime treated alum sludge can be filter pressed to remove in excess of 50% as soluble aluminate, however, incineration of alum sludge leaves little or no residue for disposal, so for alum, disposal may be less expensive than re-use. (see also w71-09450) (lowry-texas)

Dean, R. B. (1981). Use of Log-Normal Statistics in Environmental Monitoring. Chemistry in Water Reuse 1: 245-258.

Most real data obtained in analytical laboratories follow log-normal statistics. In order to make use of the most powerful statistics that are available the data should be transformed to logs. If log-normal data are treated as if they were normal, quite erroneous estimates of large deviations from the central value will be made. Conversely, if truly normal data are treated as log-normal, the errors will usually be small and conservative. One should justify in each case the use of normal statistics rather than log-normal on all data, such as concentrations, where values less than zero are impossible. (Author)

Decker, L. M. and D. C. Erman (1992). Short-term seasonal changes in composition and abundance of fish in Sagehen Creek, California. Trans. Am. Fish. Soc. 121(3): 297-306.

Direct underwater observation was used to quantify numbers and locations of eight species of fish in 100-m sections along a 1,200-m reach of Sagehen Creek, California, at biweekly intervals between 5 July and 22 September 1983. Most of the eight species exhibited significant short-term changes in abundance and reached peak abundance at different times. Total fish abundance was highest in mid-July; the Margalef index of diversity was highest in mid-August. Lahontan redside Richardsonius egregius , Tahoe sucker Catostomus tahoensis , and mountain sucker C. platyrhynchus appeared to migrate from a downstream reservoir into the stream during the spawning season. In addition, fish were not distributed evenly in the study reach. All species tended to prefer pool habitat and pools were not uniformly distributed. Relative fish composition determined at long- term permanent sections by electrofishing was not significantly associated with most underwater counts made at different times or stations. This study illustrates mobility of an entire fish assemblage and indicates how long-term studies of fish populations may be greatly influenced by the timing and placement of samples.

DeMars Jr., C. J., G. T. Ferrell, et al. (1988). Host-insect/disease interactions in drought-stressed white fir stands at Lake Tahoe, California. Integrated control of Scolytid bark beetles. T. L. Payne and H. Saarenmaa. Blacksburg, VA, College of Agriculture and Life Science, V.P.I and State Univ.: 135-146.

Denham, C. R. (1981). Numerical Correlation of Recent Paleomagnetic Records in Two Lake Tahoe Cores. Earth Planet. Sci. Lett. 54(1): 48-52.

Recent paleomagnetic fluctuations are smooth and well correlated in two short cores collected 28 km apart in Lake Tahoe. Cross-correlation analysis of the unit-vector time series data shows that the characteristic angular difference between the two records is only 11 degree for the past 3000 years. this compares favorably with the characteristic angular differences of 7-8 degree between adjacent samples within each core taken separately. The correspondingly high values of pairwise (between cores) and serial (within core) correlation are significant at 99.99% confidence. These data, collected and previously studied qualitatively by A.S. Goldstein, show that the sediment in Lake Tahoe can provide reliable recent paleosecular variation records. The paucity of fine-scale paleomagnetic correlation between other cores from that basin is due likely to stratigraphic rather than rock magnetic difficulties.

Dewante, Stowell, et al. (1971). Comments on South Tahoe Public Utility District proposal to provide sewerage service for Tahoe City and North Tahoe Public Utility Districts, Dewante & Stowell, Sacramento, CA.

Dillon, T. M. (1974). Low Frequency Turbulence and Vertical Temperature Microstructure In Lake Tahoe, California - Nevada, University Of California, Davis.

Dillon, T. M., T. M. Powell, et al. (1975). Low Frequency Turbulence and Vertical Temperature Microstructure in Lake Tahoe, California-Nevada. Verhandlungen Internationale Vereinigung Limnologie 19: 110-115.

Lake depth temperature profile plots are usually presented as smooth curves, masking considerable detailing in structure of temperature, including ‘stair steps’ and inversions. Thus, estimates of thermal eddy diffusivities can be obtained from a careful analysis of the small-scale irregularities. A device is described which can resolve the 50 cm spectral level by modifying an expendable bathythermograph probe, which consists of a thermistor mounted on a streamlined body containing a 450 m section of fine two-conductor copper wire mounted on aspool from which it freely unwinds. A second section of the same wire is wound on a similar spool which remains on board when the probe is launched. Modification of the probe involves attaching a large funnel to slow the rate of descent and mounting four large rectangular wings on the drag funnel to provide further drag and spin the probe about its vertical axis to ensure uniform vertical descent. The descent rate is taken concurrently with a conventional thermistor. The fall rate is normally about 13 cm/sec and the time constant for XBT thermistor is 0.1 seconds, so that under ideal conditions features on the order of 3 cm might be resolved. The spectrum was uncontaminated at wavelengths greater than 25 cm during measurements taken at Lake Tahoe. (Auen-Wisconsin)

Dillon, T. M. and T. M. Powell (1976). Low-Frequency Turbulence Spectra in the Mixed Layer of Lake Tahoe, California-Nevada. Journal of Geophysical Research 81(36): 6421-6427.

Low-frequency turbulence was measured in the unstratified mixed layer (epilimnion) of Lake Tahoe, California-Nevada, during August and September 1973 by using savonius rotor current meters positioned at three depths. Kinetic energy frequency spectra derived from these measurements were compared with the Kolmogorov inertial subrange prediction by assuming that Taylor’s hypothesis is valid. The spectra are proportional to (wave number) to the (-5/3) power in a wavelength range generally between 10 m and 100 m at all depths. In view of the shallow thermocline depth (18-27m), the turbulence cannot be considered isotropic in this wavelength range, and a true inertial subrange should not exist. Kinetic energy dissipation rates averged over the epilimnion were calculated from the -5/3 portion of the kinetic energy spectra and vary between 0.0004 sq cm/s to the 3rd power (with slight winds) to 0.005 sq cm/s to the 3rd power (with winds ranging from 2 to 8 m/s). These dissipation rates are comparable with dissipation rates measured at similar depths in oceanic waters. (Sims-ISWS)

Dodson, R. E. (1977). Continuous Measurements Of the Natural Remanent Magnetization Of Sediments From Lake Michigan and Lake Tahoe, University Of Pittsburgh (0178).

Dozier, B. J. and P. J. Richerson (1975). An Improved Membrane Filter Method for the Enumeration of Phytoplankton. Verhandlungen Internationale Vereinigung Limnologie 19: 1524-1529.

The technique described offers two important modifications to the usual membrane filter method. The first modification is a reduced vacuum pressure of only 1 psi or less, which prevents destruction and minimizes distortion to the fragile forms by the filtration process. The other modification is substitution of 50% glutaraldehyde for the clearing agents usually used, such as cedarwood oil, immersion oil, anisole, and acetone vapor. Because glutaraldehyde is water soluble, it can be applied to the wet filter immediately following filtration, eliminating the need for an ethanol dehydration step. The new method is an offshoot of research initiated earlier, in which over 1,000 phytoplankton samples had to be enumerated as part of an investigation into the relationship between phytoplankton community structure and physical processes in Lake Tahoe (California-Nevada). Results are given of experiments performed to investigate organism distribution on filters prepared by the new method, using several techniques involving equipment distinguished by funnel shape. Statistical results are given, in addition, for a comparison of counts of 10 filtered and 10 sedimented samples, including mean, variance, variance:mean, chi-square and pattern description. (Harris-Wisconsin)

Dozier, B. J. (1976). An Autoradiographic Study Of the Relationship Between Photosynthetic Rate and Phytoplankton Seasonal Succession In Lake Tahoe, California-Nevada, University Of California, Davis.

Dozier, B. J. and J. J. Beauchamp (1978). An autoradiographic investigation of the seasonal photosynthetic activity of three diatom species in Lake Tahoe, California-Nevada Stephanodiscus astraea, Fragilaria crotonensis, and Cyclotella stelligera, Algae. 20th Congress, Internationale Vereinigung fur Theoretische und Angewandte Limnologie, Copenhagen, Denmark, International Association of Theoretical and Applied Limnology.

Seasonal photosynthetic activity of three dominant diatom species in ultraoligotrophic Lake Tahoe (CA, NV) was measured by autoradiography, in 1975. The influence of water temperature, light available for photosynthesis, nitrate nitrogen, and total phosphorus on species-specific variation in photosynthetic activity was analyzed by stepwise multiple regression. Declining phytoplankton populations in Lake Tahoe were precipitated by an unfavorable change in the physico-chemical environment rather than by zooplankton grazing, since in all three cases population reduction followed declining photosynthetic activity. Data also support the overriding influence of nitrate nitrogen over phosphorus as a limiting nutrient in Lake Tahoe. Of the four parameters, water temperatures was the most ciritcal affecting photosynthetic rate at 50 m of Stephanodiscus astraea, while nitrate nitrogen was the most important for Cyclotella stelligera, and to a lesser extent Fragilaria crotonensis. For all three species temperature correlated inversely with photosynthetic activity. Algal samples were injected with carbon-14 sodium bicarbonate solution with an activity of 9.2 microCi/ml. Incubated and filtered samples were packaged with Kodak AR10 Autoradiographic Stripping Plates and exposed for 3-6 weeks; five proved optimal. Results were evaluated according to silver grain density. (Lynch-Wisconsin)

Drew, S. E. (1982). Carson & Tahoe Lumber & Fluming Company's Lake Tahoe narrow gauge railroad locomotive no. 2 "Glenbrook" : restoration feasibility investigation. Arcadia, CA, Short Line Enterprises.

Drivas, E. P. (1986). Sampling Schedules For Tahoe Basin Streams During Snowmelt (Nevada), University Of Nevada, Reno.

Drohojowska, H. (1992). Natural Grace For Lake-Tahoe, Rustic Details Enliven a Nevada Waterfront. Architectural Digest 49(8): 156-163.

Duane, T. P. (1992). Managing the Sierra Nevada. California Policy Choices 8: 169-194.

Duckworth, S., D. Crowe, et al. (1979). Ozone patterns on the western Sierra slope : downwind of Sacramento during the summer of 1978, California Air Resources Control Board, Technical Services Division, Aerometric Analysis Branch, Sacramento, CA.

Duell, L. F. W. (1987). Geohydrology and Groundwater Quality Monitoring Network for the Antelope Valley Area, California, U.S. Geological Survey - Water Resources Division, Tahoe City, CA.

A basinwide ideal network and an actual network were designed to identify ambient groundwater quality, trends in groundwater quality, and degree of threat from potential pollution sources in Antelope Valley, California. In general, throughout the valley groundwater quality has remained unchanged, and no specific trends are apparent. The main source of groundwater for the valley is generally suitable for domestic, irrigation, and most industrial uses. Water quality data for selected constituents of some network wells and surface-water sites are presented. The ideal network of 77 sites was selected on the basis ofsite-specific criteria, geohydrology, and current land use (agricultural, residential, and industrial). These sites were used as a guide in the design of the actual network consisting of 44 existing wells. Wells are currently being monitored and were selected whenever possible because of budgetary constraints. Of the remaining ideal sites, 20 have existing wells not part of a current water quality network, and 13 are locations where no wells exist. The methodology used for the selection of sites, constituents monitored, and frequency of analysis will enable network users to make appropriate future changes to the monitoring network.

Dugan, G. L. (1972). Eutrophication Potential of the Lake Tahoe Basin California-Nevada. Water Resources Seminar Series 1: 3-11.

Future seasonal and permanent populations will be controlled by zoning regulations to some predetermined number as a measure of eutrophication control of lake tahoe. the lake tahoe area council was formed in the 1950's with the basic function of conducting research and promoting orderly and environmentally sound development around the lake. a consultants' study concluded that municipal sewage posed the greatest threat to the clarity of the lake, prompting a program of effluent export from the basin. after lengthy negotiations, alpine county agreed to accept the effluent in a proposed 160-acre reservoir located outside of the tahoe basin if the effluent met drinking water quality standards; the reservoir would be used for recreations and as a storage facility for irrigation water. one of the most advanced waste water treatment plants, operated by the south lake tahoe public utilities district (the several processes are listed) purifies the effluent before it is pumped over a 1500-ft. elevation to the indian creek reservoir. a 1966 fwpca demonstration grant and a 1969 epa grant resulted in intensive studies (which are described) of the basin. lake tahoe should not be the basic criteria for limiting development as when detectable degradation is observed environmental degradation will have already occurred.

E.L. Nuttle Co. (1964). Map of south shore of Lake Tahoe, El Dorado County, California, Douglas County, Nevada.

Economics Research Associates and Tahoe Regional Planning Agency (1971). Economic analysis of projected growth for the Lake Tahoe Basin, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Economics Research Associates and Tahoe Regional Planning Agency (1972). Regional housing element update. Los Angeles, CA, Economics Research Associates.

Economics Research Associates and Tahoe Regional Planning Agency (1972). Regional capital programming plans, 1973-1977. Los Angeles, CA, Economics Research Associates.

Economics Research Associates and Tahoe Regional Planning Agency (1973). Capital programming plans, Lake Tahoe Region. Los Angeles, CA, Economics Research Associates.

Economics Research Associates, EDAW, et al. (1973). Housing element update; Lake Tahoe region. Los Angeles, CA, Economics Research Associates.

Economics Research Associates (1976). Socioeconomic impact of the California Tahoe Regional Planning Agency regional plan and land use ordinance. Los Angeles, CA, Economics Research Associates.

EDAW (1972). Tahoe : population estimates and projections. San Francisco, CA, Eckbo, Dean, Austin and Williams.

EDAW and Tahoe Regional Planning Agency (1973). A comprehensive regional planning program for the Tahoe Region : Overall program design 1973-1975. San Francisco, CA, Eckbo, Dean, Austin and Williams.

Eddy, G. A. and Lake Tahoe Sierra Association (1950). Bird's-eye view of the Lake Tahoe region. Tahoe City, CA, Lake Tahoe Sierra Association.

Edson, M. S. (1955). Ultimate water requirements, American and Cosumnes River Basins and Lake Tahoe region, El Dorado County, California. Georgetown, CA, Edson.

Edwards, W. F., C. D. Irons, et al. (1883). W.F. Edwards' tourists' guide and directory of the Truckee Basin. Truckee, CA, W.F. Edwards.

Eiland, R. G. (1968). Operation of Lake Tahoe Dam and Reservoir. South Lake Tahoe, CA, Dept. of Water Resources.

El Dorado County Chamber of Commerce and California Economic Development Agency (1964). The economic resources of western El Dorado County, including Placerville, California, with supplement south shore Lake Tahoe, El Dorado County Chamber of Commerce.

Elder, J. F. (1974). Trace-Metals From Ward Creek and Their Influence Upon Phytoplankton Growth In Lake Tahoe, University Of California, Davis.

Elder, J. F., S. K. Perry, et al. (1975). Application Of Energy-Dispersive X-Ray Fluorescence to Trace Metal Analysis of Natural Waters. Environmental Science and Technology 9(12): 1039-1042.

Energy-dispersive x-ray fluorescence is a relatively recent development in the field of x-ray spectrometry which improved capability for rapid multielement analysis. application of the technique to analysis of dissolved trace metals in water requires transfer of the dissolved elements to a uniform target suitable for analysis. this can be accomplished by precipitating the elements with the nonspecific chelating agent, ammonium-l-pyrrolidine dithiocarbamate, and filtering through a membrane filter. the method is applicable to many types of aqueous samples and for analysis of most transition metals. equipment and costs, as well as advantages and limitations of the method are discussed. data from analysis of waters in the lake tahoe basin are presented and discussed.

Elder, J. F., K. E. Osborn, et al. (1976). Iron Transport in a Lake Tahoe Tributary and its Potential Influence upon Phytoplankton Growth. Water Research 10(9): 783-787.

Water from Ward Creek, a tributary of Lake Tahoe, California-Nevada, was analyzed for iron content from October 1972 to April 1974. Two analytical techniques were used: a bathophenanthroline colorimetric method which produced total iron data, and X-ray fluorescence which produced total iron data, and X-ray fluorescence which permitted separate determinations of dissolved and particulate iron. Iron concentrations show marked seasonal variability. The total iron transport during a one-year period in 1972-73 was approximately 6000 kg or 0.2% of the total iron content of Lake Tahoe. Most iron in stream water of the Lake Tahoe basin results from erosion, producing a high predominance of particulate forms. Because of the possiblity of various breakdown mechanisms, this iron is potentially stimulatory to algal growth in the lake. (Katz)

Eloranta, P. V. and S. L. Loeb (1983). Near-shore littoral phytoplankton communities in Lake Tahoe, California-Nevada. Congress of the International Association of Limnology, Lyon, France.

Phytoplankton biomass and the species community structure were monitored at the near-shore sampling stations in Lake Tahoe, California-Nevada. The main aim of the study was to get information on the algal response to the nutrient load from the surrounding land areas with different degree of the urban development. The species richness, diversity and evenness were used as community parameters. The comparisons were also made using some single species as indicators and similarity indices. The differences between the stations were generally small and the seasonal fluctuation in biomass and species richness reflected the seasonal differences in water flow and nutrient load.

Eloranta, P. V. (1983). Periphyton pigment analyses using paper chromatography. Periphyton Of Freshwater Ecosystems - The First International Workshop On Periphyton Of Freshwater Ecosystems, Vaxjo, Sweden.

Paper chromatography was used to study the community structure, the proportion of degraded chlorophylls to the total pigment content, and the chlorophyll and carotenoid content of the epilithic periphyton algae from Lake Tahoe, California-Nevada. Analyses were made using both samples directly from the lake and cultured periphytic algae. The relative contribution of different pigment fractions to total light absorption by the complete periphyton extract was estimated by planimetric integration of absorption curves. From the pigment structure, estimates were made of the proportions of different algal groups in the samples. The results showed the rarity of phaeophytin a in the epilithic algal communities in Lake Tahoe, but often some proportion of chlorophyll a occurred as other forms of pigment degradation products.

Elser, J. J., H. J. Carney, et al. (1990). Zooplankton-Phytoplankton Interface in Lakes of Contrasting Trophic Status: An Experimental Comparison. Hydrobiologia 200(201): 69-82.

An experimental study was conducted to compare algal responses to short-term biomanipulations of zooplankton in three California lakes that encompass a broad range of productivity (ultra-oligotrophic Lake Tahoe, mesotrophic Castle Lake, and strongly eutrophic Clear Lake). To assess the potential strength of grazing in each lake, algal responses to a 16-fold range of zooplankton biomass were evaluated. Algal responses to Daphnia over a range of Daphnia densities from 1-16animals/L were compared. Effects of both ambient grazers and Daphnia were strong in Castle Lake. However, neither ambient zooplankton nor Daphnia had much impact on phytoplankton in Clear Lake. In Lake Tahoe, no grazing impacts could be demonstrated for the ambient zooplankton, but Daphnia grazing had dramatic effects. These results indicate weak coupling between phytoplankton and zooplankton in Clear Lake and Lake Tahoe, which lie near opposite extremes of lake trophic status for most lakes. These observations, along with work reported by other researchers, suggest that linkages between zooplankton and phytoplankton may be weak in lakes with either extremely low or high productivity. Biomanipulation approaches to recover hypereutrophic lakes that aim only to alter zooplankton size structure may be less effective if algal communities are dominated by large, inedible phytoplankton taxa.

Elser, J. J. and C. R. Goldman (1991). Zooplankton Effects on Phytoplankton in Lakes of Contrasting Trophic Status. Limnology and Oceanography LIOCAH 36(1): 64-90.

Studies were carried out in three lakes of strongly contrasting trophic state to evaluate how the effects of zooplankton on phytoplankton vary as a function of lake productivity. Chlorophyll and total P concentrations differed by 2-3 orders of magnitude among ultra-oligotrophic Lake Tahoe, meso-oligotrophic Castle Lake, and strongly eutrophic Clear Lake. Three experimental designs involving short-term (4 d) manipulations of nutrients, ambient zooplankton, and the common crustacean grazer Daphnia were performed in each lake. Algal responses were assessed at both the aggregate, community and species levels. Experiments in Lake Tahoe revealed a high degree of nutrient sensitivity but negligible grazing impacts by the very low densities of ambient zooplankton. Daphnia grazing had substantial impacts on Tahoe phytoplankton, indicating high susceptibility to grazing in this assemblage of relatively small-sized algal species. Castle Lake exhibited strong direct and indirect impacts of both ambient zooplankton and Daphnia on the nutrient-limited algal assemblage. The cyanobacteria-dominated algal community of Clear Lake was resistant to grazing impacts, responding relatively weakly only to the higher densities of Daphnia. Good correspondence between estimates of algal biomass made from chlorophyll measurements and microscopic examination were obtained, and, in Castle Lake, concordance between estimated community productivity turnover times made from species-specific growth determinations and community productivity measurements was observed. The contrasting responses to experimental zooplankton manipulations in the three lakes support the view that the coupling between zooplankton and phytoplankton is strongest in the lakes of intermediate productivity and imply that food-web alterations at the top of the food web are most likely to propagate to the level of the phytoplankton (and therefore lake water quality) in lakes of moderate trophic status. (Author's abstract)

Engineering Science Inc. (1964). Lake Tahoe survey. Arcadia, CA, Engineering Science Inc.

Engineering Science Inc. and Dillingham Corporation of California (1966). Circulation system for Tahoe Keys waterways. Arcadia, CA, Engineering Science Inc.

Engineering Science Inc. and Lake Tahoe Area Council (1967). A regional program for the protection of water resources in the Lake Tahoe-Truckee River Basin. Arcadia, CA, Engineering Science, Inc.

Engineering-Science Inc. and Placer County Board of Supervisors (1965). Report on waste disposal alternatives for North Shore area of Lake Tahoe, Engineering-Science, Inc., Arcadia, CA.

Environmental Protection Agency (1975). The Lake Tahoe Study...as Requested by the 92nd Congress in Section 114 of the Federal Water Pollution Control Act of 1972, Environmental Protection Agency, Surveillance and Analysis Div., San Francisco, CA.

An important conclusion reached by a comprehensive study of the Lake Tahoe Basin in 1973 and 1974 was that, while federal oversight and control in efforts to preserve the fragile ecology of the lake are adequate in terms of public lands around the lake, such efforts are inadequate for control of the activities connected with private lands. As a corollary, it was concluded that legal and other arrangements should be redefined to resolve the apparent dichotomy of adequacy. Various recommendations were given to resolve this problem, including individual actions that could be taken by the U.S. Congress and by the States of California and Nevada. Study elements described include a basic 9-point description of the Tahoe basin, including location, physical geography, political geography, status of planning, land ownership and land use, economic system, population, infrastructure, and externalities. The Tahoe Basin ecosystem and intergovernmental activities relating to it are also considered, including compact provisions and federal coordination, an analysis of agency activities and intergovernmental problems relating to federal policy, sewerage, air quality, erosion and sedimentation control, water supply, transportation, regulation of private development and ecosystem management. Also described are an assessment of the adequacy of federal control and a roster of programs available to resolve basin problems.

EPA (1971). Capital and Operating Costs For Conventional and Advanced Waste Treatment. Advanced Wastewater Treatment As Practiced At South Tahoe, Environmental Protection Agency, Water Pollution Control Research Series, Environmental Protection Agency: 323-364.

The costs of conventional and advanced waste treatment are estimated using data obtained from the conventional-advanced waste treatment scheme at south lake tahoe, nevada. conventional treatment includes primary clarification, and both plug flow and completely mixed activated sludge secondary treatment. advanced treatment includes phosphorus removal through lime treatment and lime recalcining, nitrogen removal, recarbonation, filtration, carbon adsorption, and carbon regeneration. the total cost at 7.5 mgd was $166 per mg for conventional waste treatment and $217 per mg for advanced waste treatment. the cost for conventional treatment consists of $67.50 in capital costs and $98.50 in operating and maintenance costs. advanced waste treatment costs are divided into $74.50 for capital costs and $142.50 for operating and maintenance costs. capital costs are defined as the estimated replacement cost per mg in 1969. these costs are based on producing an extremely high quality reclaimed water with 100 percent reliability. lesser requirements should generate lower costs. the cost estimates are presented in detail in numerous tables. these cost estimates indicate that tertiary waste treatment adds less than $9.00 per person per year to the total cost of waste collection and treatment.

EPA (1971). Eutrophication Of Surface Waters--Lake Tahoe, Environmental Protection Agency, Water Pollution Control Research Series; Lake Tahoe Area Council, South Lake Tahoe, CA.: 154 p.

A survey was made of nutrient and other chemical constituents of surface waters from developed and undeveloped land areas, sewage effluents, seepage from septic tank percolation system and refuse fills, drainage from swamps, precipitation, and lake tahoe water. algal growth stimulating potential of the samples were bioassayed with selenastrum gracile as a test organism. algal response to nutrients was measured by maximum growth rate and maximum cell count in a 5-day growth period. ponds simulating the shallow portions of the lake were used for continuous flow assay of the biomass of indigenous lake organisms produced by sewage effluent. flask assays and chemical analyses were made over two years on three major creeks. twenty-eight other creeks and precipitations were monitored by chemical analysis. evaluating the eutrophication potential, lake tahoe is nitrogen sensitive and responds to it in proportion to its concentration. creeks draining developed land carried twice the nitrogen as those draining relatively undisturbed watersheds. human activity doubles nitrogen inflow to the lake. exporting all sewage would remove 70% of the nitrogen.

EPA (1971). Wastewater Ammonia Removal By Ion Exchange, Battelle-Northwest, Richland, WA.

Pilot plant investigations of a nitrogen removal system employing a natural zeolite, clinoptilolite, which is selective for ammonium ions in the presence of sodium, magnesium, and calcium ions, were conducted at the south tahoe public utility district. the system was operated on both clarified and carbon treated secondary effluent and clarified raw sewage. 94% removal was the average ammonia removal obtained using tahoe tertiary effluent with single 6 ft. deep beds. with two column semi-countercurrent operation, 97% ammonia removal was achieved with 4.7 ft. deep beds, operating to an average of 250 bed volumes. for clarified raw sewage treated in the semi-countercurrent columns, 93% average ammonia removals were achieved at average throughputs of 282 bed volumes. regeneration was accomplished by reacting the exhausted zeolite with hydroxyl ions to form an alkaline aqueous ammonia solution suitable for air stripping and discharge to the atmosphere. the regenerant solution is not discarded and no liquid wastes are generated. a 7 1/2 mgd plant was designed based on the pilot plant data. estimates for operational costs and construction costs, based on current costs in the lake tahoe region and capital costs amortization at 6% over 20 years were $84.95/million gallons and $63.10/million gallons, respectively.

EPA (1981). Final Environmental Impact Statement; Wastewater Treatment Facilities, South Shore Lake Tahoe Basin, Environmental Protection Agency, San Francisco, CA. Region IX.

This Final Environmental Impact Statement on the wastewater treatment programs proposed by the South Tahoe Public Utility District and the Douglas County Sewer Improvement District No. 1, contains EPA's recommendations, and revisions and additions to the Draft Environmental Impact Statement. Based on the impact analysis of various growth scenarios and commitments to mitigate primary and secondary adverse impacts, EPA recommends for South Tahoe Public Utility District a 7.5 mgd maximum daily flow wastewater treatment plant which produces secondary treated and filtered effluent for agricultural irrigation in Alpine County, California. Possible plant expansion is contingent upon approval by various local and regulatory agencies and adequate performance under the mitigation program. The environmental parameters considered were water quality, biology, noise and air quality, and visual resources. The social parameters considered include land use, housing, transportation, recreation, public services/fiscal concerns, utilities, and cultural resources. The final environmental impact statement for Douglas County Sewer Improvement District No. 1 has been postponed because of lack of progress in developing a mitigation program.

Eppard, R. A. (1992). Effect of deicing salt on overstory vegetation in the Lake Tahoe Basin. Transportation Research Record(1352): 67-74.

Etcheverry, B. A. (1917). Miscellaneous data and maps, (Partial Contents: Bouquet Canyon Reservoir -- Tahoe City and Lake Tahoe).

Etra, J. and W. N. Johnson (1986). Water quality improvement and erosion control at Heavenly Valley Ski Area, Lake Tahoe Basin. High-Alt-Revegetation-Workshop, Fort Collins, CO, Colorado Water Resources Research Institute.

Etra, J. (1987). Revegetation and erosion control on harsh sites in Lake Tahoe basin. Erosion control : you're gambling without it, Conference XVIII International Erosion Control Association, Reno, Nevada, International Erosion Control Association, Pinole, CA.

Evans, J. R. and R. A. Matthews (1968). Geologic studies in the Lake Tahoe area, California and Nevada. Sacramento, CA, Geological Society of Sacramento.

Evans, D. R. and J. C. Wilson (1972). Capital and Operating Costs--Awt. Journal Water Pollution Control Federation 44(1): 1-13.

Advanced waste treatment methods have been utilized at south lake tahoe, california, to further improve on conventional activated sludge secondary effluent, and produce a valuable water resource for recreation, irrigation, and perhaps direct reuse. methods used include lime precipitation of phosphorus from secondary effluent, with subsequent lime recalcination, ammonia stripping, recarbonation, mixed-media filtration, and carbon adsorption with subsequent carbon regeneration. total costs in 1969 were $172/million gallons for conventional treatment and $212/million gallons for advanced waste treatment, both figures including capital and operating costs for treatment of 7.5 mgd of municipal wastes. product water contained less than 0.21 mg/l mbas, 2.9 mg/a bod, 16.9 mg/lcod, 1.2 mg/l turbidity, and 0 mg/l suspended solids for 100% of plant operating lime.

Evans, L. G. (1993). Lake Tahoe : A Family Guide. Seattle, Mountaineers.

Fallon, D. and City of South Lake Tahoe (1990). City of South Lake Tahoe, twenty-five years : continuing the pursuit of excellence. South Lake Tahoe, CA, Tahoe Daily Tribune.

Farrell, J. B. (1970). Ammonia Nitrogen Removal By Stripping With Air. Nitrogen Removal From Wastewaters, Federal Water Quality Administration, Cincinnati, Ohio, Advanced Waste Treatment Research Lab.

Ammonia can be desorbed or stripped from solution by raising the ph of the solution to the point where the ammonium ion is converted to dissolved ammonia, and contacting the solution with ammonia free air. municipal wastewater normally contains 15 to 25 mg/l of ammonium ion which is removable by stripping, but the volume of air required is nearly 400 cu. ft./gallon of wastewater in a counter current-flow packed tower. pressure drop across a packed tower is one psi, and since power is proportional to the product of pressure drop and volumetric flow rate, power costs were prohibitive. development of a slat filled tower in lieu of a packed tower halved the pressure drop and so reduced power costs at lake tahoe, where 90% removal efficiencies were then obtained in a 24 ft.high counter current tower. problems with ammonia stripping include the increased solubility of ammonia in cold water making winter operation more costly. scaling problems have also occurred in several of the locations now using the process, although the scale did not adhere to the tower in south africa. cost has been estimated at 2.9 cent/1000 gallons of wastewater treated exclusive of the cost of lime and facilities to raise the ph to 11.0. in colder weather, costs will increase sharply. an operating ph of 10.5 counter current operation rather than crossflow, and an openfill to allow easy flushing of accumulated solids will help to control scale in the tower.

Felts, W. E. and G. Wandesforde-Smith (1973). The politics of development review in the Lake Tahoe basin, Institute of Governmental Affairs, University of California, Davis.

Fenske, J. P. (1990). Erosion Control and Water Quality In the Tahoe Basin California-Nevada, University Of Nevada, Reno.

The Lake Tahoe Basin is extremely sensitive to human activities. Steep slopes, unstable soils, a harsh climate, and a short growing season to reestablish vegetation increase erosion potential. With the advent of development in the past 30 years, much of which was on environmentally sensitive lands, eutrophication increased dramatically as did the need for environmental safeguards. The magnitude of sediment discharge and its accompanying nutrients transported to the lake is dependent on a readily available source of sediment and a water flow of high enough energy to induce movement. Retention structures, which treat runoff prior to discharge into the lake, are one way man has attempted to control the effects of erosion on water quality. The Tahoe City Urban Improvement Projects propose to divert urban runoff away from the lake to a retention structure for treatment. To ensure design integrity, a hydrogeologic site investigation was performed. Because of high groundwater levels encountered near the center of the site and the limited construction area, substantial berming would be required for the implementation of initial design proposals. Order No: AAC 1342733 ProQuest - Dissertation Abstracts

Field Research Com pany and Joint California-Nevada Interstate Compact Commission (1958). Property owners in the Lake Tahoe basin appraise proposed water level plans for the lake; a public opinion survey conducted for the California-Nevada Interstate Compact Commissions of California and Nevada. San Francisco, CA, Field Research Company.

Fielding, G. J., H. J. Schuler, et al. (1979). Highway 50 corridor study in the South Lake Tahoe area : final report, Jhk Associates, Santa Ana, CA.

Fillip, J. (1989). Lake-Tahoe R/Udat Explores Controlling Resort Growth. Architecture-the AIA Journal 78(9): 36-37.

Findlay, W. F. (1990). Tertiary Geology Along the Sierra Nevada-Basin and Range Boundary Northwest of Lake Tahoe, California, University Of California, Davis.

Fink, R. J. (1991). Public Land Acquisition For Environmental Protection - Structuring a Program for the Lake Tahoe Basin. Ecology Law Quarterly 18(3): 485-557.

Finkelstein, C., L. Baxter, et al. (1974). Planning and politics : a staff perception of the Tahoe Regional Planning Agency, Institute of Governmental Affairs, University of California, Davis.

Firby, J. R., R. A. Schweickert, et al. (1985). Field trip guide : National Association of Geology Teachers Far Western Section Fall meeting, October 4-6, 1985. Reno, NV, Mackay School of Mines, University of Nevada-Reno.

Fisher, W. K. (1920). Camp Agassiz in the Tahoe National Forest. Palo Alto, CA, W.K. Fisher.

Fisher, H. J. and Fisher Drafting Service (1957). Map of Lake Tahoe south shore. Placerville, CA, Fisher Drafting Service.

Fisher, H. and California Resources Agency (1964). Lake Tahoe problems, Statement before the Assembly Committee on Natural Resources, Planning and Public Works, September 10-11, 1964, Brockway.

Fisher, H. (1965). California's programs and needs in water quality control, Report presented by Hugo Fisher, Administrator of Resources, before the Senate Subcommittee on Air and Water Pollution, San Francisco, CA: 7 leaves.

Fisher, H. (1966). Water quality control legislative needs : Tahoe and statewide, Paper presented before the Assembly Interim Committee on Water, July 22, 1966, Bijou, California.

Flint, R. W. and C. R. Goldman (1975). The Effects Of a Benthic Grazer On the Primary Productivity Of the Littoral Zone Of Lake Tahoe. .

The crayfish, pacifastacus leniusculus, because of its dominant biomass in the littoral zone occupies a unique trophic position in lake tahoe. submerged macrophytes above 50 m are scarce as are animal food materials during much of the year, thus the crayfish population relies substantially on the littoral benthic periphyton for its food. this investigation was designed to establish what effect the crayfish has on the littoral zone periphyton production and to assess the effects of its grazing on aquatic macrophytes and its role in the recycling of nutrients. the nutrient contribution by crayfish excretion serves as an important source of ammonia which is converted to nitrate by heterotrophic activity and becomes directly available to periphyton. the importance of these nutrients to the benthic community was shown by the absence of any abnormal increase in nutrient levels in the water column and the lack of any overall increase in nitrogen in the lake indicated rapid recycling of this nutrient. the relationship between the crayfish and the benthic flora portrays a dynamic balance between primary and secondary production in this extremely oligotrophic environment. the crayfish represents an effective ‘cleanser’ of the littoral area and provides a stable food source for the lake trout. (auen-wisconsin)

Flint, R. W., R. C. Richards, et al. (1977). Adaptation of styrofoam substrate to benthic algal productivity studies in Lake Tahoe, California-Nevada. J. Phycol. 13(4): 407-409.

A routine sampling technique has been developed using artificial styrofoam substrate to estimate benthic algal productivity in the littoral zone of lakes. Estimation of maximum carbon fixed in Lake Tahoe ranged from 11-.-1 mg C-.-m-SUP--2--.-day-SUP--1- at 0-.-5 m to 17-.-1 mg C-.-m-SUP--2--.-day-SUP--1- at 1-.-0 m. Estimates were made for communities composed of both diatom and green algal populations in water between 0-.-5 and 3-.-0 m. Maximum productivity occurred between 1-2 m. The technique developed can give comparable estimates of productivity if adequate replication is undertaken to decrease problems associated with periphytic heterogeneity.

Florsheim, J. L. (1988). Channel Form and Process: a Modeling Approach, University Of California, Santa Barbara.

A study of channel form and process using the HEC-2 step-backwater computation in an alluvial channel (Blackwood Creek, near Tahoe City, CA) and a bedrock controlled channel (Slide Creek, near Ojai, CA) suggests riffle-pool sequences and deposits upstream and downstream of bedrock constrictions are produced and maintained by flows with a characteristic distribution of shear stress or stream power per unit bed area. Riffle-pool sequences in Blackwood Creek are maintained by flows with recurrence intervals of 1.2 to 5 years when the shear stress on pools exceeds that on riffles. The majority of bed material is mobile during flows with recurrence interval less than 20 years, including the largest boulders, which may be derived from Pleistocene glacial outwash. There is an inverse relationship between stream power per unit bed area and sediment deposition in Slide Creek. Deposition occurs where stream power per unit bed area decreases most rapidly (in backwater areas and in expansions), and scour occurs where stream power per unit bed area increases most rapidly (in constrictions). The Wheeler Fire in July 1985 burned the entire watershed of Slide Creek. Rate of material delivered to the channel by the process of dry ravel (dry sliding of debris under the force of gravity) was measured at 39 m$\sp3$/ha per month. The first winter flow (2.1 m$\sp3$/s), following the fire was transport limited and deposited 550 m$\sp3$ of small gravel in the 270 m study reach and 90% of this debris was derived from dry ravel accumulations on hillslopes near the channel. The second winter flow (2.5 m$\sp3$/s) was supply limited, and eroded the channel to the pre-fire thalweg. A reduction in particle size and critical shear stress associated with post-fire deposition of small gravel enables relatively low magnitude flows to transport large volumes of sediment. Radiocarbon dating of debris flow deposits in Slide Creek basin suggest that the recurrence interval of debris flows is at least 100's and perhaps 1000's of years. In a given basin, fluvial transport of sediment derived from dry ravel and small landslides off hillslopes are more likely following a fire than is a large debris flow. Order No: AAC 8813990 ProQuest - Dissertation Abstracts

Flynn, G. J., Tahoe County Formation Review Commission, et al. (1984). Tahoe County Formation Review Commission final report, Tahoe County Formation Review Commission.

Foglesong, M. T. (1993). Water-Related Scientific Activities of the U.S. Geological Survey in Nevada, Fiscal Years 1991-92, U.S. Geological Survey, Water Resources Div., Carson City, NV.

The U.S. Geological Survey has been collecting water resources data in Nevada since 1890. Most of the projects that constitute the current Nevada District program can be classified as either basic-data acquisition (about 25%) or hydrologic interpretation (about 75%). About 54% of the activities are supported by cooperative agreements with State and local agencies. Technical projects supported by other Federal Agencies make up about 28% of the program, and the remaining 18% consist of USGS data collection, interpretive projects and research. Water conditions in most of Nevada during fiscal years 1991 and 1992 continued to be very dry, a continuation of drought conditions since late 1986. The major water resource issues in Nevada include: water allocation in the Truckee River and Carson River basins; water supply needs of Las Vegas and the Reno/Sparks area, including water importation plans; irrigation and return flow contamination of the Stillwater Wildlife Management Area; hydrologic effects of weapons testing at the Nevada Test Site; assessment of potential long term effects of the proposed Yucca Mountain Nuclear Waste Repository; and drought. Future water resources issues in Nevada are likely to center on water supply for, and environmental effects of, the rapidly growing population centers at Las Vegas, Reno, and Elko; impact of operations at the Nevada Test Site; management of interstate rivers such as the Truckee, Carson, and Colorado Rivers; hydrologic and environmental impacts at heavily mined areas; and water quality management in the Lake Tahoe Basin.

Folt, C. L. (1982). The Effects Of Species Interactions On the Feeding and Mortality Of Zooplankton (Tahoe), University Of California, Davis.

Mechanisms of interaction among the adults of the 3 species of crustacean zooplankton in Lake Tahoe were examined (Mysis relicta, Epischura nevadensis, Diaptomus tyrelli). Interference and predator/prey interactions that reduced the feeding and survival of these species were demonstrated. The intensity of these interactions varied with the absolute and the relative densities of the species and was hypothesized to provide a mechanism for the density-dependent population regulation of zooplankton communities. Both species of copepods (Diaptomus and Epischura) were severely food limited in Lake Tahoe. The use of algal resources by the copepods was measured from August 1979 to October 1980, and compared to the seasonal abundances of the zooplankton and the algae. Filtering and ingestion rates were estimated from the uptake of radioactivity labelled particles in natural assemblages of lake seston. There were strong seasonal trends in food usage, with very low rates (< 1ml per animal per day) found during the fall and winter, when the densities of zooplankton and phytoplankton were also very low. The interactions among the copepods that affected feeding and survival were studied in a series of laboratory experiments. The filtering rates of Diaptomus were reduced by an allelopathic chemical passively released by Epischura. The feeding rates of Diaptomus averaged 50% lower in 2-species trials (including Epischura) than in 1-species trials. An increase in the density of Epischura relative to Diaptomus did not reduce the filtering rates further. A 10-fold increase in Diaptomus density (from 1 to 10 animals per 125mls) resulted in a decrease in the Diaptomus filtering rates, but was not chemically induced. The effects of intra- and inter-specific interactions on filtering rates of Diaptomus were compared at several copepod densities. At low densities (< 4 animals per 125 mls) only inter-specific interactions caused significant reductions in the filtering rates. However, at the higher densities, the effects were similar. . . . (Author's abstract exceeds stipulated maximum length. Discontinued here with permission of school.)

Folt, C. L., W. G. Crumpton, et al. (1987). The consequences of food resource partitioning on a size-structured zooplankton population. Congress In New Zealand, Hamilton, New Zealand, [publisher unknown].

All animals were taken from the pelagic waters of Lake Tahoe, California-Nevada, USA. Size related patterns in food use by Epischura nevadensis were experimentally measured, seasonal patterns in algal abundance were estimated from samples taken at ten depths (0 to 60) and samples for total particulate carbon were collected. Zooplankton were separated into three size-classes (nauplii, copepodids and adults). Predation rates on both size-classes increased with the size of the predator. The abundances of the three algal size classes varied seasonally. Food use by E. nevadensis differs with animal size. The only species of rotifer present in the pelagic waters of the lake, Keratella longispina , is also to large for the small E. nevadensis.

Folt, C. L. and E. R. Byron (1989). A comparison of the effects of prey and non-prey neighbours on foraging rates of Epischura nevadensis (Copepoda: Calanoida). Freshwat. Biol. 21(2): 283-293.

Adults of the calanoid copepod, Epischura nevadensis aggregate in situ near the thermocline in Lake Tahoe, California-Nevada, together with adults of another species of calanoid copepod, Diaptomus tyrelli and juveniles of both species. With a series of laboratory predation and algal clearance trials, the authors show that foraging rates of adult E. nevadensis are determined not only by the density of co-occurring potential prey (small copepods), but also by the presence of co-occurring non-prey neighbours (large, adult copepods). These effects occur at densities and in zooplankton assemblages found naturally, emphasizing the ecological importance of neighbours other than prey on zooplankton feeding.

Fordham, J. W., R. L. Bateman, et al. (1980). Arid Basin Management Model With Concurrent Quality and Flow Considerations: Phase III, University of Nevada-Reno, Water Resources Center.

This report is the third and final report of a three-phase research project. The primary objective of the overall project was to develop an inorganic water quality-flow management model in which both water supply and quality criteria are considered in the development of operating policy and to demonstrate the use of the combined model in a real-world situation. This was done by developing a water quality model for the Carson River for use with a Truckee-Carson management model and an existing Truckee quality model. A second objective of the research was projection of water quality of Carson sub-basins by applying predictive techniques developed on the Tahoe-Truckee System. A third objective was to examine long term hydrology behavior, making use of such climatic indicators as three growth (ring widths). The report includes a report on the first three phases, as well as an in-depth review and analysis of the study area and the data obtained. The 26 figures contained in the report graphically represent the data and schematically depict two river systems and locations of key control points. Computer programs used in data analysis are included in the appendices.

Fortmann, L. and J. Kusel (1990). New voices, old beliefs: forest environmentalism among new and long-standing rural residents. Rural Sociology 55(2): 214-232.

In the on-going sociological debate over rural-urban differences, rural conflict over natural resources is often attributed to environmental attitudes of new residents from urban areas. An alternative hypothesis is that new residents provide not new attitudes, but a new voice for attitudes already held by many local residents. Data from a survey of residents of communities near two national forests show little support for the hypothesis that residential status affects forest management attitudes, dissatisfaction, or action. The findings support the “new-voice” thesis and show that it is often a female voice.

Foster, D. and California Dept. of Public Works - Division of Highways (1971). Control of highway-produced siltation, Lake Tahoe Basin, California Dept. of Public Works, Division of Highways, Sacramento, CA.

Foster, D. (1975). Highway Ice and Snow Removal and Deicing Salt Problems at Lake Tahoe. Lake Tahoe Research Seminar III, South Lake Tahoe, CA.

Problems associated with environmental effects caused by use of salt for highway snow and ice removal are discussed in regard to the Lake Tahoe Basin. Loss of vegetation along roadsides, and water pollution from highway runoff are possible dangers, together with corrosion of steel and deterioration of concrete on bridge supports and decks. Routine use of salt in California which did not begin until 1962-63, rose to 22,000 tons in 1969. In Caltrans District 3 costs in 1973-74 were $212,000, down from $339,546 the previous winter. Since 1962 the Division of Highways has had a ‘bare pavement’ policy. Alternative methods of snow and ice control have been tried or considered, including abrasives, vacuum equipment, chains, serrated packed snow, and chemicals other than salt. Abrasives, including sand and gravel, can lead to siltation. Chains have drawbacks, such as inconvenience, pavement and tire wear, and driver over-confidence. Seventeen compounds were tested as salt replacements; two were considered promising--Tetrapotassium-pyrophosphate and Urea--both are potential environmental hazards.

Fox, P. S. (1930). Al Tahoe (Lake Tahoe). Al Tahoe, CA, P. S. Fox.

Fox, F. L. (1982). Chemical Variations Of the Truckee River From Lake Tahoe to Truckee, California During Low Flow, University Of Nevada, Reno (0139).

Franks, A. L. (1975). Erosion and Sediment Control Technology. Lake Tahoe Research Seminar III, South Lake Tahoe, CA.

This is the text of a slide presentation illustrating existing and proposed methods of erosion sediment control arising from the California Water Resources Control Board's demonstration of such technology at Northstar California. The area is devoted half to living quarters and half to a ski area and to other recreational purposes. The project was begun in 1968 and by 1971 thirteen mosaics of vegetation types based on soil, geology, and reestablishment of vegetation were developed. As a result, only a few areas at Northstar have problems with erosion. Most of the soil in the area is a high-infiltration volcanic type; the runoff from most impervious areas was diverted and percolated. When this was impossible, standard methods of debris traps, drop inlet structures, screens, and energy dissipators were used.

Franks, A. L. (1980). Environmental Geology--Land Use Planning, Erosion and Sedimentation, West Martis Creek Drainage Basin, California, University Of California, Davis.

The West Martis Creek drainage basin is tributary to the Truckee River and lies north of Lake Tahoe and southeast of the town of Truckee, California. It is considered to be a portion of the Sierra Nevada physiographic province. The oldest rocks in the West Martis Creek Basin consist of andesite flows, a sill, brecciated flows, and mudflows that are correlated with the Pliocene Kate Peak formation. They are overlain along the northern border of the study area by Pliocene lake and stream deposits that are correlated with the Coal Canyon formation. One small exposure of an olivine basalt flow, which is probably of Pleistocene age, is located in the northwest portion of the area. Younger rock units include Pleistocene glacial deposits and recent alluvial and lake deposits. All layered rocks are at or close to their original dip. The only significant structures in the study area are faults. Four faults of some significance were mapped. Movement on them ranges in age from Pliocene to Recent. The year-round recreational complex of Northstar-at-Tahoe, constructed in the West Martis Creek drainage basin, was the site of detailed studies of post-development erosion and sedimentation. These studies included extensive hydrologic and water quality monitoring, detailed mapping of the geology, and measurement of changes in the aquatic ecosystems. An extensive demonstration of various methods that may be used for source control of erosion were carried out and were used to develop best management practices for both planning and construction. To supplement the studies on erosion control, Rubicon Properties subdivision, in the Lake Tahoe basin, was included as a portion of this demonstration. It was demonstrated that erosion can be controlled at the source by using appropriate existing technology. The study shows that some natural, less costly methods such as the use of willow wattling, straw mulch, and native plants, are better and more effective than are the more expensive measures. Order No: AAC 8016847 ProQuest - Dissertation Abstracts

Frantz, T. C. and A. J. Cordone (1967). Observations On Deepwater Plants In Lake Tahoe, California and Nevada. Ecology 48(5): 709-714.

Aquatic studies of lake tahoe have disclosed a remarkable plant zonation. with surface area not unusually large, it has maximum depth of 1645 feet, mean depth of 1027 feet. deepwater macroscopic hydrophytes in lake tahoe, found to depths of 500 feet, consisted of algae, mosses, and liverworts. most were concentrated at depths of 200-350 feet. only chara occasionally invades areas shallow as 20 feet; other deepwater hydrophytes are restricted to depths below 50 feet. the list of identified species, probably incomplete, includes six algae, ten mosses, and two liverworts. although light transmission probably controls maximum depth of plant occurrence, factors limiting inshore distribution are less clear. substrate type at lake's south end seems to control shoreward extension of plants. these deepwater plant beds are not only unusual scientific interest but appear important in the life history of tahoe's major game fish, the lake trout, whose maximum concentration coincides with these plant zones; plants apparently provide shelter for crayfish, nongame fishes, and small lake trout. longterm research on ecology of these deepwater hydrophyte communities is needed. lake tahoe is threatened with eutrophication from domestic wastes. (jones-wisconsin)

Frantz, T. C. and A. J. Cordone (1970). Food Of Lake Trout In Lake Tahoe. California Fish And Game 56(1): 21-35.

Stomachs of 1389 lake trout of five size groups were analyzed. samples were obtained by creel census, gill-net and bottom trawl. percentage of empty stomachs increased directly with fork length of fish. fish under 5 inches utilized cladocerans and copepods (over 90% by weight and frequency of occurrence); tendipid larvae and pupae were of secondary importance. fish (sculpin) became an important dietary component in fish 5 to 9.9 inches; cladocerans and tendipeds were of secondary importance and amphipods assumed importance. fish and cladocerans remained important in fish 10 to 14.9 inches, fish other than sculpins and including small lake trout were ingested. sculpins dominated diet of fish 15 to 19.9 inches; importance of cladocerans diminished while importance of crayfish increased. fish over 19.9 inches relied almost entirely on fish, primarily suckers. percentage of stomachs containing food was highest in spring and summer, lowest in winter and autumn for all size groups; mean weight of food per stomach was also highest in spring and summer. fish were utilized most in spring months, least in summer. tabular data include seasonal stomach analyses by size group of lake trout. (voigtlander-wisconsin)

Fronk, C. A., J. B. Farrell, et al. (1985). Separation of Metals in Wastewater Sludge by Centrifugal Classification. Environmental Progress 4(4): 269-276.

The great bulk of municipal wastewater sludge is harmless or beneficial with toxic contaminants generally present in only trace amounts. There would be substantial benefit if these trace substances could be removed economically. In Lake Tahoe, California, it was discovered that a solid-bowl continuous decanter centrifuge with an internal helical conveyor for solids removal separated the sludge into two fractions. The primary constituent of the sludge was calcium carbonate, with lesser amounts of magnesium, phosphate, calcium hydroxyapatite, and organic solids. It was found that the calcium carbonate was concentrated in the solids in the cake, whereas the magnesium and phosphate compounds were concentrated in the solids in the centrate. Consequently, instead of just wasting a portion of the cake to bleed off impurities, the centrifuge was deliberately operated inefficiently, losing the undesirable phosphates and magnesium compounds in the centrate. The cake, which was enriched in calcium carbonate, was reburned to CaO and reused. The centrate solids were subsequently collected by a second centrifuge, using a polymer, and discarded. This procedure improved the economics of their process because the lime concentration in the reburned product was increased, calcium carbonate losses were lower, and lime makeup was reduced. The interesting results indicate that centrifugal classification might prove to be a useful and cost-effective method for removing harmful substances from sewage sludge. (David-PTT)

Fullmer, D. G. (1987). Sheep grazing for plantation release a foresthill ranger district case study. Annu-For-Veg-Manage-Conf., Sacramento, CA, The Association.

Fullmer, D. G. (1989). Benefits of free ranging cattle grazing for plantation release Foresthill three year results. Annu-For-Veg-Manage-Conf., Redding, CA, The Association.

Galton, J. H. and K. M. Nolan (1986). Suspended-Sediment Transport, Lake Tahoe Basin. Proceedings of the Fourth Federal Interagency Sedimentation Conference, Las Vegas, Nevada, I.

Analysis of magnitude and frequency of suspended sediment transport in four tributary streams of Lake Tahoe indicated that from 1973 to 1981 suspended sediment was transported primarily by frequent, moderate streamflow. Spring snowmelt transported 73.8% of the total annual suspended sediment load. Ninety percent of the suspended sediment in these four streams was transported by flows that occurred more than 1.4 days/yr. Less than 13% of the total suspended sediment load was transported by flows that occurred only 1% of the time. The relationship of suspended sediment discharge to water discharge was found to depend upon factors such as amount of snow cover and the type of runoff that produced streamflow. Data were divided into four groups according to the time of year during which different runoff processes prevail and were further subdivided into high and low discharge classes within each seasonal group. (See also W87-05741) (Author's abstract)

Gambino, P. (1987). First records of the German yellowjacket Paravespula germanica (L.) from the east San Francisco Bay (California, U.S.A.) area. Pan Pac. Entomol. 63(4): 358.

The German yellowjacket, Paravespula germanica (L.), is native to Europe, northern Africa, and western Asia. Its geographical range has increased largely due to the activities of man, and it is now established in Australia, New Zealand, South Africa, North America, and South America. The North American population was introduced on the east coast and gradually spread west. The first California record was from South Lake Tahoe in 1983. The present report extends the confirmed range to coastal California.

Gangopadhyay, A. K. (1989). Economics Of Water Transfers In the Tahoe-Truckee Basin Of Nevada, University Of Nevada, Reno (0139).

The problem of improving water allocation in the Tahoe-Truckee basin of Nevada has assumed great significance, particularly during recent drought in the State. One of the main issues is whether there are potential gains from both long-term and short-term water transfers from agricultural uses to non-agricultural uses. The main objective of this study is to examine this question and formulate, by using value of marginal productivity analysis and regression analysis, mechanisms for short-term allocation of water between agricultural and municipal uses for the Tahoe-Truckee basin of Nevada during drought. More precisely, this study attempts to outline procedures and implications for water transfers from the Sierra Valley, California to the Truckee Meadows in Nevada, and for water transfers from agricultural uses to municipal uses within the Truckee Meadows area under conditions of drought. Order No: AAC 9019258 ProQuest - Dissertation Abstracts

Garcia, R., K. H. Hansgen, et al. (1972). Observations on malathion thermal fogging in a mixed conifer forest at Lake Tahoe. [Mosquito control]. Calif-Mosq-Contr-Assoc-Proc-Pap 40: 56-59.

Garcia, K. T. (1988). Effect of Erosion-Control Structures on Sediment and Nutrient Transport, Edgewood Creek Drainage, Lake Tahoe Basin, Nevada, 1981-83, U.S. Geological Survey, Water Resources Div., Carson City, NV.

Three sites in the Edgewood Creek basin with a combined drainage area of about 1.2 sq mi were selected to assess the effect of erosion-control structures along Nevada State Highway 207, on sediment and nutrient transport. The flow at site one is thought to have been largely unaffected by urban development, and was completely unaffected by erosion control structures. The flow at site two was from a basin affected by urban development and erosion control structures. Site three was downstream from the confluence of streams measured at sites one and two. Most data on streamflow and water quality were collected between June 1981 and May 1983 to assess the hydrologic characteristics of the three sites. As a result of the erosion control structures, mean annual concentrations of total sediment were reduced from about 24,000 to about 410 mg/l at site two and from about 1,900 to about 190 ml/l at site three. Sediment loads were reduced from about 240 to about 10 tons/year at site two and from about 550 to about 110 tons/year at site three. At site one, in contrast, mean concentrations and loads remained low throughout the study period. At site two, sediment particle size changed from predominately coarse prior to construction, to predominately fine thereafter; at site three, it changed from about half coarse sediments to predominately fine. Mean concentration and loads of total iron also were significantly reduced after construction at sites two and three, whereas mean concentrations of nitrogen and phosphorus species did not change appreciably.

Gates, W. C. B. (1993). New Wells Safeguard Scenic Tahoe. Civil Engineering 63(5): 60-62.

Geological Survey of California (1870). Geologic map of a portion of the Sierra Nevada in the vicinity of Lake Tahoe.

Geological Survey of California (1870). Sierra region west of L. Tahoe.

George S. Nolte Associates (1960). North Tahoe Public Utility District water supply study, George S. Nolte Associates, Palo Alto, CA: 1 v.

Gilbert, L. E. (1993). Geodetic Shear Strain Estimates From the 1906 Segment Of the San Andreas Fault, California (Earthquakes), Columbia University (0054).

Shear strain rate estimates from the San Andreas fault segment that ruptured in the 1906 earthquake are complied. Those results indicate that the strain accumulation pattern associated with Pacific-North American plate interaction along the San Andreas fault varies from a narrow zone of free slip near Hollister to a broad locked zone north of San Francisco. A geodetic network between San Francisco and Lake Tahoe has been measured five times by first-order triangulation between 1880 and 1963. In 1991, it was resurveyed using the Global Positioning System. Calculations of average shear strain rates indicate: (1) Long term strain extends from the San Andreas fault to the westernmost Great Valley. (2) In the decades after 1906, strain rate in the Coast Ranges is elevated relative to its average. (3) Estimates of the orientation of the maximum right lateral shear strain rate in the Coast Ranges are interpreted to imply that the period of elevated strain rate included an element of enhanced fault-normal compression. (4) The maximum right lateral shear strain rate in the Great Valley is oriented approximately north-south. (5) The estimated strain rate in the Sierra Foothills cannot be differentiated from zero at the 95% confidence level. When formulated as a two dimensional problem, the difference between “deep slip” and “basal shear” models of interseismic strain accumulation cannot be resolved using geodetic observations of surface deformations. Laboratory models also fail to distinguish between them. Estimates of the maximum shear strain direction from all along the San Andreas System are everywhere parallel to the local faulting rather than the regional plate motion direction. This indicates that the deep slip mechanism dominates the loading process. The vertical rheological structure implicit in the deep slip model is corroborated by geological field observations that transcurrent faults are rooted in deep vertical ductile shear zones. The deep slip model can be reconciled with the rheology of predicted by laboratory models through the strain-softening processes associated with flow of composite materials such as quartzo-feldspathic rocks. Order No: AAC 9317194 ProQuest - Dissertation Abstracts

Gilliland, M. W. and Western Federal Regional Council Interagency Task Force (1979). Lake Tahoe environmental assessment, Western Federal Regional Council Interagency Task Force.

Gilliland, M. W. and B. D. Clark (1981). The Lake Tahoe Basin: A Systems Analysis of its Characteristics and Human Carrying Capacity. Environ. Manage. 5(5): 397-407.

A systems analysis of the Lake Tahoe Basin indicates significant and accelerating environmental deterioration within the basin, suggests that Tahoe is poised for yet another round of urban expansion, delineates the portion of Tahoe’s resources that are consumed by gaming recreation vis-a-vis outdoor recreation, and identifies the Federal government as a contributor to Tahoe’s problems. In response to the need for a holistic approach to basin-wide planning and management, ecological carrying capacity concepts are explored as they may be applicable to the Basin’s growth patterns, and ideas on establishing a carrying capacity for Tahoe are developed.

Gilliland, M. W. (1982). A systems approach to the analysis of human carrying capacity applied to the Lake Tahoe Basin of California/Nevada. Analysis of ecological systems : state-of-the-art in ecological modelling, Colorado State Univ., Ft. Collins, CO, Amsterdam : Elsevier Scientific Pub. Co.

Glancy, P. A. (1969). A Mudflow In the Second Creek Drainage, Lake Tahoe Basin, Nevada, and Its Relation to Sedimentation and Urbanization. Geol Surv Res 650: 195-200.

A mudflow of more than 50,000 cubic yards occurred in the 1.5-square-mile second creek basin on august 25, 1967, after an intense thundershower. although the mudflow originated naturally, its path was affected by manmade features. it damaged real estate and roadways in the lower part of the drainage, and also polluted lake tahoe. the mudflow probably is typical of one erosional process believed common throughout the area. the sequence includes sheet and rill erosion of nonforested uplands, severe downstream channel erosion that flushes out alluvium previously accumulated as a result of normal runoff and mass wasting, and extensive deposition along the flatter and lower part of the drainage. estimates suggest that sheet and rill erosion of the upper basin contributed 60 to 80% of the debris, with the rest derived from the main channel. the event caused landscape denudation that averaged about 0.02 ft over the entire basin. results of this reconnaissance influenced design of drainage structures for a new highway route through the area.

Glancy, P. A. (1971). A reconnaissance of streamflow and fluvial sediment transport, incline village area, Lake Tahoe, Nevada, second progress report, 1971, Nevada Dept. of Conservation and Natural Resources, Division of Water Resources, Carson City, NV.

Runoff during the 1970 water year from the five major streams in the incline village area, lake tahoe, nevada, was about 17,600 acre-feet. about three-fourths of the runoff was from incline and third creeks. sediment transported to lake tahoe by the major streams was estimated to be about 10,000 tons, of which about three-fourths was from incline and third creeks. about 85% of the sediment was delivered to the lake during the snowmelt runoff period. the annual sediment load was estimated to be about 68% sand, 20% silt, and 12% clay. sediment transported by streams during periods of runoff from rainfall generally contained greater percentages of silt and clay than that transported in runoff from snowmelt. estimated annual sediment yields ranged from 50 to 650 tons/sq mi from undeveloped areas, and 1,600 to 3,200 tons/sq mi from developed areas. the estimated annual yield from the developed area was about 12 times that from the undeveloped area. the highest measured concentrations of nitrogen transported by streams to the lake during periods of heavy sediment transport were of organic nitrogen, and the highest phosphorous concentrations at those times were attached to or part of the sediment particles.

Glancy, P. A., A. S. Van Denburgh, et al. (1972). Runoff, Erosion, and Solutes In the Lower Truckee River, Nevada, During 1969. Water Resources Bulletin 8(6): 1157-1172.

The truckee river heads in the sierra nevada at lake tahoe, and terminates in pyramid lake. during the 1969 water year, flow about 9 miles upstream from the mouth (974,000 acre-ft) was almost four times the long-term average, due mainly to heavy winter rains and spring snowmelt. a short period of low-altitude rainfall produced the highest concentrations of suspended sediment, whereas a much longer subsequent period of snowmelt yielded a much greater total quantity of material. the upper 90% of the basin yielded about 630,000 tons of sediment at the nixon gage, whereas an estimated 6.8 million tons was contributed by erosion of about 200 acres of river bank below the gage. solute content at the gage ranged from 80 to 450 mg/liter, dominated by calcium, sodium, and bicarbonate, plus silica in the most dilute snowmelt and chloride in the most concentrated low flows. solute load totaled about 130,000 tons, of which the principal constituents in pyramid lake--sodium plus equivalent bicarbonate and chloride--amounted to almost 40,000 tons. the total solute load during a year of average flow may be 45,000-55,000 tons, including 18,000-22,000 tons of principal lake constituents. (knapp-usgs)

Glancy, P. A. (1973). A Reconnaissance Of Streamflow and Fluvial Sediment Transport, Incline Village Area, Lake Tahoe, Nevada, Second Progress Report 1971, Geological survey, carson city, nev.

Runoff of the five major streams in the incline village area, nevada, was about 17,600 acre-feet during the 1971 water year. about three-fourths of the runoff was from incline and third creeks. sediment transported to lake tahoe by the major streams was estimated to be about 11,000 tons, of which about 60% was from incline and third creeks. about 90% of the sediment was delivered to the lake during the snowmelt runoff period. the annual sediment load was estimated to be about 78% sand and gravel, 13% silt, and 9% clay. sediment transported by streams during periods of rainfall runoff generally contained greater percentages of silt and clay than that transported by snowmelt runoff. estimated annual sediment yields ranged from 60 to 930 tons per square mile from undeveloped areas, and 620 to 7,600 tons per square mile from developed areas. the highest measured concentrations of nitrogen transported by streams to the lake during periods of heavy sediment transport were of dissolved ammonia and occurred during periods dominated by low-altitude runoff. (woodard-usgs)

Glancy, P. A. and United States Geological Survey (1976). A reconnaissance of streamflow and fluvial sediment transport, Incline Village area, Lake Tahoe, Nevada : Third Progress Report, 1972 and 1973, State of Nevada, Dept. of Conservation and Natural Resources, Division of Water Resources, Carson City, NV.

Glancy, P. A., Nevada Dept. of Highways, et al. (1977). A reconnaissance of sediment transport, streamflow, chemical quality, Glenbrook Creek, Lake Tahoe basin, Nevada, State of Nevada Highway Dept., Carson City, NV.

Glancy, P. A. (1988). Streamflow, Sediment Transport, and Nutrient Transport at Incline Village, Lake Tahoe, Nevada, 1970-73, U.S. Geological Survey, Carson City, NV.

Five principal creeks, First Creek, Second Creek, Wood Creek, Third Creek, and Incline Creek, having a cumulative drainage of 17.8 sq mi, furnished a yearly average of about 15,000 acre-ft of runoff, mainly snowmelt, to Lake Tahoe during the 1970-73 water years. Annual runoff from the individual streams ranged from 460 to 7,070 acre-ft, and discharges ranged from 0.2 to 110 cu ft/sec. During the 4 years, the five streams delivered to Lake Tahoe 31,000 tons of sediment, which averaged about 75% percent gravel and sand, 15% silt, and 10% clay. Annual cumulative sediment load for the five creeks ranged from 1,500 to 11,000 tons; individual streams furnished 20 to 5,200 tons annually. Measured sediment transport at the stream mouths ranged from 1 to 13,200 mg/L and from 0.001 to 1,420 tons/day; sediment concentrations up to 63,200 mg/L were measured at upstream tributary sites. Estimated annual sediment yields of principal drainage basins ranged from 3 to 930 tons/sq mi from undeveloped areas and from 26 to 5,000 tons/sq mi from developed areas; yields for developed areas appeared to average about 10 times those of undeveloped areas, and roadways apparently were the major source. Erosion disequilibrium caused by pre-study flash floods on two of the creeks continues to manifest itself through high natural sediment yields. The Second Creek flood of 1967 yielded about 75,000 tons of sediment in one afternoon. Fluvial nutrient transport seems quantitatively related to magnitudes of sediment and water transport. Movement rates of organic nitrogen and particulate phosphorus were greater than rates of other nutrient species moving to the lake.

Glen Alpine (1930). Tahoe : Glen Alpine, Lake Tahoe, California. Lake Tahoe, CA, Glen Alpine.

Goddard, G. H. and Geological Survey of California (1870). Sierra region south of Lake Tahoe.

Goin, P., C. E. Raymond, et al. (1992). Stopping time : a rephotographic survey of Lake Tahoe. Albuquerque, NM, University of New Mexico Press.

Goin, P. (1992). Rephotographing Tahoe. Landscape 31(3): 8-15.

Goin, P. (1992). Stopping Time a Rephotographic Survey Of Lake-Tahoe (Photographs From the Book). Spazio E Societa-Space & Society 15(58): 74-85.

Goldman, C. R. (1963). Primary Productivity Measurements in Lake Tahoe, Appendix I. Comprehensive Study on Protection of Water Resources of Lake Tahoe Basin Through Controlled Waste Disposal, Engineering Science, Inc.: 154-157.

Goldman, C. R. and R. C. Carter (1965). An Investigation By Rapid Carbon-14 Bioassay Of Factors Affecting the Cultural Eutrophication Of Lake Tahoe, California-Nevada. Journal Water Pollution Control Federation 37(7): 1044-1059.

Attempts were made to determine significant variability in the present fertility of lake tahoe, to estimate more precisely the lake's productivity by a more comprehensive sampling program than previously possible, and, with carbon-14 bioassay methods, to determine eutrophication potential of inflow, both natural and that enriched with sewage effluent. the extreme sensitivity of the carbon-14 method provides a means of predicting levels of nutrient addition which might cause objectional eutrophication. assumption that the physiological condition of plankton is variable in different parts of the lake is supported by results of study. areal estimates of productivity were determined by integrating photosynthetic curves resulting from consideration of light extinction, variation in temperature, and the distribution of plankton with depth. a secondary sewage effluent, when diluted to 1/3,700 of original strength, stimulates bioactivity in lake tahoe sufficiently to produce a 1% decrease in light transmittance within 12 days. measurements of primary productivity around the lake's margin show that, despite extensive mixing, localized signs of eutrophication are evident. the extreme sensitivity of lake tahoe waters to any change in nutrient regime clearly evidences the potential of even treated effluent for speeding eutrophication. (jones-wisconsin)

Goldman, C. R. and J. E. Court (1968). Limnological Studies of Lake Tahoe. Geologic Studies in the Lake Tahoe Area, California and Nevada. J. R. Evans and R. A. Matthews. Sacramento, Geological Society of Sacramento: 60-66.

Goldman, C. R. and R. Armstrong (1969). Productivity: Primary Productivity Studies In Lake Tahoe, California. Verh Internat Verein Limnol 17: 49-71.

Lake tahoe's enrichment and areal variability in productivity influenced by tributary streams have been investigated. knowledge of factors causing higher production rates in certain areas should enhance evaluation of nutrients in entire lake and assist in effectively slowing eutrophication. productivity measurements at the mouths of streams showed dispersion of stream-borne nutrients influencing primary productivity. calculating relative photosynthetic efficiences provided best comparisons of areal variability. relative influence of tributary waters of three streams was assessed; water from unpolluted control stream did not provoke the response as the others. although importance of nitrogen or phosphorus was implied, stream water appeared more stimulating than its nitrogen and phosphorus content alone implied, perhaps affected by organic growth factors or natural chelating agents. each stream bioassay was accompanied with a productivity experiment at the stream's mouth in the lake. stimulation of photosynthesis by stream water was seasonal. water was analyzed for calcium, magnesium, sodium, potassium and ultraviolet absorbance. absorbance was greater in streams than lake and offered greater promise of being a water-mass indicator; its measurements in water samples, compared with productivity data, showed relationship restricted to waters around the upper truckee river mouth.

Goldman, C. R., G. Moshiri, et al. (1970). Synoptic Study Of Accelerated Eutrophication In Lake Tahoe--an Alpine Lake. Water Pollution Control In Cold Climates. R. S. Murphy and D. Nyquist. Washington, D.C., U.S. GPO. 5501-0208: 1-21.

Lake tahoe was studied by the synoptic approach which provides a nearly instantaneous evaluation of conditions existing on a given day, allowing nutrient sources to be located accurately. increased fertility was evident at the south shore under the influence of the truckee river and high resident population, in crystal bay which contained highly disturbed land drainage, and near the lake outflow where there were high resident population and fairly extensive shallow water areas. although occasional high periphyton values were encountered near tributaries, there was less correlation with tributaries than was found for phytoplankton productivity and biomass; distribution of periphyton was fairly uniform around the lake. the abundance and diversity of benthic organisms may not be functions of the same environmental property as the abundance, productivity, and diversity of the phytoplankton. the primary producers must be viewed as a more sensitive indication of increased fertility than chemical parameters, since any additional nutrients appear to move rapidly into the phytoplankton. little or no measurable change in water chemistry was found while phytoplankton photosynthesis showed a very significant change.

Goldman, C. R. (1972). The Role Of Minor Nutrients In Limiting the Productivity Of Aquatic Ecosystems. American Society of Limnology and Oceanography Special Symposia. G. Likens. Lawrence, Kansas, Allen Press. 1: 21-23.

The limiting-factor concept is useful in understanding dynamics of aquatic ecosystems but it is almost certainly an oversimplification when applied to the organisms representing natural phytoplankton populations. trace elements, either singly or in combination, may limit aquatic environment productivity. of methods for determining nutrient-limiting factors, one measures nutrient content of the waters and infers limitation of specific nutrients that are in short supply. another collects the organisms themselves, extracts and analyzes their cell content; a third adds nutrients to the natural phytoplankton population and measures their growth responses; a fourth is similar to the third except that a test species is used in filtered water for the bioassay. trace element deficiencies are more likely in oligotrophic than in eutrophic lakes. in castle lake, california which is deficient in molybdenum, nitrogen-fixing alders appear to compete with aquatic ecosystem for molybdenum. algal enzyme systems are simultaneously limited by more than a single nutrient. the additive effect of phosphate additions to iron- and nitrogen-limited lake tahoe, california is emphasized. autoradiography is useful in determining relative metabolic activity. to understand lakes submodels that emphasize recycling time and efficiency are recommended as opposed to models requiring masses of data.

Goldman, C. R. (1973). Will Baikal and Tahoe Be Saved? Cry California 9(1): 19-25.

An exchange program between the united states and the soviet union to reduce water pollution investigates lake tahoe, california-nevada and lake baikal, Russia. lake baikal, the world's oldest, largest, and deepest freshwater lake is very clear, low in minerals, and contains nearly 600 plant and 1200 animal species, three-quarters of which are endemic. although cellulose plant effluents meet water quality standards for human consumption, they may be lethal to lake organisms. omul are declining due to overfishing and use of spawning streams for log flotation. logging, soil erosion, tourist activities, and industrial developments are causing eutrophication. The FSU's hydrometeorological services conduct extensive limnological research on effects of man's activities on the lake's hydrological, chemical, and biological processes. lake tahoe is less complex and has a less diversified aquatic population. an environmental research program, research applied to national needs, is monitoring tahoe's physical and biological condition and surrounding terrestrial environment. university extension and political science programs have been established to speed application of research results. both areas have air pollution and snow removal problems; california is now studying the soviet union's method of snow disposal. solutions to these problems will depend on governmental ability to use scientific evidence and act to protect mankind's natural heritage.

Goldman, C. R. (1974). Eutrophication of Lake Tahoe emphasizing water quality, United States Environmental Protection Agency, Office of Research & Development,Washington, D.C. and University of California, Davis, Institute of Ecology, Davis, CA.

A study of lake tahoe eutrophication showed that primary productivity has increased, with the seasonal maxima shifting from early spring to late summer. depth of maximum productivity may be 50-75 m. productivity increased 25-26% from 1968-1971 and 51% from 1959-1971. the littoral zone contributes about 10% of the total primary production. winter mixing distributes nutrients into the euphotic zone and is important in year-to-year productivity variation. phosphorus is more uniformly distributed than nitrate which forms a thermocline that helps determine depth of winter mixing. near-short areas have higher nitrogen and phosphorus levels and more seasonal variation. nta stimulates primary productivity. bacteria are important in nutrient regeneration; their growth is stimulated by sediment. there are at least 160 species of phytoplankton. cyclotella bodanica, melosira crenulata, and fragilaria crotonensis account for 80% of phytoplankton biomass. cladocerans have been virtually eliminated as phytoplankton grazers; this may be related to mysis relicta and oncorhynchus nerka. the most important benthic organism is pacifastacus leniusculus. nitrogen, iron, and phosphorus levels should be limited and sediment input reduced. synoptic sampling and aerial photography have delineated problem areas. bacterial regeneration of nutrients in eutrophication should be studied. relationships between bacteria, detritus, phytoplankton, zooplankton, and fish need elaboration.(buchanan-davidson--wisconsin)

Goldman, C. R., J. C. Rundquist, et al. (1974). Ecological Studies of the California Crayfish, Pacifastacus Leniusculus, With Emphasis on Their Growth from Recycling Waste Products. Second International Crayfish Symposium, Baton Rouge, LA.

This research has two main objectives. The first is an investigation of the ecological role of Pacifastacus leniusculus in its natural habitat such as Lake Tahoe, the Sacramento River, and the coast range streams and lakes. The second objective involves cooperative research around the world as regards intensive crayfish culture. This paper reviews previous work and present outlook for the two objectives.

Goldman, C. R., R. C. Richards, et al. (1974). Limnological Studies and Remote Sensing Of the Upper Truckee River Sediment Plume In Lake Tahoe, California-Nevada. Remote Sensing Of Environment 3(1): 49-67.

The upper truckee river sediment plume in lake tahoe was studied using aerial photography and simultaneous measurements in the lake. the studies covered river discharge conditions during the snowmelt-runoff period in the spring of 1971. color and multispectral aerial photography allowed delineation of the extent and relative density of four to five units within each plume.simple correlation coefficients are high between these uni ts and measures of suspended sediment, dissolved inorganic carbon, and light penetration, as well as measures of primary productivity and heterotrophic activity. corelations are inconsistent between the above variables and nutrients. two studies were conducted in the morning and afternoon of a single day; the plume's eastward shift during the day was recorded photographically and with limnological measurements. high correlations between sediment plumes and biological conductivity coupled with evidence that silt particles and associated nutrients stimulate bacterial growth indicate that sediment plumes are accelerating the eutrophication of lake tahoe. (knapp-usgs)

Goldman, C. R., R. W. Hoffman, et al. (1975). A study of the influence of highway deicing agents on the aquatic environment in the Lake Tahoe basin and drainages along Interstate 80, Ecological Research Associates, Davis, CA.

Goldman, C. R. and E. de Amezaga (1975). Spatial and Temporal Changes in the Primary Productivity of Lake Tahoe, California-Nevada Between 1959 and 1971. Verhandlungen Internationale Vereinigung Limnologie 19: 812-825.

Intensive study of Lake Tahoe during 1967-71 and comparisons made with 1959-60 data show a dramatic increase in primary productivity for this remarkably blue and transparent alpine lake, a measure of increased cultural eutrophication that continues despite steps taken to export sewage from the lake's basin. During the latter period primary productivity increased 25.6% and this increase rises to 51% if compared with the 1959-60 data. It is assumed that the rapid build-up population around the lake in recent years have caused soil and vegetation disturbances which have replaced the nutrients that formerly were derived from treated sewage. The euphotic zone in Lake Tahoe often exceeds 100 m depth, and maximum phytoplankton may occur as deep as 50-75 m. The vertical profile is established in early December with a single production peak in the vicinity of 50 m. As stratification develops the unimodal productivity curve is transformed into a bimodal one which persists through the rest of the season. A trend is seen in which the seasonal maximum in productivity is retarded. Synoptic studies show that pelagic phytoplankton productivity has steadily increased relative to productivity in the littoral zone. Although the latter zone contributes only 10% of the lake primary productivity, it is visibly the greatest evidence of eutrophication in Lake Tahoe.

Goldman, C. R. and T. A. Cahill (1975). Danger Signs For Tahoe's Future: The Continuing Decline in Air and Water Quality. Cry California(Spring): 30-35.

Since 1959 qualitative measurements of lake tahoe's water have shown increasing fertility. algal growth rose 25% between 1968-1971; since then algal growth has increased but the annual rate of increase has dropped. synoptic studies showed that high-fertility water masses are gradually spreading over the entire lake surface. zooplankton--daphnia rosea, daphnia pulex, and bosmina longirostris--have disappeared, perhaps due to introduction of opossum shrimp (mysis relicta) and red salmon fry. their disappearance may be contributed to the lake's green algal crop increase. tahoe is still oligothrophic; if nutrient inflow can be retarded, this low fertility might be preserved. air quality of the basin is also declining. a 1973 california air resources board study revealed that eye-stinging oxidants were half as dense at tahoe as in los angeles, but carbon monoxide, hydrocarbon, and lead levels were higher. atmospheric aerosols--sulfur-containing particulates, fine soil, and automobile pollutants--are the major cause of reduced visibility. sulfur-containing particulates result from combustion of fuel oil by automobiles and planes, are a by-product of automobile catalytic converters, and may be carried into the area by wind. through sound, strictly enforced land development restrictions, tahoe's beauty can still be preserved.

Goldman, C. R. (1976). The Use of Natural Phytoplankton Populations in Bioassay. Internationale Vereinigung fur Theoretische und Angewandte Limnologie Symposium: Experimental Use of Algal Cultures in Limnology, Sandefjord, Norway.

Natural phytoplankton populations from Castle Lake and Lake Tahoe, California, incubated both in-situ and in a continuous-light incubator, were used in experiments on limiting effects of nitrogen. In environments with extremely low nitrients, as in these lakes, only part-per-billion additions of nutrients are required, and conventional culture technique are not likely to be effective. Adaptation time may be required for enzyme levels to respond to increased substrate levels, and photosynthetic inhibitionis requently the first response measured. In Castle Lake the nitrogen response is complicated by a natural molybdenum deficiency. Culture experiments with natural phytoplankton populations were conducted there to determine the relative availability of nitrogen with and without molybdenum. In early August 1975, fiver micrograms/l of molybdenum was inhibiting with nitrogen and phosphorus in short supply (three micrograms nitrate/l, no detectable ammonia, and two micrograms/l phosphorus). The combination of nitate-nitrogen, phosphorus, and molybdenum was most stimulating, followed by nitrogen and phosphorus. By early September nitrogen limitation was very pronounced, and the organisms' ability to utilize nitrate without molybdenum was greatly reduced. In Lake Tahoe experiments, Fragilaria crotonenesis, a dominant diatom, showed particular response to nitrate addition in the nitrogen-limiting lake. Various other experiments at the two lakes are also described.

Goldman, C. R. and J. C. Rundquist (1976). A Comparative Ecological Study of the California Crayfish, Pacifastacus Zeniusculus (Dana), From Two Subalpine Lakes. 3rd International Symposium on Freshwater Crayfish, Kuopio, Finland.

Crayfish growth and population density were determined and compared for Pacifastacus leniusculus (Dana) populations in two closely situated but limnologically distinct Sierra-Nevada lakes, Lake Tahoe (California-Nevada) and Donner Lake (California). Physical, chemical and biological parameters for the lakes were also compared to determine whether differences observed in the crayfish populations could be related to broad limnological characteristics of the lakes. The crayfish population in mesotrophic Donner Lake was considerable less dense than in ultraoligotrophic Lake Tahoe. The implication of this finding for crayfish production management is discussed. A brief discussion of possible genetic differences between the two crayfish populations, based on gel electrophoresis, is also presented.

Goldman, C. R. (1977). Trophic Status and Nutrient Loading for Lake Tahoe, California - Nevada. North American Project--A Study of U.S. Water Bodies, United States Environmental Protection Agency, Washington, D.C.: 465-480.

Lake Tahoe in California and Nevada, a subalpine, ultraoligotrophic lake with record Secchi readings to 40 meters, has in recent years been subjected to increased nutrient inputs resulting from resident and tourist population growth and basin development. Because of its relatively small watershed and great volume, Lake Tahoe is at the extreme lower end of classifications based on loading; probably for the same reasons it is very sensitive to nutrient loading, as seen in data on primary productivity for 1959-74. By 1962 even treated sewage discharge was found to greatly stimulate phytoplankton primary productivity in the nutrient-poor water. Productivity apparently stopped increasing by 1974 in response to extensive sewage diversion, mostly completed by 1970. Daphnia and Bosmina are no longer dominant zooplankters, and ultraplankton have increased at the lower end of the euphotic zone. Oxygen shows no measurable depletion, even at depths of 500 meters, and the dilute rain of organic matter into the abyssal zone is almost completely mineralized before it reaches the sediment. At present nitrogen levels the lake is rather insensitive tophosphorus and is an excellent example of a nitrogen-limited system. The lake ap pears highly sensitive to nitrogen loading, which has caused an increase in primary productivity of about 5%/year. Total phosphorus loading is about 0.047 g/sq m/yr, and nitrogen is 0.5156 g/sq m/yr (1969).

Goldman, C. R., M. D. Morgan, et al. (1979). A population dynamics analysis of the cladoceran disappearance from Lake Tahoe, California-Nevada. Limnol. Oceanogr. 24(2): 289-297.

A comparison of the population dynamics of Daphnia pulicaria- and D. rosea- in 1967-1969 and during their decline from Lake Tahoe in 1970 showed that the decline resulted from a combination of increased death rates and decreased birth rates. The remaining cladoceran, Bosmina longirostris-, disappeared from the plankton in 1971. The elimination of cladocerans coincided with high densities of the opossum shrimp, Mysis relicta-, and the kokanee salmon, Oncorhynchus nerka-. Predation by these two introduced species is believed to have increased cladoceran death rates. Changes in the timing of the peaks of primary productivity are a possible cause for the decline in birth rates. A brief resurgence of Bosmina- in late 1974 was associated with a dramatic decline of the mysid population and the continued decline of kokanee which began in 1970. The mysids recovered by late 1975 but Bosmina- again disappeared and has remained absent since. The failure of Daphnia- to reappear suggests that factors in addition to predation by kokanee and Mysis- exclude them from Lake Tahoe. Changes in the phytoplankton community composition may have altered the ability of the cladocerans to maintain birth rates sufficiently high to offset increased losses due to predation.

Goldman, C. R., E. R. Byron, et al. (1981). Colonization of Lake Tahoe and other western habitats by the copepod, Skistodiaptomus pallidus (Herrick) (Calanoida). Southwest Nat 26(1): 82-84.

Goldman, C. R. (1981). Lake Tahoe: Two Decades of Change in a Nitrogen Deficient Oligotrophic Lake. Congress In Japan, Kyoto, Japan.

This paper summarizes the changes in this oligotrophic lake due to increased recreational activity. Fluctuations in phytoplankton community composition and of zooplankton populations are discussed with regard to changing patterns of nutrient availability: in two decades phytoplankton biomass has more than doubled. Three cladocerans which had been dominant in the lake vanished, the introduced species Mysis relicta appeared as the dominant species 5-7 years after its introduction.

Goldman, C. R., Ecological Research Associates, et al. (1981). The Effects of deicing agents on the autotrophic and heterotrophic communities of Lake Tahoe, Ecological Research Associates, Davis, CA.

Goldman, C. R. and E. de Amezaga (1983). Primary productivity and precipitation at Castle Lake and Lake Tahoe during twenty-four years, 1959-1982. Congress of the International Association of Limnology, Lyon, France.

A strong bimodal productivity curve characterizes Castle Lake. The hypolimnetic productivity sometimes exceeds the productivity of the epilimnion-metalimnion. This occurs most frequently in late spring and early summer. The depth of spring mixing is an important factor influencing the annual fertility of the lake. Nitrogen limitation occurs and ammonia appears to be the major nitrogen source after nitrate depletion. A curious distribution of nitrate and ammonia persists at the bottom of the euphotic zone. Denitrification is evident near the bottom of the water column during years of unusually high productivity. An inverse relationship was found between primary productivity and annual rainfall, indicating a nutrient and perhaps phytoplankton washout from the lake during years of heaviest spring runoff. This contrasts with Lake Tahoe.

Goldman, C. R. (1985). Lake Tahoe: An oligotrophic lake's response to nutrient loading. LAKES POLLUTION AND RECOVERY: EUROPEAN WATER POLLUTION CONTROL ASSOCIATION INTERNATIONAL, Rome, Italy, European Water Pollution Control Assoc., London, UK.

Lake Tahoe is a large subalpine lake located in a deep graben fault basin in the Sierra Nevada between California and Nevada. The remarkable transparency of this ultraoligotrophic lake is now threatned as it enters the earliest stages of eutrophication. Nutrient loading from precipitation influences the percent change in productivity from year to year but the most dominant factor is internal loading during occasional periods of deep winter mixing, which returns the accumulation of nutrients to the euphotic zone. The lake is gradually shifting from a nitrogen-limited system to one increasingly sensitive to phosphorus and trace elements. Paleolimnological studies indicate a four-fold increase in recent sedimentation rate as compared with a period of major deforestation during the previous century.

Goldman, C. C., S. G. Paulsen, et al. (1986). Lake Tahoe wetlands: Prospects for control of nutrient loading at the transition between land and water. 6th Annual International Symposium, Lake and Reservoir Management: Influences of Nonpoint Source Pollutants and Acid Precipitation, Portland, OR, North American Lake Management Society.

Wetlands form a transitional zone between the land and water and remain some of the most interesting and complex ecosystems on our planet. Studies of artificial wetlands in Southern California have shown the remarkable ability of Pseudomonoas sp. to denitrify both primary and secondary sewage. Natural wetlands in the fragile Lake Tahoe basin have been greatly reduced by development, but provide the same important environmental services. Denitrification measurements in the Lake Country Estates marsh above Tahoe showed moderate levels of denitrification largely regulated by the availability of nitrate. Small carbon supplements greatly enhance the denitrification process in this system. New, highly efficient wetlands can be constructed to intracept both the particulate and dissolved nutrients draining from disturbed lands and fertilized areas, thus, reducing the nitrogen loading of receiving waters.

Goldman, C. R., E. R. Byron, et al. (1986). Changing water quality at Lake Tahoe : the first five years of the Lake Tahoe Interagency Monitoring Program, Tahoe Research Group, Institute of Ecology, University of California, Davis, CA.

Goldman, C. R., E. R. Byron, et al. (1986). A technical summary of Changing water quality in Lake Tahoe : the first five years of the Lake Tahoe Interagency Monitoring Program, Tahoe Research Group, Institute of Ecology, University of California, Davis, CA.

Goldman, S. J., K. Jackson, et al. (1986). Erosion and Sediment Control Handbook. New York, NY, McGraw-Hill Book Company.

This handbook on erosion and sediment control is an outgrowth of a series of professional seminars. The handbook is organized into chapters on each of the major subject areas of erosion control. Chapter 1 describes erosion problems, including both environmental impacts and economic costs. It also describes the erosion process. Chapter 2 outlines ten basic strategies for preventing erosion and trapping sediment. Chapter 3 describes how to set up and enforce an effective erosion and sediment control program in a city or county, and it outlines the key features of an effective erosion and sediment control ordinance. This chapter also includes detailed data on private sector costs for constructing control measures and public agency costs for implementing a control program. Chapter 4 shows how to use the rational formula to estimate runoff volumes for sizing temporary erosion and sediment control measures. Emphasis is on the use of short-duration rainfall intensity data. Chapter 5 describes how to use the universal soil loss equation to estimate the volume of sediment likely to be eroded from a construction site. Chapter 6 discusses how to use plants and mulches to protect graded areas from erosion. It rates the effectiveness and cost-effectiveness of seven common revegetation techniques, describes the characteristics of plants that are effective in controlling erosion, and lists sources of information on suitable plant types throughout the world. Chapter 7 provides guidelines for designing water conveyance and energy dissipation structures such as dikes, swales, sample designs, and practical tips for designers and builders. Chapter 8 shows how to design and construct sediment basins and traps, straw bale dikes, and silt fences. The first part of Chapter 9 shows how to develop an erosion and sediment control plan for a site. The step-by-step planning process is illustrated with examples from an actual project. The last part of the chapter gives a method, designed for public officials, for evaluating the adequacy of an erosion and sediment control plan, and it includes a plan review checklist. Chapter 10 covers control measure maintenance.

Goldman, C. R. (1988). Primary Productivity, Nutrients, and Transparency During the Early Onset of Eutrophication in Ultra-Oligotrophic Lake Tahoe, California-Nevada. Limnology and Oceanography 33(6): 1321-1333.

For more than half a century, the trophic status of water bodies has been of interest to limnologists and oceanographers. This report demonstrates the close, inverse relationship between C14-estimated primary productivity and transparency during the earliest stages of cultural eutrophication. As the population in the Tahoe basin has rapidly increased, Lake Tahoe has been characterized by an increase in primary productivity that has averaged 5.6%/yr for the last 28 yr. There has been a concomitant decline n transparency of 0.37 m/yr. During winter months when transparency is highest, the average annual loss has been slightly greater (0.40 m/yr). The average annual Secchi depth has decreased by 7 m during the last 19 yr of intensive monitoring. There has also been a significant increase in the light extinction coefficient. Photosynthetic efficiency has increased while there has been a gradual shrinkage of the eutrophic zone. During the same period the total nitrate-N content of the lake has increased significantly, but total P content has not. Lake Tahoe primary production has become increasingly P sensitive during the last decade as N has accumulated in the system. A gradual increase in the N:P may prove to be a general evolutionary characteristic of oligotrophic lakes during the earliest stages of eutrophication. The importance of long-term studies in detecting gradual change that may be masked by considerable interannual variability is particularly evident from this study.

Goldman, C. R., A. Jassby, et al. (1989). Interannual fluctuations in primary production: Meteorological forcing at two subalpine lakes. Limnol. Oceanogr. 34(2): 310-323.

Meteorological factors are associated with most of the interannual variability in primary production at both Castle Lake, California and Lake Tahoe, California-Nevada. At Castle Lake, extreme values of annual primary production, either much higher or lower than the long-term average, are likely to occur during the phenomenon of El Nino/Southern Oscillation. Two plausible pathways for the impacts of these large-scale climate events at Castle Lake were identified: winter snowfall, acting through its effect on the snow-ice pack and timing of the spring thaw; and total precipitation, acting through its effect on outwash rates. In contrast, no influence of large-scale climate events is apparent at Lake Tahoe, but a plausible pathway involving the impact of synoptic-scale phenomena on interannual variation was identified: local weather events.

Goldman, C. R. (1989). Lake Tahoe: Preserving a Fragile Ecosystem. Environment 31(7): 6-11, 27-31.

An overview of the history of the development of Lake Tahoe and the surrounding area is presented. Over the last 30 years, water quality in Lake Tahoe has declined steadily despite the lake's large volume. As a result of increased nutrient availability in the lake's water, algal growth in the spring coats the rocks near shore, and the lake is losing its famous transparency. As a result of increasing concern about the condition of the lake, in 1970 California and Nevada created the Tahoe Regional Planning Agency (TRPA) to regulatefurther development in the basin. With increasing cooperation from the various state and federal agencies and clearer goals set by a 1980 agreement, TRPA began to enforce conservation practices based on a basin-wide zoning plan that classified the land according to its suitability for development. In addition, regulations for maintaining water quality were adopted as the conservation forces gradually assumed a more aggressive and successful posture. Research and monitoring programs have been implemented that disseminate essential water quality information that offers support to regulatory, planning, and research activities in the Tahoe basin. Eutrophication studies have been conducted and ways to decrease inputs into the lake implemented. Tributary streams and atmospheric deposition have also been considered and studied. Essential to preserving a lake's ecological balance is the basic science necessary for understanding the structure, function, and coupling of terrestrial ecosystems. By developing an understanding of the workings of these fragile aquatic systems, it should be possible to conserve their quality. (White-Reimer-PTT)

Goldman, C. R. (1990). The importance of long-term limnological research with emphasis on Lake Tahoe and Castle Lake. Scientific Perspectives in Theoretical and Applied Limnology. R. de Bernardi. Pallanza, Italy, C.N.R., Istituto Italiano di Idrobiologia. 7: 221-231.

An account is given of long-term limnological studies of Lake Tahoe, California, USA, together with some comparative studies of Castle Lake, which evidence the importance of weather-mediated events and the necessity of sustaining long-term research.

Goldman, C. R., A. D. Jassby, et al. (1990). Forest Fires, Atmospheric Deposition and Primary Productivity at Lake Tahoe, California-Nevada. Internationale Vereinigung fur Theoretische und Angewandte Limnologie. Verhandlungen 24(1): 499-503.

Forest fires are a possible link between climate and interannual changes in lake behavior. A 1974 fire in the Experimental Lakes Area of northwestern Ontario increased the volume of runoff water, but annual nutrient loading to the drainage stream was not changed significantly, nor were nutrients and phytoplankton productivity in the lake receiving the stream flow. In Elk Lake, Minnesota, fossil pigment stratigraphy and cladoceran remains suggest an increase in algal production and a change in cladoceran community composition in response to fires in the watershed. The occurrence of major fires in southern California during the summer of 1985 offered a unique opportunity to examine the atmospheric effects of fire in isolation. Lake Tahoe is located in a graben at the crest of the Sierra Nevada Range. Surface irradiation was measured continuously with a Belfort recording pyranograph, and photosynthetically active radiation at different depths in the lake was measured. Despite the decrease in solar radiation reaching the phytoplankton community, primary productivity reached the highest recorded levels on July 11. Lake Tahoe characteristically shows a vertical productivity profile with one peak above the thermal discontinuity and a second peak below it. The high primary productivity on July 11 also cannot be attributed to biomass. Several lines of evidence suggest the nutrients contributed by dry fallout during the fire were the most likely cause of the stimulation in productivity. When atmospheric deposition filtrate from the July fire was added to mixed-layer water, the productivity stimulation was similar in extent to that caused by nutrient spiking. These results show that large-scale fires can have a significant impact on monthly and perhaps even annual primary productivity through their effects on atmospheric deposition, independent of any runoff effects.

Goldman, C. R. (1992). Moving Beyond the Conflicts: Research to Protect Lakes and Reserviors of the Western States. Bend, Oregon, The High Desert Museum: 8 p.

The ongoing drought has underscored the importance of our western water supplies and those of the entire globe. Availability of water is in fact likely to be the ultimate limiting factor for the quality of life and will eventually set the upper limits for sustaining the earth's rapidly expanding population. The lakes and reserviors of the Pacific west are extraordinarily diverse in both their nature and their variety of water quality problems. Lake Tahoe, situated between the states of California and Nevada, is in the earliest stage of eutrophication. Our three decades of study underscore the necessity of conducting long-term measurements in order to detect and eventually reverse deteriorating water quality. Managed fertility in lakes and reservoirs remains a goal to produce fish and at the same time provide for multiple uses. Education beginning at the primary level and extending to public consensus meetings is essential for diffusing conflict and arriving at workable compromise. The importance of this can scarcely be overemphasized as we attempt to manage our limited water resources, predict and anticipate future conditions which will be influenced by changes in climate, and endeavor to meet human expectations for multiple water uses.

Goldman, C. R., A. D. Jassby, et al. (1993). Decadal, interannual, and seasonal variability in enrichment bioassays at Lake Tahoe, California-Nevada, USA. Can. J. Fish. Aquat. Sci. 50(7): 1489-1496.

The response of Lake Tahoe water to macronutrient supplementation has been assayed with inorganic super(14)C uptake since the 1960s. On the decadal scale, a change in bioassay response to macronutrient enrichment took place around 1980, with a decrease in the frequency of N stimulation and an increase in the frequency of P stimulation. On the annual scale, an effect of spring mixing depth on the size of the bioassay response could be observed: stronger mixing events resulted in a more positive response. On the seasonal scale, the response magnitude was affected by stratification, but the significance of the response was independent of season. In a subset of the bioassays, in vivo fluorescence and chlorophyll a were measured in addition to inorganic super(14)C uptake; bioassay results were essentially the same, regardless of which of these three bioassay response indicators was used.

Goodman, J. B. and United States Forest Service - California Region (1926). Tahoe National Forest, California and Nevada : 1926. San Francisco, CA, U.S. Forest Service.

Goodwin, V., Tahoe Regional Planning Agency, et al. (1971). Cultural and historical significance of the Lake Tahoe region : a guide for planning, Lake Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Gordon, F. and Evergreen Publishing Corp. (1956). Tahoe fishing, hunting, recreation map : made by sportsmen, showing the best spots to hunt and fish, types of fish and game found in the area, and all other recreation and accomadations of vital interest to the sportsman and tourist. Sacramento, CA, Evergreen Publishing Corp.

Gray, D. H., A. T. Leiser, et al. (1980). Combined Vegetative-Structural Slope Stabilization. Civil Engineering 50(1): 82-85.

Vegetation in partnership with structural measures provides an attractive and cost effective method of stabilizing slopes and combating erosion. An effective approach is to use contour wattling, willow cuttings, or conventional slope plantings in combination with a low breast wall, gabion revetment, or bench structure constructed at the toe of a slope. Another approach is to grow vegetation in the voids of interstices of structural walls or revetments. The role of vegetation in stabilizing slopes was described; criteria and guidelines for successful wattling or revegetation of slopes were also discussed. Examples and cost comparisons were presented of recent vegetative-structural slope treatments used in the Lake Tahoe Region of California. (Humphreys-ISWS)

Greenfield, S. M. (1973). Ultimate Disposal Of Wastewaters and Their Residuals, Environmental Protection Agency, Office of Research and Monitoring, Washington, D.C.: 121-126.

The environmental protection agency provides financial support for projects for the development of water reuse technology to help meet the goals of the 1972 federal water pollution control act. epa supports the continued development and implementation of waste water reclamation, reuse, recycling, and recharge. emphasis is placed on the potential for waste water reuse in agricultural, industrial, municipal, recreational, and groundwater recharge applications. the direct interconnection of waste water reclamation plants with municipal water treatment plants, and projects including procedures for the rapid identification and removal of viruses and organics, epidemiological and toxicological analyses, advanced waste water drinking water treatment process design and operation, development of water quality requirements for various reuse opportunities, and cost-effectiveness studies are not currently supported by epa. eighteen major waste water reuse projects for a total investment of $5,400,000 have been supported by epa. among these projects are ones at lake tahoe, santee, and antelope valley, california. most of the epa funded research in the fiscal year 1973 was concerned with land treatment systems for effluents and sludges. well-known epa financed projects in this area are groundwater recharge at whittier narrows, california, pennsylvania state university's project, and the muskegon, michigan, spray irrigation project.

Greenlee, D. L. (1985). Denitrification Rates Of a Mountain Meadow Near Lake Tahoe (Acetylene, Inhibition), University Of Nevada, Reno.

Grenfell, W. E., Jr. and A. J. Brody (1983). Seasonal foods of black bears in Tahoe National Forest, California. Calif. Fish Game 69(3): 132-150.

Black bear, Ursus americanus , food habits were determined by analyzing 395 fecal samples collected from 1978 through 1980. Colonial insects were eaten consistently throughout the year, while other animal food items were used sporadically. Consumption of plant material varied with phenology. Grasses and forbs were utilized in the spring, manzanita berries in the summer, and acorns eaten in the fall.

Greuner, L. and Lake Tahoe Historical Society (1971). Lake Valley's past : a guide to twenty historical sites at Tahoe's South Shore. South Lake Tahoe, CA, Lake Tahoe Historical Society.

Griffenhagen-Kroeger Inc. and South Tahoe Chamber of Commerce (1960). Local government for South Tahoe; prepared for the South Tahoe Chamber of Commerce. San Francisco, CA, Griffenhagen-Kroeger Inc.

Grose, L. T. and Nevada Bureau of Mines & Geology (1985). Geologic map, Glenbrook quadrangle. Reno, NV, Nevada Bureau of Mines and Geology, University of Nevada-Reno.

Grose, L. T., United States Geological Survey, et al. (1986). Geologic map, Marlette Lake quadrangle. Reno, NV, Nevada Bureau of Mines and Geology, University of Nevada-Reno.

Grunsky, C. E. (1913). Evaporation from reservoirs (pen & ink graphs), [publisher and place published unknown].

Guerrant, D. G. (1989). Evaluation Of Infiltration, Runoff and Sediment Transport Characteristics In Sierra Nevada Watersheds Through Rainfall Simulation, University Of Nevada, Reno.

Quantitative erosion data for Tahoe Basin soils are lacking. Rainfall simulation was used to measured infiltration, runoff and erosion of Cagwin soil under three slope (0-15, 15-30, and $>$30%) and four plot (natural with duff, natural without duff, disturbed without duff, and disturbed with duff) condition. Simulated storms were $>$100 yr-1 hr event. Relationships were analyzed via a modified Philip's model and multiple non-linear regression (P = 0.01). All plots were significantly different. Final infiltration (i$\sb{\rm f}$) ranged from 4.6-6.1 cm hr$\sp{-1}$ and runoff from 36-59%. Natural conditions with duff demonstrated highest and without duff lowest i$\sb{\rm f}$. Runoff was reversed. Sediment discharge increased with slope, decreased with time, and was greatest for disturbed with duff (1,391-35,416 Kg Ha$\sp{-1}$) and least for natural with duff conditions (trace). Modeled cumulative sediment vs. runoff demonstrated general erosivity for each slope/plot condition. Order No: AAC 1338576 ProQuest - Dissertation Abstracts

Guerrant, D. G., W. W. Miller, et al. (1990). Infiltration Evaluation of Four Mechanical Rainfall Simulation Techniques in Sierra Nevada Watersheds. Water Resources Bulletin 26(1): 127-134.

Little quantitative site-specific infiltration, runoff and sediment transport data for Tahoe Basin soils under varying storm events or stage of development are available. Modular (M1), F-type (M2), Impact nozzle (M3), and Impact-Fan nozzle (M4) rainfall simulators were evaluated as to their practicality and ability to characterize infiltration for the Cagwin Soil Series within the Tahoe Basin. Three slope (0-15, 15-30, >30 ppt) and four plot conditions (natural with duff, natural without duff, disturbed without duff, and disturbed with duff) were studied. The measured data were incorporated into a modified Philip's infiltration model and multiple non-linear regression analyses were used to examine relationships between method, slope, plot conditions, and infiltration characteristics. Simulation methods M1 and M4 produced statistically similar (P=0.01) infiltration data, as did M2 and M3 which produced lower infiltration rates. All were found suitable for use in Sierra Nevada watersheds. M1 was considered most practical. Slope had negligible effect on infiltration. The plot condition was found to significantly influence infiltration, and the effect of each plot condition was significantly different. Final infiltration rates ranged from 4.7 to 6.2 cm/hr. Thus, the Cagwin soil demonstrated moderate to high infiltration rates even when exposed to extreme storm conditions (8-10 cm/hr). (Author's abstract)

Guerrant, D. G., W. W. Miller, et al. (1991). Site-specific erosivity evaluation of a Sierra Nevada forested watershed soil. J Environ Qual 20(2): 396-402.

Little quantitative site-specific infiltration, runoff, and erosion data for forested watershed soils of the Tahoe Basin are available. A Modular-type rainfall simulator was used to examine these variables for the Cagwin (mixed Typic Cryopsamment) soil series. Three slope (0-15, 15-30, >30%) and four plot conditions (undisturbed with natural duff, undisturbed without natural duff, disturbed without natural duff, and disturbed with natural duff removed) were studied. Infiltration and runoff data were incorporated into a modified Philip's model whereas erosion data were incorporated into a general nonlinear model. Data sets were analyzed via nonlinear regression for slope and plot interaction. Slope had negligible effect on infiltration and runoff but had a significant effect on erosion. Plot condition had significant effects on infiltration runoff, and erosion. Final infiltration rates ranged from 4.7 to 6.1 cm h-1, runoff ranged from 36 to 59% of the application rates, and cumulative interrill erosion ranged from 37.5 to 108.4 g m-1 for a simulated design storm of 8 to 10 cm h-1. The findings of this investigation were consistent with those of related quantitative investigations and indicate that the Cagwin soil has a low relative erosivity. Data from this study further suggest that previously applied models used to estimate potential erosion hazards of forested watershed soils may well result in over-estimation of erosion potential.

Gupta, V. L. and J. W. Fordham (1971). Multisite Streamflow Simulation Of Truckee River, Nevada. Symposium on Statistical Hydrology, Arizona University, Tucson.

The problems associated with conducting sequential simulation studies of monthly streamflow were discussed. focus was on a configuration of six gaging stations in the truckee river system. the concepts of simulation were structured in such a manner that both the serial and cross correlations of the station-to-station dependence was preserved. the results were investigated by comparing the statistical properties of the simulated sequences and the historic flow inputs. some of these properties include mean, standard deviation, and skewness; correlograms; and frequency distributions. lack of meaningful agreement in the statistics of historic and simulated sequences for tahoe inflow, particularly for the low flow regime, is attributable to the use of a blanket 'log-pearson type iii distribution' for all stations, for all seasons, and for each month. tahoe inflow is predominantly a consequence of the precipitation on the large body of water. lag time and the frequency distribution of precipitation and streamflow are distinctly different. consequently, postulating the same parent distribution has led to discrepancies. smoothing and truncating the skew coefficients as advocated by the method used is partially responsible for the lack of agreement between historic and simulated sequences. (see also w75-10507) (sims-isws)

Gupta, V. L. and J. W. Fordham (1972). Streamflow Synthesis -- a Case Study. Journal Of The Hydraulics Division, American Society Of Civil Engineers 98(Hy6): 1049-1055.

A statistical simulation was prepared for monthly streamflow sequences in a multiple-site configuration in the tahoe-truckee system. data preparation consisted of: (1) conversion of historic streamflow values, wherever necessary, to what the values would be if it were not for regulation; and (2) reconstitution of missing flow values in the record. the general statistical properties of the simulated sequences were comparable to those of historic sequences. inconsistencies with regard to monthly water balance of the simulated sequences are outlined.

Guthe, W. G. and M. L. Shelton (1987). Estimating the Water Resource for a High Sierra Watershed. Water Resources Bulletin WARBAQ 23(5): 767-775.

Competition for water, concerns for maintaining groundwater quality, and compliance with legislative action require quantification of the water resource for high elevation watersheds in the Sierra Nevada. However, meager hydroclimatic data frequently hinder runoff assessments needed for formulating water development policies, and the selection of watershed models for estimating the water resource is limited to those requiring a minimum of observational data. A climatic water budget model and an energy slope and aspect model are employed to estimate the water resource for a small watershed in Sierra Valley north of Lake Tahoe. The models employ different assumptions and computational procedures, but the total water available estimated by both models is very similar. Measured runoff is estimated satisfactorily by the models, but streamflow is not representative of the total water resource because a substantial portion of the available water enters the regional groundwater system. This conclusion is supported by hydrologic and geochemical evidence, and groundwater recharge is estimated to be at least as great as measured runoff during dry years and nearly twice as large during wet years. (Author's abstract)

H.L. Hensley & Associates (1959). Lake Tahoe Area Council : program and plan of operations. Reno, NV, H.L. Hensley & Associates.

Hacker, P. W. (1973). The Mixing Of Heat Deduced From Temperature Fine-Structure Measurements In the Pacific Ocean and Lake Tahoe, University Of California, San Diego (0033).

Hager, D. G. (1981). Source Treatment of Industrial Wastewater with Granular Activated Carbon. International Conference on Application of Adsorption to Wastewater Treatment, Nashville, TN, Enviro Press, Inc., Nashville, TN.

Installation of a granular activated carbon (GAC) wastewater treatment system at Lake Tahoe some fifteen years ago marked the first large scale municipal application for the adsorption process. Following the Lake Tahoe installation, many municipal and industrial waste treatment facilities were installed with the common objective of reducing residual dissolved organic contaminants which have survived conventional biological treatment. The GAC System was placed at the end of the treatment sequence and the organics being removed were measured in terms of biological oxygen demand (BOD), chemical oxygen demand (COC), total organic carbon (TOC) and/or soluble (organic) oxygen demand (SOC). More recently, industrial GAC systems have been designed to remove specific chemical contaminants rather than overall general organic reductions. Current regulatory actions emphasize the removal of specific organic contaminants from industrial effluents which are considered to be toxic and/or carcinogenic. For removal of specific organic contaminants the adsorptive capacity of activated carbon is more fully utilized in point of source treatment where specific contaminant concentrations are highest and other organic concentrations are lowest. Point of source GAC treatment provides an opportunity for recovery of valuable products from the wastewater via non-thermal regeneration of the GAC. Countercurrent adsorption systems, such as pulsed bed adsorbers, maximize the loading of contaminants on the GAC in each adsorption cycle and thereby reduce the quantity of carbon exhausted per gallon of treated water. Recently, developed fluid bed carbon reactivation technology has appreciably reduced fuel consumption and improved reactivated carbon quality in both industrial and municipal GAC water applications.

Hamilton, F. S. (1935). A study of Lake Tahoe with respect to the best regulation for future storage, University of California, Berkeley.

Hamilton, M. K., C. O. Davis, et al. (1993). Estimating chlorophyll content and bathymetry of Lake Tahoe using AVIRIS data. Remote Sens. Environ. 44: 2-3.

An AVIRIS image was obtained at Lake Tahoe on 9 August 1990, along with in situ data. Profiles of percent transmission of monochromatic light, stimulated chlorophyll fluorescence, photosynthetically available radiation, and spectral upwelling and downwelling irradiance, and upwelling radiance were measured. Chlorophyll-a + phaeopigments, total particulate absorption, detritus absorption, and absorption due to colored dissolved organic matter were measured on discrete samples. Spectral reflectance at the surface was measured with a handheld spectroradiometer. Image preprocessing included increasing the instrument signal-to-noise ratio by filtering to reduce patterned noise and spatial resampling, and application of LOWTRAN-7 as an atmospheric correction. Several analyses were then performed illustrating the utility of the AVIRIS over a dark water scene. The water-leaving radiance measured by the AVIRIS compares very well with the upwelling radiance measured in-water, everywhere but in the very short wavelength channels. After recalibrating one AVIRIS channel, the chlorophyll concentration derived from the image compares extremely well with that measured with bottle samples. Surface spectroradiometer measurements made along a transect of varying depth were used to condition a multiple linear regression bathymetry model. By applying the model coefficients to a portion of the image, a bathymetry map of the shallow parts of the lake was constructed which compares favorably with published lake soundings, indicating the potential for a bottom-reflectance correction to coastal ocean color imagery.

Hampton, A. M. (1988). Altitudinal range and habitat of triclads in streams of the Lake Tahoe basin. Am. Midl. Nat. 120(2): 302-312.

The distribution of freshwater triclads in streams, springs and seeps of the Lake Tahoe Basin was studied. Twenty-one streams were investigated from source to mouth in an elevation range from 1902 to 2792 m (6235 to 9160 ft), and collecting sites were established approximately every 400 m (quarter mile). Species of Polycelis were found at the highest elevations and were the most abundant and widely distributed of the stream triclads. They were in 81% of the streams and in many springs and seeps. In several cases, triclads of the genus Polycelis were most abundant in headwaters, decreasing in density downstream.

Hancock, L. (1986). Lambreth Hancock autobiography : revised typescript (photocopy), [ca. 1986], (Describes his years working for Henry J. Kaiser, first in California and later in Hawaii; life at Lake Tahoe; various ventures of Henry J. Kaiser; other members of the family.).

Hanf, K. and G. Wandesforde-Smith (1972). Institutional Design and Environmental Management; the Tahoe Regional Planning Agency, University of California, Institute of Governmental Affairs, Davis, CA.

Some of the reasons why the tahoe regional planning agency has not lived up to the hopes that environmentalists had for it are considered. an explanation is presented of the performance of the agency in terms of relationships between its organizational attributes, its politico-administrative environment, and the structure of incentives and constraints in which this and all other attempts at environmental policy-making sets within the context of the political systems must operate. at a more general level, it is argued that environmentalists have scant reason to be either surprised or indignant at the inadequate performance of the intergrated, comprehensive approach to environmental planning. little systematic attention has been given to the political factors likely to influence the design and performance of the regional agencies or to the political processes which, once set in motion by demands for regional environmental planning, can reasonably be expected to lead to a situation where regional agencies are inadequate to the task at hand. this is not to say that environmental planning is impossible or undesirable in the united states through the medium of regional agencies. however, it is argued that more careful attention must be given to analysis of the costs and benefits of alternative governmental arrangements with a potential for achieving regional environmental planning, including existing as well as proposed arrangements. the nature of environmental planning as a political process must be reconsidered, stressing the need to take clearer account of the consequences of policies advanced in the name of improved environmental quality.

Hannaford, J. F. and M. C. Williams (1968). Regional Hydrologic Area Study As an Analysis Tool In Weather Modification. 36th Annual Meeting of Western Snow Conf., Lake Tahoe, Nevada.

A regional hydrologic analysis of the southern and central sierra nevada from bakersfield, california to reno, nevada was made to identify trends in runoff and to identify trends associated with weather modification activity. most target areas show apparent increases in runoff during the period of modification operations. the pattern is clear even though increases may only be in the 5 to 10 percent range. this implies that sierra weather modification projects have been successful, well targeted, and effective. there is an apparent area of downwind effect showing increases in runoff of a magnitude similar to that in the target areas. no peripheral or downwind effects indicating decreases in runoff were found which could be associated with the period of weather modification activity. it is recognized that rigorous statistical proof with the data in this analysis is a virtual impossibility. apparent effects are small when related to overall discharge and potential measurement errors, so that detection with a suitable degree of statistical reliability basins may not be possible. however, an overall pattern is developing which appears consistent with findings of others in this and other areas.

Hansen, R. P., W. A. Hillhouse, et al. (1970). Public Land Policy and the Environment, Volume 2, Part I Environmental Problems On the Public Lands. Summary Statement and Case Studies 1 Through 8, Rocky Mountain Center On Environment, Denver, CO.

Environmental case studies of the following areas and practices are presented: (1) batholith granite in idaho; (2) lake tahoe; (3) the henderson project in colorado, a mining operation; (4) shirly basin in wyoming, a mining operation; (5) copper pit mining composite in arizona; (6) south central utah, a grazing area; (7) a timber cutting practice composite; and (8) a fire ecology composite. these case studies recite facts, discuss environmental impact, and consider problem origins, environmental considerations, and alternatives. a summary of all the case studies is provided in an attempt to define generally the areas discussed in all of the studies. types of environmental problems and impacts are set forth, as are the legal, procedural and policy problems associated with environmental problems and impacts. suggested alternative laws, regulations, policies, practices, and procedures for avoiding or mitigating environmental problems are presented.

Harding, S. T. and California Dept. of Water Resources (1959). Derivation of the future water requirements of the Lake Tahoe Basin : comments on the results of the California Department of Water Resources.

Harding, S. T. (1962). Water supply of Lake Tahoe.

Harrill, J. R., Nevada Bureau of Mines & Geology, et al. (1977). South Lake Tahoe folio, hydrologic map. Reno, NV, Nevada Bureau of Mines and Geology.

Harrington, J. M. and California Dept. of Fish & Game (1991). Tributylin residues in Lake Tahoe and San Diego Bay, California, 1988, California Department of Fish and Game, Sacramento, CA.

Harris, R. W., W. Jeffery, et al. (1974). Water Pollution. Interstate Environmental Problems: 57-84.

The types and mechanisms of water pollution, the various legal means of protecting water quality, and the application of those means in the lake tahoe-truckee river area in california are surveyed in this article. types of pollutants include: organic wastes, infectious agents, plant nutrients, synthetic organic chemicals, inorganic chemicals, sediments, radioactive wastes, and thermal pollution. a particularly destructive type of pollution is created by the meat packing industry by penning animals in feedlots. various chemical techniques are available for detecting pollutants, as well as natural techniques such as the trout standard. once a pollution problem is detected, water quality control authorities may compel abatement under the 1972 amendments to the federal water pollution control act (fwpca), which places limitations on the discharges of effluents into navigable waters. in california, there are nine separate regional water quality control boards in charge of enforcing fwpca requirements. an examination of the tahoe-truckee system, however, reveals that federal requirements often conflict with state needs, and that solution to one part of the water quality problem--sewage treatment--can have adverse consequences in other areas of the environment.

Harris, R. E., P. F. Barker, et al. (1988). Land and resource management plan : Lake Tahoe Basin Management Unit, USDA Forest Service, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

Hart, O. O. (1978). An Introduction to Water Renovation and Reclamation. Manual for Water Renovation and Reclamation CSIR Technical Guide K42 16(1978): 1-16.

A supply of fresh surface water for all consumers is no longer possible in a water-poor country such as South Africa, therefore, water renovation and reclamation, two methods of conserving the water that is available, are becoming increasingly necessary. Successful reuse of waste water has been achieved in locations such as Lake Tahoe in South Africa, Chanute in the United States, and Windhoek in South West Africa. Research that began six years ago at the Stander water reclamation plant, Daspoort, Pretoria has done much to futher water reuse in South Africa. The research has dealt primarily with two types of raw water, biofilter humus tank effluent and activated sludge effluent. Unit processes have been developed so that final water of virtually any quality can be produced. Unit processes used include: lime treatment, clarification, quality equalization, ammonia stripping, recarbonation, sand filtration, chloride disinfection, ozone disinfection, active carbon adsorption, final treatment, sludge dewatering, and active carbon regeneration. The cost of renovated and reclaimed water is a function of plant size, waste water characteristics, and the degree of treatment ore renovation. The most expensive, but necessary, unit process is active carbon adsorption, while the most economical unit process is quality equalization.

Hasler, A. D. and B. Ingersoll (1968). Dwindling Lakes. Nat Hist 77(9): 1.
Eutrophication and subsequent extinction of lakes is a naturally occurring process whose rate is governed by many limnological and geological factors. man's activities, including waste disposal and agricultural practices, substantially hasten the process by polluting rivers, lakes and impoundments with excessive plant nutrients. consequent growth of blue-green algae and rooted aquatic vegetation initiate a cycle of events which are aesthetically offensive and economically costly. authors classified 12 selected american lakes as follows: excellent--crater, ore; excellent but endangered--superior and tahoe; good but endangered--george and cayuga, ny; fair but improving--washington, seattle; good and improving--okoboji, iowa; fair and endangered--mendota, wis; poor and endangered--erie; good but endangered--douglas, mich; and okeechobee, fla; and poor but improving--apopka, fla. authors discuss diversion, improved sewage treatment, enlightened agricultural practices, and harvesting as methods of control, but discourage techniques such as application of biocides, which treat effects without eliminating nutrients. air pollution is involved as source of nitrogen pollution via rainfall. authors urge more and careful study of manifold factors influencing eutrophication and indicate the great promise of systems analysis as means of generating large-scale data needed for control.

Hasler, A. D. (1969). Cultural Eutrophication Is Reversible. Bioscience 19(5): 425-431.
Various human activities contribute to excessive enrichment (cultural eutrophication) of waters. among the symptoms of cultural eutrophication are nuisance blooms of algae, increased nutrient levels, depletion of hypolimnetic oxygen, increased turbidity, and changes in the species-compositions of phytoplankton, invertebrates, and fishes. a case history is presented (zurichsee) documenting changes in limnological conditions, as well as additional relevant data from north american lakes. as methods of solving the problems of cultural eutrophication, author suggests that more extensive dissemination of information, involvement of all citizens and citizen groups in workshops and seminars, and enlightened legislation. the wisconsin resources law (1965) is given as an example of legislation and the philosophy of zoning is discussed. three examples are given (lakes monona, tahoe, washington) where success is curbing cultural eutrophication has been achieved. methods of control and harvesting aquatic plants and fish are discussed; also chemical control and sewage utilization. table gives estimates of nitrogen and phosphorus input to wisconsin surface waters. see also w68-00680. (voigtlander-wis)

Hawkins, F. F., R. LaForge, et al. (1986). Seismotectonic study of the Truckee/Lake Tahoe area, northeastern Sierra Nevada, California for Stampede, Prosser Creek, Boca, and Lake Tahoe Dams, Seismotectonic Section, Engineering and Research Center, U.S. Bureau of Reclamation, Denver, CO.

Hawley, R. S. (1925). Property map of Lakeside Park : Lake Tahoe, Calif.

Hayden, M. (1971). Guidebook to the Lake Tahoe Country. Los Angeles, CA, W. Ritchie Press.

Hays, D. W. and U.S. Geological Survey Reclamation Service (1903). Lake Tahoe outlet, Truckee project, Nevada. [Reno, Nevada?], U.S.G.S. Reclamation Service.

Hendrickson, J. D. (1993). Community plan preparation primer, City of South Lake Tahoe : an individual parcel inventory and cumulative district assessment to assist in the preparation of a community plan for the South "Y" and industrial tract planning areas, University of California, Los Angeles.

Heoney, A. and C. Miller (1987). Living on the lake : Tahoe. Northern California Real Estate Journal 2(2): 8-9.

Heyman, M. (1975). Legal Review of Land Use Controls. Lake Tahoe Research Seminar III, South Lake Tahoe, CA.

Developments in the Lake Tahoe Basin since the organization of the Tahoe Regional Planning Agency (TRPA) as a grant experiment in legal techniques and governmental organization are discussed. Major topics covered are land use regulation and processes of governments. TRPA and CTRPA plans are referred to. The major concern of these plans has been the protection of water quality in Lake Tahoe and other Basin lakes, and the preservation of the vegetation and natural land forms. Air pollution and shoreline regulation are mentioned. The second part of the paper is devoted to litigation dealing with land use. (See also W78-00260) (Lynch-Wisconsin)

Hildinger, A. E. (1962). Forest trees of the Lake Tahoe area. South Lake Tahoe, CA, A.E. Hildinger.

Hill, B. R., J. R. Hill, et al. (1988). Sediment Sources in the Lake Tahoe Basin, California-Nevada: Preliminary Results of a Four Year Study, August 1983 - September 1987, U.S. Geological Survey, Menlo Park, CA.

Data were collected during a 4-yr study of sediment sources in four drainage basins tributary to Lake Tahoe, California-Nevada. The study areas include the Blackwood, General, Edgewood, and Logan House Creek basins. Data include changes in bank and bed positions at channel cross sections; results of stream-channel mapping; analyses of bank and bed material samples; tabulations of bed material point counts; measured rates of hillslope erosion; dimensions of gullies; suspended-sediment data collected during synoptic snowmelt sampling; and physiographic data for the four study basins. (USGS)

Hill, B. R., J. R. Hill, et al. (1990). Sediment-Source Data for Four Basins Tributary to Lake Tahoe, California and Nevada, August 1983-June 1988, U.S. Geological Survey, Menlo Park, CA.

Data were collected during a 5-year study of sediment sources in four drainage basins tributary to Lake Tahoe, California-Nevada. The study areas include the Blackwood Creek, General Creek, Edgewood Creek, and Logan House Creek basins. Data include changes in bank and bed positions at channel cross sections; results of stream-channel inventories; analyses of bank and bed material samples; tabulations of bed-material pebble counts; measured rates of hillslope erosion; dimensions of gullies; suspended-sediment data collected during synoptic snowmelt sampling; and physiographic data for the four study basins. (USGS)

Hill, K. J. and Tahoe Regional Planning Agency (1994). 1993 annual water quality report, Tahoe Regional Planning Agency, Zephyr Cove, NV.

Hinckle, G. and B. Hinckle (1949). Sierra Nevada Lakes. Indianapolis, IN, The Bobbs-Merrill Company, Inc.

Hoefer, J. (1986). Planning in a fragile environment--Lake Tahoe. Proc-Soc-Am-For-Natl-Conv. Bethesda, Md., The Society: 273-275.

Hoffman, R. W., C. R. Goldman, et al. (1981). Aquatic Impacts of Deicing Salts in the Central Sierra Nevada Mountains, California. Water Resour. Bull. 17(2): 280-285.

The fate and effect of sodium chloride applied to Californian highways in the Lake Tahoe, Truckee River, and Yuba River watersheds were studied over a period of 14 months in 1974-75. Chloride levels in streams below major freeways were found to be elevated during the winter. The high chloride levels occurred after the application of salt to roads, decreasing as the time from application increases. Small lakes receiving runoff from major highways were also enriched with chloride. Several of these lakes displayed a temporary chemocline, which was sufficiently strong to stabilize a temperature inversion in one lake.

Hoffman, D. S. (1984). Saving the lake! : an overview of Lake Tahoe's development, University of Nevada, Reno.

Hoffman, R. J. (1990). Phosphorus in the Truckee River Between Vista and Patrick, Storey and Washoe Counties, Nevada, August 1984, US Geological Survey, Carson City, NV.

During calibration of a numerical water quality model of the Truckee River below Reno, Nevada, the modeling results showed an undocumented accretion of phosphorus between Lockwood and Patrick at streamflows of about 300 cu ft/sec. An examination of available historical data tended to support the observed increase. In August 1984, at a streamflow of about 300 cu ft/sec, a diel sampling program was undertaken at four stations along a 7.3-mile reach of the river to determine if the undocumented input of phosphorus was real, or was due to errors associated with water quality sampling procedures, or the river's traveltime, or both. Water samples were collected using the equal-discharge-increment method across the stream, for the analysis of phosphorus, chloride, sulfate, and arsenic. On-site measurements included specific conductance, dissolved oxygen, water temperature, and pH. All water quality data were collected every 2 hours and instantaneous streamflow was measured about every 3 hours at each station. The results of field work and a thorough analysis of past sampling programs in the Truckee River suggest that the apparent increase in phosphorus between Lockwood and Patrick was most likely the result of sampling protocol in association with the river's time of travel, compounded by fluctuating phosphorus loads from an upstream wastewater treatment plant near Reno during periods of moderate streamflow. During high streamflow conditions, the increase may also have been the result of the resuspension of particulate phosphorus. (Author's abstract)

Hokom, L. H. (1949). Sanitary survey of water systems Lake Tahoe Area, California Department of Public Health, Bureau of Sanitary Engineering, Sacramento, CA.

Holderman, J. C. (1991). Development Of a Bike Path In the Ecologically Sensitive Lake Tahoe Basin, University Of Nevada, Reno.

The environmental and developmental problems of a hike n' bike path in an ecologically sensitive mountain lake area were researched. The path would extend the existing Incline Village bike path south along Highway 28 at Lake Tahoe. The high recreational pressure on the Lake Tahoe area has resulted in environmental degradation along the shoreline. Subjects covered in this analysis were examination of historical development of the study area, planning issues, integration with other recreational plans, and Intergovernmental Cooperative agreements. Two bike path alternatives were established and comparison of the plans were assessed to determine the most feasible alternative. The research indicates that the development of the proposed path will probably slow down the degradation occurring in the area allowing better control of recreational use; and thus, easier enforcement of regulations and maintenance of the area.

Hopp, W. J. (1970). Tahoes environmental problems and regional controls : with a history and analysis of the Tahoe regional planning compact, [publisher and place published unknown].

Hotchkiss, W. R. (1968). Snow Avalanche - The White Death. Geologic Studies in the Lake Tahoe Area, California and Nevada. J. R. Evans and R. A. Matthews. Sacramento, Geological Society of Sacramento: 37-45.

Avalanches; Avalanch control

Howard, R. F., M. J. Singer, et al. (1981). Effects of soil properties, water content, and compactive effort on the compaction of selected California forest and range soils in the Sierra, Tahoe, and Modoc national forests in California. J Soil Sci Soc Am 45(C (2): 231-236.

Howell, R. and California Dept. of Public Works - Division of Highways (1971). Soil erosion transects Lake Tahoe region, California Division of Highways, Sacramento, CA.

Howell, R. B., J. B. Skog, et al. (1971). Hydrology and sediment transport (Spring 1971), Lake Tahoe Basin : interim report, State of California, Dept. of Public Works, Division of Highways, Materials and Research Dept., Sacramento, CA.

Huber, W. L. (1936). Photographs of scenic views of Nevada and Lake Tahoe.

Huggins, E. (1992). What shall we do tomorrow : at North Lake Tahoe and Truckee. Truckee, CA, Coldstream Press.

Hunsaker, J. N. and United States Lake Tahoe Basin Management Unit (1976). Environmental analysis report (EAR) for a proposed Lake Tahoe Management Unit land use plan, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

Hunt, R. H. and California Division of Forestry (1971). Lake Tahoe : urbanization under the forest canopy, California Division of Forestry, Sacramento, CA.

Hunter, D. A., C. R. Goldman, et al. (1990). Changes in the Phytoplankton Community Structure in Lake Tahoe, California-Nevada. Internationale Vereinigung fuer Theoretische und Angewandte Limnologie 24(1): 505-508.

Qualitative and quantitative evidence suggests that the low phosphorus concentrations in Lake Tahoe are responsible for changes in the phytoplankton community structure. The high N:P ratio has triggered increases in species richness and has altered the relative contribution of algal groups to the total phytoplankton biomass. Diatoms no longer exclusively dominate the biomass. Instead, the phytoplankton community structure reflects a shared dominance among diatoms, chrysophytes and cryptophytes. The shift in algal group dominance may testify to resource partitioning among natural N:P gradients. As phosphorus becomes more limiting, those species that can optimize low concentrations of phosphorus are gaining importance. If the N:P ratio increases, the phytoplankton community may become increasingly dominated by chrysophytes. Lake Tahoe is characterized by a high degree of environmental variability which is reflected in the annual resource availability. Much work remains to be done to increase the understanding of the interactions between the extent of spring mixing and the resulting implications for phytoplankton growth and resource partitioning.

Hyne, N. J. J. (1969). Sedimentology and Pleistocene History Of Lake Tahoe, California - Nevada, University Of Southern California.

Hyne, N. J., P. Chelminski, et al. (1972). Quaternary History of Lake Tahoe, California-Nevada. Geol. Soc. America Bull. 83: 1435-1448.

Hyne, N. J., C. R. Goldman, et al. (1973). Mounds In Lake Tahoe, California-Nevada: a Model For Landslide Topography In the Subaqueous Environment. J. Geology 81(2): 176-188.

Landslide movement of sediments is a significant mode of sediment transport in lake tahoe, california-nevada. a series of massive, basin-wide landslides deposited a large portion of the thick bottom sediments. the latest of these landslides was comparable in volume with the largest landslides ever recorded. several large mounds on the floor of lake tahoe were formed by landslides. at the base-of-slope environment, many mounds are well layered and rotated backward, suggesting deposition as coherent slump blocks. mounds further from the base of slope are circular or elliptical in area, have a pebbly mudstone sedimentary texture, display a disordered internal structure on seismic reflection profiles, and are located on an extensive layer of similarly disordered sediments. these mounds formed along dewatering centers during the rapid deposition of an incoherent landslide mass. a gradation exists between coherent slumps, partially fluidized incoherent landslide masses, and fluidized turbidity currents depending on the amount of water that has been entrained. only the fluid flow does not form a characteristic mound topography.

Imboden, D. M., R. F. Weiss, et al. (1977). Lake Tahoe geochemical study. (l). lake chemistry and tritium mixing study. Limnology and Oceanography 22(6): 1039-1051.

The study of vertical mixing in Lake Tahoe by temperature and oxygen measurements is limited to the top layer of the lake, since vertical gradients are extremely small at greater depth. Below 200 m the temperature gradient is about -1-.-6 x 10-SUP--4--degree-C m-SUP--1-, with little or no seasonal variation. A tritium profile was taken at a midlake station in 1973 together with samples for measurements on lake chemistry. Oxygen, nitrate, total inorganic carbon, and pH showed the effects of photosynthetic activity to a depth of about 80 m, well below the thermocline; average planktonic composition was calculated from these data. Silicate and carbonate alkalinity profiles were essentially uniform, showing that biological removal is negligible in comparison to the rate of vertical mixing. Essentially no variation in tritium concentration with depth was observed. Tritium measurements and input estimates in Crater Lake were used to calculate tritium concentration in Lake Tahoe between 1954 and 1973 and to estimate a ratio in tritium input of 32% precipitation to 68% vapor exchange. The tritium profile gives strong evidence for at least occasional complete mixing of Lake Tahoe. The last complete mixing may have occurred in March 1973 and at least one other such event took place between 1964 and 1968.

Ingram, W. and P. A. Sabatier (1987). A descriptive history of land use and water quality planning in the Lake Tahoe Basin, Institute of Governmental Affairs and the Institute of Ecology, University of California, Davis, CA: 75 leaves.

Ingrum, B. (1986). Progress at Lake Tahoe. Urban Land 44(11): 13-16.

Innis, G. S., D. F. Hanson, et al. (1981). A simulation model of management alternatives in a freshwater fishery. Ecol. Modelling 12(4): 267-280.

A model for investigating management alternatives on the Pyramid Lake-Truckee River system of Nevada and California is presented. Cutthroat trout, cui-ui, Tahoe sucker and tui chub are modelled with special emphasis on river spawning by trout. Management decision variables include hatchery input, water flow control, and diversion screening. Preliminary results indicate that some hatchery input will be needed to support the trout even with the best river management.

J.B. Gilbert & Associates (1973). Erosion control and surface water management : Lake Tahoe portion of El Dorado County, J.B. Gilbert & Associates, Sacramento, CA.

J.B. Gilbert & Associates (1974). Tahoe Regional Planning Agency 1974 comprehensive planning program, preliminary status report : public facilities master plan - storm drainage and surface water runoff - fire services - power and gas supply, J.B. Gilbert & Associates, Sacramento, CA: 1 v.

Jackson, W. T. and D. J. Pisani (1972). Lake Tahoe water : a chronicle of conflict affecting the environment : 1863-1939, Institute of Governmental Affairs, University of California, Davis, CA.

Jackson, W. T. and D. J. Pisani (1973). From resort area to urban recreation center : themes in the development of Lake Tahoe, 1946-1956, Institute of Governmental Affairs, University of California, Davis, CA.

LAKE TAHOE'S DEVELOPMENT AS A RESORT CENTER DATES TO 1924. AFTER WORLD WAR II, IMPROVED ACCESS BY HIGHWAY AND AIR, DEVELOPMENT OF WINTER SPORTS FACILITIES AND AN INCREASE IN RESIDENTIAL BUILDING BEGAN TO TAX TAHOE CITY'S WATER SUPPLIES. CONTROVERSY OVER PUBLIC AND PRIVATE USE OF BEACHES, BUILDING AND ZONING CODES, AND LAND USE OCCURRED IN THE 1940'S AND 1950'S. SMALL PRIVATE UTILITY COMPANIES SUPPLIED WATER BETWEEN 1946-1956, MANY OF THESE BEING ABSORBED INTO PUBLIC UTILITY DISTRICTS AS COMMUNITIES EXPANDED. CALIFORNIA AND NEVADA DEPARTMENTS OF PUBLIC HEALTH DEMONSTRATED CONSIDERABLE CONCERN OVER SEWAGE SYSTEMS DRAINING INTO THE LAKE AND INTO THE TRUCKEE RIVER, THE NATURAL OUTLET OF THE LAKE. AS POLLUTION INCREASED BOND ISSUES TO PROVIDE A NEW SEWAGE SYSTEM AT TAHOE CITY WERE DEFEATED BY VOTERS AND COURT ACTIONS BECAME FREQUENT. CONFLICT BETWEEN THOSE WISHING TO PRESERVE AND THOSE WISHING TO DEVELOP THE ENVIRONMENT BECAME EVIDENT. ATTEMPTS AT BI-STATE COOPERATION OVER THE WATER LEVEL CONTROVERSY INCLUDING THE TRUCKEE RIVER AGREEMENT WHICH SET MAXIMUM AND MINIMUM LEVELS OF THE LAKE, AND THE PROPOSED BUILDING OF THE PROSSER RESERVOIR FOR STORAGE BY THE CORPS OF ENGINEERS, ARE TRACED. PROBLEMS OF SEWAGE DISPOSAL WERE ALSO TACKLED ON A BI-STATE BASIS OFTEN INVOLVING BITTER CONFLICT. PROBLEMS OF JURISDICTION AND FINANCE CONTINUE. (EDWARDS-NORTH CAROLINA)

Jackson, W. T. and D. J. Pisani (1973). A Case Study In Interstate Resource Management: the California-Nevada Water Controversy, 1865-1955, University of California, Davis, Water Resources Center, Davis, CA.

A historical summary and evaluation are presented of the controversy between northern california and nevada over capture, storage, and distribution of the water supply originating in the sierra nevada mountains between the two states. the water controversy is described from the perspective of formal interstate efforts to satisfy those interests and find an equitable way of dividing 'surplus' water between the two states. the majority of the report is concerned with interstate efforts to resolve differences over water allocation, uses, and management from 1931 to 1955. although significant, the california-nevada interstate water conference played a relatively ineffective role during this period.

Jackson, W. T. (1974). Early planning efforts at Lake Tahoe : the role of Joseph F. McDonald, 1956-1963. Davis, CA, Institute of Governmental Affairs, University of California.

Jackson, W. T. and T. L. Dailey (1974). Environmental planning efforts at Lake Tahoe : the evolution of regional government, 1963-1968, Institute of Governmental Affairs, University of California, Davis, CA: iii, 76 leaves.

Jackson, W. T. and D. J. Pisani (1974). A Case Study In Interstate Resource Management: the California-Nevada Water Controversy, 1955-1968, University of California, Davis, Water Resources Center, Davis, CA.

A history is presented of the california-nevada interstate compact commission from its formation in 1955 through 1971. the commission was responsible for drafting a compact dividing up the surplus water of one interstate lake, lake tahoe, and three interstate streams, the truckee, carson and walker rivers. however, largely because of opposition from the federal government, the compact has never taken effect. federal agencies interested in lake tahoe, particularly the department of the interior, have blocked any chance for the two states to solve their mutual water problems by imposing a new set of negotiating conditions on the commissioners after a formal compact between the states was adopted. much of the criticism levelled at the compact commission has been unjustified considering the statutory limitations imposed on the commission's authority when negotiations began. finally, this report illustrates the continuing conflict over water use priorities in the american west. throughout negotiations the relative value of water use for recreation was tested against the needs of farmers, power companies and other interest groups. the agreements reached by negotiators reflect the difficulty water use planners have had in reconciling conflicting, and often inconsistent, demand on a limited resource.

James, G. W. (1915). Lake Tahoe and it's surroundings. Pasadena, CA, George Wharton James.

James, G. W. (1956). The lake of the sky, Lake Tahoe in the high Sierras of California and Nevada; its history, Indians. Chicago, IL, C. T. Powner Company.

discovery by Fremont, legendary lore, various namings, physical characteristics, glacial phenomena, geology, single outlet, automobile routes, historic towns, early mining excitements, steamer ride, mineral springs, mountain and lake resorts, trail and camping out trips, summer residences, fishing, hunting, flowers, birds, animals, trees and chapparal [!] with a full account of the of the Tahoe National Forest, the public use of the water of Lake Tahoe and much other interesting matter

Jassby, A. D., C. R. Goldman, et al. (1992). Trend, seasonality, cycle, and irregular fluctuations in primary productivity at Lake Tahoe, California-Nevada, USA. Hydrobiologia 246(3): 195-203.

Primary productivity has been measured routinely at Lake Tahoe since 1967, and a number of mechanisms underlying variability in the productivity record have now been identified. A long-term trend due to nutrient loading dominates the series. Seasonality also is prominent, apparently controlled by direct physical factors unrelated to the trophic cascade. A 3-yr cycle has been detected and several possible mechanisms are considered. Irregular fluctuations also are present, caused in part by isolated events (a forest fire) and recurring but variable phenomena (spring mixing). Except possibly for the 3-yr cycle, the known sources of variability appear to operate "bottom-up" through direct physical and chemical effects on the phytoplankton.

Jassby, A. D., J. E. Reuter, et al. (1994). Atmospheric Deposition Of Nitrogen and Phosphorus In the Annual Nutrient. Water Resources Research 30(7): 2207-2216.

Jeffries, J. P. (1987). The master trailbuilder of Lake Tahoe : [Bill Tisher]. Sierra 72(4): 79-82.

Jhk Associates and Franchise Realty Interstate Corporation (1976). Traffic engineering report : proposed McDonald's Restaurant, 1035 Emerald Bay Road, South Lake Tahoe, Jhk Associates, San Francisco, CA: 17 leaves.

Jhk Associates (1981). Woodvista traffic impact analysis : draft report, Jhk Associates, San Francisco, CA: 68 leaves.

Jhk Associates (1984). Tahoe Transportation District transit operations program, fy 1985-89, Jhk Associates, Emeryville, CA: ca. 150 leaves in various foliations.

Johnson, H. (1910). Hiram Johnson photograph albums.

Johnson, J. W. (1959). Shoreline processes near the mouth of the upper Truckee River.

Johnson, J. W. and E. G. Hagadorn (1970). Star Harbor, Lake Tahoe.

Johnson, H. T. (1972). Lake Tahoe and Fragile Environment. Congressional Record 118(27).
The fragile ecosystem of the lake tahoe area basin is discussed and the statement of mr. paul de falco, jr., regional administrator (ix) of the environmental protection agency, made before a senate public works sub-committee is introduced. the presentation summarizes the work done to preserve the environment surrounding the lake in relationship to pressures of development. particular points discussed are: efforts to protect the quality of the waters of lake tahoe by implementation of a system of sewage and solid waste export; the possible effects on water quality due to the cycle of land alteration, erosion, sedimentation, transport of nutrients, and eutrophication; the air pollution control program; the activities of epa, other federal agencies, and the tahoe regional planning agency in protecting the basin's environmental quality. the interrelatedness of these problems is nowhere more evident than in the tahoe basin. defalco states that the fragile ecological system which is tahoe demands not just water pollution control or air pollution control, but a true environmental review, and coordinated efforts by state and local jurisdictions, with the cooperation of the federal government. (tolle-florida)

Johnson, W. N. (1985). High altitude erosion control at Lake Tahoe. Erosion control: A Challenge in Our Time : Conference XVI International Erosion Control Association, San Francisco, CA, International Erosion Control Association.

Johnson, W. and J. Christophrson (1992). Trees for Tahoe landscapes. Fact sheet Max C Fleischmann Coll Agric, Coop Ext Serv(92-49): 4.

Johnson, W. and J. Christopherson (1992). Shrubs for Tahoe landscapes. Fact sheet Max C Fleischmann Coll Agric, Coop Ext Serv(92-48): 4.

Johnston, R. A., B. Pedersen, et al. (1989). Air pollution, transportation policy, and growth control in the Lake Tahoe Region, Division of Environmental Studies, University of California, Davis, CA: 34, [8] leaves.

Joint California-Nevada Interstate Compact Commission (1968). California-Nevada interstate compact concerning waters of Lake Tahoe, Truckee River, Carson River and Walker River Basins, Joint California-Nevada Interstate Compact Commission, Reno, NV (?).

Jones, F. L., California Dept. of Parks &Recreation, et al. (1966). Position of the State Department of Parks and Recreation regarding the Lake Tahoe regional plan, California Dept. of Parks &Recreation, Sacramento, CA.

Jones, F. L., California Department of Parks and Recreation, et al. (1966). Recreation-related problems at Lake Tahoe, California Department of Parks and Recreation, Sacramento, CA.

Jones, F. L., California Department of Parks and Recreation, et al. (1966). Report to the Lake Tahoe Area Council, California Department of Parks and Recreation, Sacramento, CA.

Jones, J. R., J. Stuart, et al. (1974). Inventory of research activities in the Lake Tahoe area, 1878-1974. South Lake Tahoe, CA, Lake Tahoe Area Research Coordination Board.

A bibliography of 492 research publications and items which might be useful to researchers for the lake tahoe area, california and nevada, has been compiled. a master file listing was made which has been subdivided into the following categories; air, land, water, vegetation, animal life, socio-economic, and resource allocation. the water section of the bibliography contains 111 references under sub-groupings of limnology, water supply, water quality, water resources managements and waste water treatment. the bibliographical notations are arranged chronologically. the appendices include an author index, a chronological index, a subject index and a listing of current research activities. the inventory master listing will be kept current and published periodically.

Jones, M. M. (1975). Interpretations of Property Rights at Lake Tahoe: An Investigation into the Open Texture of the Taking Clause, University Of Washington.

Jones, J. R., Lake Tahoe Area Research Coordination Board, et al. (1976). Inventory of research activities in the Lake Tahoe area : a bibliography, 1845-1976. South Lake Tahoe, CA, Lake Tahoe Area Research Coordination Board.

Jones, J. R. (1978). Research coordination and utilization at Lake Tahoe Snow. .

Jones & Stokes Associates, Tahoe-Truckee Sanitation Agency, et al. (1973). Environmental impact assessment, Tahoe-Truckee Sanitation Agency, Jones & Stokes Associates, Sacramento, CA: 3 v.

Jorgensen, L. N., A. L. Seacer, et al. (1978). Hydrologic basins contributing to outflow from Lake Tahoe, California-Nevada. Reston, VA, U.S. Geological Survey.

Juday, C. (1907). Notes on Lake Tahoe, Its Trout and Trout-fishing. Bulletin of the Bureau of Fisheries 26: 133-146.

Kampf, H. J. (1972). Repeated Use Of Granular Activated Carbon In Waste Water Treatment. Water Research, 6: 493-494.

Granular activated carbon, which has more capacity than powdered activated carbon, is economical only if regeneration and reuse is possible. onsite thermal regeneration in a herreshoff furnace is the usual method. with proper oxygen and temperature control, a 5-7% carbon loss per cycle can be maintained giving a fifteen cycle lifetime for the carbon. at lake tahoe, costs are $5.84 per 1000 cu m for tertiary treatment with the product comparable to drinking water. (anderson-texas)

Kasperson, R. E. and M. Eichen, Eds. (1972). Water Supply From Renovated Wastewater--a Resource Manual For Massachusetts Planners, Public Officials and Citizen Groups. Worcester, MA, Clark University.

Metropolitan boston, although situated in the humid northeast, is faced with the prospect of water shortages due to growing population and per capita use. this study examines one source of supply--reclaimed water--in general terms and as it might be applied to boston. treatment techniques are analyzed for their abilities to deal with heavy metals and toxic organic materials, and for their costs. complete purification of waste water for all uses is expensive, lacks public support, and may pose long-term health hazards even when it meets current standards. instead of treating waste water to make it potable, a heirarchy of water used is proposed. higher order uses, including drinking, cooking, and bathing, require much more stringent standards than lower order uses such as irrigation or industrial application. eighteen locations currently using renovated wastewater in municipal, industrial, recreation, or irrigation uses are listed, and two in california, santee and lake tahoe, are described, as well as the windhoek, south africa, reclamation plant which supplies 1/3 of the city's water. the metropolitan district commission's quabbin reservoir in cental massachusetts is being depleted by 12 million gallons per day. immediate and long range plans are discussed, and a dual water supply system using reclaimed waste water for major lower order uses is proposed. (herr-north carolina)

Katzer, T. L. and P. A. Glancy (1978). Flood and Related Debris Flow Hazards Map. Carson City, NV, U.S. Geological Survey, Water Resources Div.

Estimates of the 100-year floodflow were made and the corresponding flood plains were outlined on the map (scale 1:24,000) for the principal streams in the South Lake Tahoe quadrangle, California-Nevada. Degrees of hazard were assigned to the flood plains of these streams on the basis of floodflows and potential debris movement and are depicted on the map. (Woodard-USGS)

Keinath, T. M. (1973). Waste Water Renovation and Reuse: State Of the Art. Ultimate Disposal Of Wastewaters And Their Residuals, Raleigh, North Carolina, Research Triangle Universities.

The state-of-the-art of the renovation of municipal waste water for the reuse of such waters as a viable water resource is discussed. the four basic areas that this discussion covers are: the public's attitude toward the reuse of renovated municipal waste water; the specific health considerations; the primary reclamation processes; and, the experiences of a reclamation facility in renovating waste waters for reuse. a public attitude survey was sponsored by the university of california at berkeley and the california state department of public health to determine how the public would respond to the concept of reusing municipal waste waters. the consensus was that proposals to implement the reuse of renovated municipal waste waters would not meet with serious opposition as long as the proposals are properly introduced. the health aspects of reusing municipal waste water include bacteriology, virology, algology, parisitology, and toxicology. the treatment processes that are capable of high degree of treatment required for reuse purposes are those that were developed under the supervision of the advanced waste treatment program of the environmental protection agency. these treatment methods include coagulation, adsorption, filtration, ion exchange, nitrogen removal, and reverse oxmosis/ultrafiltration. operation of the south lake tahoe, california, reclamation facility is discussed.

Kempkey, A. (1923). Preliminary report on the economic development of hydro-electric energy for Tahoe Tavern.

Ken R. White Company and Douglas County-NV County Commission (1964). Lake Tahoe : 1985 development plan, Lake Tahoe, Douglas County, Nevada, Ken R. White Company, Denver, CO: 48 p.

Kennedy, G. M., J. H. Rogers, et al. (1971). Soils of the Tahoe Basin : report and general soil map, U.S. Dept. of Agriculture, Soil Conservation Service, Portland, OR.

Kennedy, D. N., California Dept. of Water Resources, et al. (1990). Testimony of David N. Kennedy, director, Department of Water Resources, State of California before the Senate Committee on Energy and Natural Resources, Subcommittee on Water and Power regarding S.1554 - a bill to ratify and implement the interstate allocations of the Truckee and Carson Rivers and for other purposes, Dept. of Water Resources, Sacramento, CA.

Kennedy Engineers and Churchill County Board of Commissioners (1966). A study of the implications of wastewater export from Lake Tahoe Basin with regard to the water quality of the Carson River, Kennedy Engineers, San Francisco, CA.

Kennedy Engineers (1966). Review of waste disposal for North Shore of Lake Tahoe for the City of Sparks, Nevada, Kennedy Engineers, San Francisco, CA.

Kiefer, D. A., O. Holm-Hansen, et al. (1972). Phytoplankton In Lake Tahoe. Deep-Living Populations. Limnology And Oceanography 17(3): 418-422.

Most of the phytoplankton biomass in lake tahoe is located below the euphotic zone. chlorophyll concentration was low (0.1-0.2 microgram/liter) in the upper 50 m, reached a maximum (0.7 microgram/liter) at 100 m, and then dropped rapidly to 0.2 microgram/liter at 200 m. below this it decreased slowly except for two peaks at 320 and 350 m. the vertical distribution of phytoplankton volume agreed with that of chlorophyll. the six dominant species in cell numbers were: asterionella formosa, fragilaria crotonensis, melosira crenulata, stephanodiscus rotula, dinobryon sociale and elakatothrix gelatinosa. there were no qualitative differences in species composition throughout the water column, although the surface samples contained many small thecate dinoflagellates. the amount of pheophytin between 100-475 m ranged from 15-25 percent of the total chlorophyll a pigment, similar to values found in the euphotic zone. this indicated that the chlorophyll in the aphotic zone derived from live algal cells rather than detritus, a conclusion supported by the healthy appearance of the cells and by their demonstrated photosynthethic capacity of being capable of fixing co2 at significant rates when exposed to near-surface illumination. the relationship between the distributions of phytoplankton standing crop and production is best explained by passive sinking of cells out of the euphotic zone and accumulation in deep waters. this recruitment of deep phytoplankton from surface waters may be an important feature of deep oligotrophic lakes, limiting primary production and nutrient regeneration in the euphotic zone. (holoman-battelle)

Klamm, J. M., J. P. Woodyard, et al. (1981). Technical assistance to the Tahoe Basin city and county governments : development and assessment of regional solid waste management alternatives: final report, SCS Engineers, Long Beach, CA: 1 v. (various pagings).

Klieforth, H. E. (1974). Weather Modification In the Lake Tahoe Basin. Lake Tahoe Research Seminar II, South Lake Tahoe, CA.

The history of weather modification by cloud seeding was reviewed. Some cloud seeding projects in the vicinity of lake tahoe were discussed.

Kramer, T. J. and Nevada Bureau of Mines & Geology (1982). South Lake Tahoe quadrangle, land use map. Reno, NV, Nevada Bureau of Mines and Geology.

Krivanek, O. L. (1991). Proceedings Of Lake Tahoe Workshop On Electron Energy Loss Spectroscopy -. Microscopy Microanalysis Microstructures Ta Microsc Mic 2(2-3): R3-R4.

Kroll, C. G. (1973). Sediment Discharge In the Lake Tahoe Basin, California, 1972 Water Year, U.S. Geological Survey, Menlo Park, CA.

Streamflow and fluvial-sediment discharge data are being collected at selected streams and highway gutters in the lake tahoe basin to determine the extent of erosion from highway cuts and to evaluate the effects of various land treatment practices to reduce erosion. precipitation in the lake tahoe area during 1972 was 77 percent of normal; consequently, runoff was well below normal. seventy-six percent of the total annual runoff during the 1972 water year occurred from march through june 1972. sediment samples were collected during the year at streamflow gaging stations and at gutter stations at highway cuts to define the range of transport conditions. the major part (87 percent) of the annual suspended-sediment discharge during the 1972 water year occurred during the snowmelt runoff period, march through june.

Kroll, C. G. (1974). Sediment Discharge In the Lake Tahoe Basin, California, 1973 Water Year, U.S. Geological Survey, Menlo Park, CA.

Streamflow and fluvial-sediment discharge data are being collected at selected streams and highway gutters in the lake tahoe basin to determine the extent of erosion from highway cuts and to attempt to evaluate the effects of various land-treatment practices to reduce erosion. this is the second progress report. precipitation in the lake tahoe area during 1973 was 94 percent of normal. seventy-one percent of the total annual runoff during the 1973 water year occurred from march through june 1973. sediment samples were collected during the year at streamflow stations and at gutterflow stations at highway cuts to define the range of transport conditions. the major part (74 percent) of the annual suspended-sediment discharge from streams during the 1973 water year occurred during the snowmelt runoff period, march through june.

Kroll, C. G. and California Dept. of Public Works Division of Highways (1976). Sediment discharge from highway cut-slopes in the Lake Tahoe basin, California, 1972-74, U. S. Geological Survey, Menlo Park, CA.

Streamflow and fluvial-sediment discharge data were collected at selected streams and highway gutters in lake tahoe basin, calif., to determine the extent of erosion from highway cuts and to attempt to evaluate the effects of various land-treatment practices to reduce erosion. estimate of long-term annual total-sediment discharge from six streams into the lake is 7,100 tons, of which 2,300 tons is finer than 62 micrometers. during 1972-74, snowmelt runoff (april-july) accounted for 65 percent of the water and sediment discharge. approximately 90 percent of the sediment is transported in suspension. sediment measured at 16 gutterflow stations at the base of highway cut-slopes indicates that less than 100 tons of fine sediment per year are contributed to the lake from all california state highway cuts. sediment-transport rates are highly variable, and an unknown part of the measured sediment was derived from sources other than highway cuts. data were not adequate to demonstrate the effectiveness of treatments to stabilize cut-slopes.

Kuehner, R. A., G. H. Elsner, et al. (1978). Responses of visitors to the Rainbow Trail: an evaluation of an interpretive area [by the Forest Service] in the Lake Tahoe Basin, California SO: USDA-For-Serv-Res-Pap-PSW-U-S-Pac-Southwest-For-Range-Exp-Stn, 1978, 131, 17 p. Maps. .

La Camera, R. J. and S. B. Browning (1988). Data on Surface-Water Quality and Quantity, Lower Edgewood Creek Basin, Douglas County, Nevada, 1984-85, U.S. Geological Survey, Water Resources Div., Carson City, NV.

Selected hydrologic data were collected from August 1984 through July 1985 at three sites on the lower part of Edgewood Creek, and at a recently constructed sediment-catchment basin that captures and retains runoff from developed areas in the lower Edgewood Creek drainage. The data were collected to quantify the discharge of selected constituents downstream from recent and planned watershed restoration projects, and to Lake Tahoe. Contained in this report are the results of quantitative analyses of 39 water samples for: total and dissolved ammonium, organic nitrogen, nitrite, nitrate, phosphorus, and orthophosphorus; suspended sediment; total iron, manganese, and zinc; and dissolved temperature, specific conductance, pH, and dissolved oxygen; summary statistics (means and standard deviations), and computations of instantaneous loads. On the basis of mean values, about 80% of the total nitrogen load at each of the three Edgewood Creek sites is in the form of organic nitrogen, 12% is in the form of nitrate nitrogen, 7% is in the form of ammonium nitrogen, and 1% is in the form of nitrite nitrogen. The percentage of total phosphorus load in the form of orthophosphorus at the three stream sites varies somewhat with time, but is generally greater at the two downstream sites than at the upstream site. In addition, the percentage of the total phosphorus load that is present in the dissolved state generally is greater at the two downstream sites than at the upstream site.

Laarveld, B. C. (1976). Happy Homestead Cemetery District : listing of burial permits. South Lake Tahoe, CA, [publisher unknown].

Lahontan Regional Water Pollution Control Board (1953). Clean water for your vacationland, Lahontan Regional Water Pollution Control Board, Sacramento, CA.

Lake Tahoe Area Council and Engineering-Science Inc. (1963). Comprehensive study on protection of water resources of Lake Tahoe Basin through controlled waste disposal. Summary and conclusions, Lake Tahoe Area Council, Al Tahoe, CA.

Lake Tahoe Area Council (1968). Eutrophication of surface waters, Lake Tahoe, bioassay of nutrient sources; first progress report, Lake Tahoe Area Council, South Lake Tahoe, CA: xii, 178 p.

Lake Tahoe Area Council, California Dept. of Conservation, et al. (1969). Tahoe Vegetation--Soil Protection Symposium: Summary and proceedings. Sacramento, CA, State of California Dept. of Conservation.

Lake Tahoe Area Council (1969). Eutrophication of surface waters, Lake Tahoe, laboratory and pilot pond studies : second progress report, Lake Tahoe Area Council, South Lake Tahoe, CA: xviii, 180 p.

Lake Tahoe Area Council and United States Federal Water Quality Administration (1970). Eutrophication on surface waters - Lake Tahoe [progress report], Lake Tahoe Area Council, South Lake Tahoe, CA: v.

Lake Tahoe Area Council and United States Federal Water Quality Administration (1970). Progress report: Euthophication of surface waters - Lake Tahoe, Lake Tahoe Area Council, South Lake Tahoe, CA.

Lake Tahoe Area Research Coordination Board (1974). Research needs for the Lake Tahoe basin, Lake Tahoe Area Research Coordination Board, South Lake Tahoe, CA.

Lake Tahoe Area Research Coordination Board and Lake Tahoe Environmental Education Consortium (1975). Lake Tahoe Research Seminar III, Lake Tahoe Area Research Coordination Board and the Lake Tahoe Environmental Education Consortium, South Lake Tahoe, CA.

Seven papers are presented as part of a quarterly series held by the Lake Tahoe Area Research Coordination Board and the Lake Tahoe Environmental Education Consortium, mostly verbatim transcriptions of tapes recorded at the seminar. Highway Ice and Snow Removal and Deicing Salt Problems at Lake Tahoe reviews alternative methods to salt for ice and snow control. '1975 Census and the Tahoe Basin' describes a census and questionnaire to be administered in six California counties, including the Tahoe Basin. 'Legal Review of Land Use Controls' discusses, land use regulation and litigation as it related to the TRPA and CTRPA. 'Erosion and Sediment Control Technology', the text of a slide presentation, presents information on an erosion control project at Northstar, Cal., a ski resort. 'Revegetation and Erosion Control at Heavenly Valley' gives deals with various methods of controlling erosion caused by snowmelt (also a slide presentation). 'Establishing Forest Cover on Harsh Sites in the Sierra Nevada' gives the results of reforestation experiments using Jeffrey pine seedlings in plantable containers. (Areawide Waste Treatment and Erosion Control Planning' discusses the purposes of the TRPA under Section 208 of the Federal Water Pollution Control Act.

Lake Tahoe Area Research Coordination Board (1975). Abstracts of current research, Lake Tahoe Basin. South Lake Tahoe, CA, Lake Tahoe Area Research Coordination Board.

Lake Tahoe Area Research Coordination Board (1976). Research coordination and utilization, the Tahoe basin : final report 1973-1976, Lake Tahoe Area Research Coordination Board, South Lake Tahoe, CA.

Lake Tahoe Association (1920). Lake Tahoe country. Lake Tahoe, CA, Lake Tahoe Association.

Lake Tahoe Chautauqua Improvement Company Carnelian Springs, Lake Tahoe summer resort. Reno, NV, Lake Tahoe Chautauqua Improvement Company.

Lake Tahoe Interstate Water Conference Committee and California Reclamation Board (1952). Preliminary report of the Lake Tahoe Interstate Water Conference Committee : issued as a public service for the information of interested Tahoe property owners in the States of California and Nevada, California Reclamation Board, Sacramento, CA.

Lake Tahoe Joint Study Committee (1967). Report of the Lake Tahoe Joint Study Committee, Lake Tahoe Joint Study Committee.

Lake Tahoe Ry Trans Company (1899). Lake Tahoe, the most picturesque lake in America, the leading mountain resort of the coast, [unpublished].

Lake Tahoe Ry Trans Company (1905). Tahoe Tavern, Lake Tahoe, California, [unpublished].

Lake Tahoe Ry Trans Company and Stanley-Taylor Company (1911). Tahoe Tavern, Lake Tahoe, California. Tahoe City, CA, Lake Tahoe Ry. & Trans. Co.

Lake Tahoe Sierra Association (1930). Lake Tahoe. Tahoe City, CA, Lake Tahoe Sierra Association.

Lake Tahoe Transportation Company (1896). Lake Tahoe Transportation Company stock and transfer book, 1896.

Lamb, D., K. W. Nielsen, et al. (1976). Measurements of Liquid Water Content in Winter Cloud Systems Over the Sierra Nevada. Journal of Applied Meteorology 15(7): 763-775.

Investigations of the structure and organization of synoptic-scale storms over the Sierra Nevada Mountain Range during two successive winters (1971-73) were made with a modified B-26 aircraft. Measurements of liquid water content, temperature, and dew point were made along horizontal traverses in a vertical plane oriented roughly perpendicular to the main crest and extending from Lake Tahoe to Sacramento, California. It was shown that the spatial distribution of liquid water was linked to the gross terrain features, as was the surface distribution of precipitation. The main centers of cloud liquid water content tended to form 40-75 km upwind of the main crest in highly convective cells. (Sims-ISWS)

Lanini, W. T. and S. R. Radosevich (1982). Herbicide effectiveness in response to season of application and shrub physiology in Tahoe National Forest, California, photosynthesis, xylem potential, moisture stress, phenology. Weed Sci 30(5): 467-475.

Laudenslayer, W. F., Jr., W. E. Grenfell, Jr., et al. (1991). A check-list of the amphibians, reptiles, birds, and mammals of California. Calif. Fish Game 77(3): 109-141.

The following is a check-list of the species of amphibians, reptiles, birds, and mammals found in California and adjacent off-shore waters. The list is presented to the extent possible, in phylogenetic order and includes vernacular and scientific names for each species. Information is also provided on the legal status of those species and subspecies that appear on California and federal lists of threatened and endangered species. California species of special concern (an informal designation used by the California Department of Fish and Game) are also included in the list. Subspecies are included in this check-list only when they appear on any of the preceding lists. This list includes 933 species representing 438 genera and 126 families.

Lawrence, E. F. (1961). Correspondence and report to Arthur L. Wood, Crystal Bay Development Company, on the geology of the Lake Tahoe area, E.F. Lawrence, Reno, NV: 11 leaves.

Lazarus, R. J. (1993). A view toward the future : lessons from Tahoe and the Truckee. Natural resources policy and law : trends and directions. L. J. MacDonnell and S. F. Bates. Washington, D.C., Island Press: 241.

League to Save Lake, T. (1991). Is it time to say “enough”? : thresholds review critical to lake’s future. Keep Tahoe Blue Jan.-Feb.: 1-6.

LeConte, J. (1883). Physical Studies of Lake Tahoe - I. The Overland Monthly 2(November): 506-516.

LeConte, J. (1883). Physical Studies of Lake Tahoe - II. The Overland Monthly 2(December): 595-612.

LeConte, J. (1884). Physical Studies of Lake Tahoe - III. The Overland Monthly 3(November): 41-.

Lee, C. R. and T. Takamatsu (1974). Carbon Contact-Filtration: How It Works. Water And Sewage Works 121(8): 84-87.

Activated carbon treatment is used to remove dissolved organics or inorganics. the mechanism of removal can be adsorption which actually removes the dissolved organics from the solution and/or bio-oxidation of the adsorbed organics. the mechanism of adsorption is discussed. physical adsorption results from inter-molecular forces of attraction. chemical adsorption results from the formation of chemical bonds between the molecules of the adsorbate and adsorbent. the adsorption equilibrium depends on the concentration of the materials, gas pressure, and temperature. equations developed by freundlich and longmuir are presented. the theory of contact-filtration is also discussed. three modes are considered--single-stage system, multi-stage current flow system, and multi-stage counter-current flow system. waste treatment cost is classified into two groups: capital cost including construction, land, engineering and contingency; and, operation and maintenance cost including fuel, power, maintenance materials and labor. when considering carbon treatment costs, carbon inventory is included in the capital cost and the make-up carbon and carbon regeneration costs are included in the operation and maintenance cost. a cost analysis is presented for the actual expenses for carbon treatment incurred at a south tahoe, nevada, water reclamation plant during 1969 and 1970. equations, figures, and graphs are used to illustrate expenses and comparisons of costs.

Legg, K. and C. Chickering (1970). Lake Tahoe wildflowers, also of the central Sierras. Healdsburg, CA, Naturegraph Publishers.

Leggett, J. T. and F. R. McLaren (1968). The Lake Tahoe Water Quality Problem: History and Prospectus. Geologic Studies in the Lake Tahoe Area, California and Nevada. J. R. Evans and R. A. Matthews. Sacramento, Geological Society of Sacramento: 47-59.

Leicht, F. v., J. D. Hoffmann, et al. (1874). Topographical map of Lake Tahoe and surrounding country : compiled from the best authorities. S.F. [i.e. San Francisco, CA], Leicht & Hoffmann.

Leigh Abbott, M. R., J. A. Coil, et al. (1978). Effects of a Coastal Front on the Distribution of Chlorophyll in Lake Tahoe, California-Nevada. Journal of Geophysical Research 83(C9): 4668-4672.

The existence of a distinct coastal zone was confirmed in Lake Tahoe (California-Nevada) by horizontal transects measuring chlorophyll and temperature simultaneously. Creation of the coastal region is influenced by bottom topography, the nature of the surface wind stress, and the difference between physical processes occurring within a Rossby radius of deformation and those occurring in midlake. Chlorophyll records from horizontal transects were decomposed by spectral analysis, and the normalized sectra from nearshore and midlake were compared. The two regions were found to differ at large scales, primarily because of differences in nutrient import, and at intermediate scales because of differences in the mixing regime. The coastal zone was observed to erode with increasing winds and weakening stratification, leading to little significant difference between nearshore and midlake chlorophyll patterns. (Sims-ISWS)

Leigh-Abbott, M. R. (1978). The Spatial Distribution of Chlorophyll in Lake Tahoe (California-Nevada) and Lake Berryessa (California), University Of California, Davis.

Leiser, A. T., California Dept. of Transportation, et al. (1974). Revegetation of disturbed soils in the Tahoe Basin : final report, March 1971-June 1974, California Dept. of Transportation, Transportation Laboratory in cooperation with U.S. Federal Highway Administration, Sacramento, CA.

Lekisch, B. (1988). Tahoe place names : the origin and history of names in the Lake Tahoe Basin. Lafayette, CA, Great West Books.

Leonard, R. L., L. A. Kaplan, et al. (1979). Nutrient transport in surface runoff from a subalpine watershed, Lake Tahoe Basin, California. Ecol. Monogr. 49(3): 281-310.

Quantitative data on the watershed of Ward Creek were collected (1972-1975) at three stations. Precipitation in a normal year is over 90% snow. Water discharge and the flux of suspended sediments, NOSUB-3-N, phosphorus, iron and trace metals were dominated by the spring snowmelt runoff from mid-April to mid-June. However, in 1974 heavy fall and summer rains accounted for a large percentage of the annual flux of sediments and nutrients in a total of only 14 d. The spring runoff was characterized by distinct diel water discharge patterns. Similar but not coincident patterns were found to exist for sediments and nutrients, including NOSUB-3-N, but not for soluble phosphorus. The principal source of suspended sediments in Ward Creek was streambank erosion in the lower reaches of the channel. The dominant form of inorganic nitrogen in Ward was NOSUB-3-N derived from precipitation, symbiotic nitrogen fixation and nitrification of organic nitrogen in forest soil. Phosphorus and iron were almost entirely in particulate form and thus their periods of flux occurred during high flows and sediments transport. Sediment and nutrient loading of Lake Tahoe from the watersheds reflect a history of soil disturbance and vegetation removal. Logging, fire and stream channel diversion have been the dominant perturbations. Conservative extrapolation of annual loading data from this study to the entire basin indicates that algal nutrient levels in the lake probably have increased sufficiently in the century of man's intensive disturbance of the basin watersheds to account for increased phytoplankton and periphyton production that have been measured and observed since 1958.

Leonard, R. L., C. R. Goldman, et al. (1981). Some Measurements of the pH and Chemistry of Precipitation at Davis and Lake Tahoe, California. Water Air Soil Pollut 15(2): 155-167.

Precipitation samples were collected at Davis and Lake Tahoe, California, in 1972-73 and 1977-78 and analyzed for pH and major cations and anions. Rain and snow in this region of northern California are derived primarily from winter cyclonic storms which move easterly from the Pacific Ocean over Davis and then Lake Tahoe. Precipitation at both sites was found to be more acid than water in equilibrium with atmospheric CO sub(2). Acidity at Lake Tahoe apparently increased over the 5-yr period of the study. Sulfate was the dominant acid anion in 1972-73 (not measured in 1977-78). A major source of sulfate in precipitaion was probably industry in the San Francisco Bay Area, upwind of the study sites. Automobile exhaust emissions throughout the region, contribute both sulfate and nitrate precursors to the atmosphere. These strong acid anions are influencing precipitation chemistry in northern California, including the Sierra Nevada mountains.

Leone, G. (1987). Tahoe plan approved : development limits set. Northern California Real Estate Journal 1(20): 5.

Lind, R. A. and J. D. Goodridge (1978). Lake Tahoe water balance. Conference on Sierra Nevada Meteorology, South Lake Tahoe, CA, American Meteorological Society.

Lindstrom, S. G. (1990). Submerged tree stumps as indicators of mid-holocene aridity in the Lake Tahoe Basin. Journal of California and Great Basin Anthropology 12(2): 146-157.

Lintz, J. and Geoscience Information Society (1984). Lake Tahoe field trip : Wednesday, November 7, 1984, Geoscience Information Society.

Livermore, N. B., U. S. Forest Service, et al. (1968). Land use planning in the Tahoe basin. Tahoe Vegetation Soil Protection Symposium, Lake Tahoe, NV.

Livingston, Blayney, et al. (1970). Lake Tahoe Regional Planning Agency overall program design, Livingston and Blayney, San Francisco, CA: 54 leaves, [1] leaf of plates.

Llewellyn, T. E. (1968). Massive Sewer Infiltration. Am City 83(10): 90-91.

The north tahoe public utility district instituted a massive sewer repair program after it discovered that sewage flows were highly excessive. snow creek and lake tahoe were becoming polluted, 200 manholes were leaking and permitting entrance of surface and groundwater, and many lateral sewers were causing infiltration. smoke bombs employed to pinpoint offenders disclosed storm inlets connected to sanitary sewers. methods used to correct violations and sewer defects are described.

Loeb, S. L. and C. R. Goldman (1979). Water and nutrient transport via groundwater from Ward Valley into Lake Tahoe. Limnol. Oceanogr. 24(6): 1146-1154.

The amount of groundwater transported from the Ward Valley watershed into Lake Tahoe during the 1975 water year was 4.1 x 10SUP-6 mSUP-3. This was 16% of the water volume carried by Ward Creek and 10% of the total precipitation within the watershed during the same period. Of the total nutrient loading of Lake Tahoe from the Ward Valley watershed, groundwater contributed 49% of the total nitrate-nitrogen and 44% of the total soluble phosphorus loads. Groundwater may be a significant source of water and dissolved nutrients for Lake Tahoe, particularly in the littoral zone. AN: 0031760 ASFA 1978 - 1987

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Loeb, S. L. (1980). The Production Of the Epilithic Periphyton Community In Lake Tahoe, California-Nevada, University Of California, Davis.

A detailed investigation of the ecology of the epilithic periphyton community of Lake Tahoe is the focus of this thesis. Lake Tahoe, a deep, clear, oligotrophic lake, is located at an elevation of 1,898 m in the Sierra Nevada on the border between California and Nevada. Initially, a new in situ method serviced by SCUBA for measuring the productivity and standing crop of the naturally occurring epilithic periphyton was developed. Results of an experiment comparing the commonly used substrate colonization method with the natural epilithic periphyton community illustrated some of the advantages of this new method. The diurnal productivity pattern of epilithic periphyton (8 m) showed the production rate reached its maximum between 0900 - 1300 with the rate gradually increasing to the maximum during the early morning hours (0600 - 0900) and gradually declining after the maximum. The diurnal productivity pattern of the littoral phytoplankton (2 - 16 m) showed maximum productivity during the first and last hours of daylight while during midday the production rate was diminished. Inhibition of photosynthetic fixation of carbon due to supraoptimal light intensities may have affected the observed diurnal productivity pattern for phytoplankton while no such inhibition was apparent in the periphyton community. Seasonal patterns in the epilithic periphyton standing crop were more pronounced at 16 m than at 2 m and 8 m. At no time did the standing crop of the community drop to zero except in the shallow eulittoral zone (0-1 m). Qualitative examination of the species composition showed the eulittoral community was dominated by chlorophycean and bacillariophycean species while the sublittoral community (1-40 m) was dominated by cyanophycean species (e.g. Tolypothrix, Calothrix, Scytonema and Nostoc). Maximum standing crop occurred during the summer and fall although the general characteristic of the sublittoral community biomass was shown to be perennial. The average annual TPC, TPN and Chl a were 28.10 g C m(‘-2), 1.80 g N m(‘-2) and 26.09 mg Chl a m(‘-2). The seasonal patterns in productivity were bimodal with peaks in spring and late summer-early fall. Spring production accounted for 25% of the total annual production at 2 and 8 m and 20% at 16 m. Productivity in 1978 was maximal at all depths (2, 8 and 16 m) during May. Overall the total annual community production was fairly evenly distributed between the spring, summer and fall (20-35% per season) while winter production ranged from 11-15% of the total. The perennial epilithic periphyton standing crop was therefore a viable, productive community during the entire year. Further evidence of the community’s stability was indicated by a slow turnover rate. Depending on what percentage of the total community TPC was living, the turnover rate ranged from a month to many years. At the average annual production rate of 2.09 g C m(‘-2)h(‘-1) it would take over 30 years to turn over the entire TPC pool (28.1 g C m(‘-2)). The depth distribution pattern of the periphyton community standing crop was bimodal with peaks at 16 and 30-40 m on horizontal rock surfaces and peaks at 2 m and 16 m on vertical rock surfaces. Maximum standing crop on horizontal surfaces was at 30-40 m and at 16 m for vertical rock surface. From 2-30 m the standing crop on vertical rock surfaces was 2-13 times greater than on horizontal rock surfaces possibly due to differences in light and grazing on these two surfaces. Below 30 m the biomass was generally equal on the two surface orientations. The depth distribution patterns for epilithic periphyton productivity was bimodal for both horizontal and vertical surfaces. Maximum productivity on horizontal surfaces occurred at 40 m (4.76 mg C m(‘-2)h(‘-1)) and at 16 m for vertical surfaces (11.30 mg C m(‘-2)h(‘-1)). The general trend from 2-16 m was increased productivity with increased depth, a trend similar to that of the standing crop. Specific production (productivity(.)Chl a(‘-1)), however, decreased from 2-16 m. Of the littoral zone productivity over 50% was contributed by epilithic periphyton from 0-40 m and over 40 % from 0-60 m. Periphyton contributed most to the total littoral zone productivity during the fall, winter and spring while the littoral phytoplankton was most important during the summer. Spatial distribution of the epilithic periphyton productivity and standing crop were positively correlated with the general distribution of urban development around Lake Tahoe. Increased nutrient

loading of the lake from surface and ground water sources draining urban areas could explain the observed higher productivity and standing crop of periphyton in the littoral zone adjacent to urban areas compared to littoral regions adjacent to undeveloped areas.

Loeb, S. L. (1981). An In Situ Method For Measuring the Primary Productivity and Standing Crop of the Epilithic Periphyton Community in Lentic Systems. Limnol. Oceanogr. 26(2): 394-399.

An incubation chamber and a quantitative sampler were developed to measure the primary productivity and standing crop of the epilithic periphyton community in Lake Tahoe. The method allows in situ measurements with minimal disturbance to the natural community. In an experiment comparing the substrate colonization method with the natural epilithic periphyton community, artificial substrate methods underestimated productivity by as much as 95%. The species composition of the periphyton on the colonized substrates ws quite different from that of the natural sublittoral epilithic community.

Loeb, S. L., P. Eloranta, et al. (1983). Littoral phytoplankton productivity and biomass as indicators of differential nutrient loading of Lake Tahoe. Congress of the International Association of Limnology, Lyon, France.

The effects of increased urbanization of the watershed of Lake Tahoe, California-Nevada, have increased nutrient loading of the lake and are believed to have accelerated the rate of eutrophication. An investigation of the seasonal and spatial trends in water quality and phytoplankton production in the littoral zone of Lake Tahoe revealed several findings: (1) littoral phytoplankton productivity was highest at the south end of the lake adjacent to the most heavily developed region of the watershed; (2) phytoplankton biomass was generally higher at the south end of the lake and partly explained the spatial distribution pattern of productivity; (3) station SS-3, located on the south shore off the Tahoe Keys development which was previously a marsh area, had the highest mean annual phytoplankton biomass and productivity, and the highest species diversity of the nine study sites.

Loeb, S. L., J. E. Reuter, et al. (1983). Littoral zone production of oligotrophic lakes. The contributions of phytoplankton and periphyton. Periphyton Of Freshwater Ecosystems: First International Workshop On Periphyton Of Freshwater Ecosystems, Vaxjo, Sweden.

Littoral zone primary productions can be expressed as the summation of the integral production of its phytoplanton and benthic components. This expression represents a “wedge” of littoral zone, 1 m wide, extending from the shore a distance, x, to where the depth of the water, z, is equal to the maximum depth of the littoral zone (i.e. 1% of surface light intensity). The periphyton community contributed 63% of the total littoral production (0-60 m) in Lake Tahoe at a site where the benthic substratum was rock. Evaluation of littoral productivity on a water column basis (i.e. m super(-2) of lake surface) illustrated that periphyton contributed varying amounts to the total productivity depending upon the depth of the water column, the time of year, the degree bottom of slope, and the benthic substratum type.

Loeb, S. L. (1986). Algal biofouling of oligotrophic Lake Tahoe: Causal factors affecting production. Algal Biofouling 28: 159-173.

The algal biofouling of oligotrophic Lake Tahoe refers to the increased growth of attached algae, periphyton, on naturally occurring rock substrata along the shoreline. Persistent patterns of periphyton production have been observed and associated with land disturbance (i.e., development) within the watershed. Nutrient bioassays demonstrated productivity can be stimulated with increased availability of nitrogen alone or phosphorus and nitrogen together. Both stream and ground waters have been identified as nutrient loading pathways from the watershed to the lake.

Loeb, S. L. and S. H. Hackley (1987). Distribution of Submerged Macrophytes in Lake Tahoe, California and Nevada, and the Possible Influence of Groundwater Seepage. Internationale Vereinigung fur Theoretische und Angewandte Limnologie, Verhandlungen 23(4): 1927-1933.

The study of factors regulating the sparse occurrence of macrophytes in oligotrophic lakes affords researchers an opportunity to examine potentialgrowth regulating factors among plant supporting and non-supporting areas. The objectives of this study were: (1) describe the distribution pattern of the submerged macrophytes in the shallow (0-10 m) littoral zone, (2) examine the seasonal growth pattern, and (3) determine whether differential groundwater seepage into the lake was associated with the growth distribution patterns of these plants. A survey of spatial distribution of submerged macrophytes revealed that these plants were very rare in the shallow (0-10 m) littoral zone of Lake Tahoe. Tracheophytes dominated the submerged aquatic plant beds. The two major macrophyte growth areas were adjacent to marshes along the shore. The importance of this relationship is not known although it may be related to chemical differences in seepage water, sediment type, or, historically, to periods when the lake level elevation was lower. The species composition within the plant beds was quite heterogeneous. A transect across the macrophyte bed illustrated how the species composition changes abruptly from myriophyllum spicatum and ceratophyllum demersum to potamogeton richardsonii. The sediment profile outside the plant bed showed it to be deep sands with low organic matter content while the sediment inside the bed was organic in composition until a coarse sand and pebble layer was reached approximately 20 cm below the sediment-lake interface. The chloride analyses on the lake and interstitial waters verified that interstitial water samplers were not drawing lake water back into the sediments. The increased amounts of chloride inside the plant beds compared to outside were believed to be the result of plant decomposition. For two nutrient species, ammonium and soluble iron, there were strong concentration gradients between the interstitial waters and the overlying lake waters. The movement of nutrients by diffusion across this gradient from sediment into lake would be relatively slow compared to movement into the lake due to groundwater seepage.

Logan, T. L. (1983). Regional Biomass Estimation Of a Coniferous Forest Environment From Noaa-Avhrr Satellite Imagery (California, Landsat), University Of California, Santa Barbara.

A predominately non-linear relationship has been established between regional coniferous forest biomass and corresponding visible and near-infrared spectral channels from the NOAA Advanced Very High Resolution Radiometer (AVHRR). The relationship bears resemblance to a generally well-behaved two-dimensional "Rooster's Tail," with shallow crescentic layers of biomass decreasing in quantity with increasing visible wavelength reflectance. The relationship was determined by preparing a 1.2 million acre continuous biomass data plane of the Eldorado National Forest near Lake Tahoe, California, and comparing it with AVHRR imagery co-registered to a common spatial resolution of 827 x 827 meter pixels. The biomass data plane was created by calibrating a Landsat-based forest stratification map (produced from the modelling of Landsat, digital terrain, and ground truth data), with field data and species biomass regression equations. Correlation, multiple regression, and multispectral classification techniques were employed to interrogate the relationship between forest biomass and spectral reflectance. The correlation analysis revealed a poor linear relationship between biomass and several popular channel transformations (Transformed Vegetation Index; Normalized Difference; Gray-McCrary Index; Eigenvector Images 1 and 2), and the AVHRR near- and thermal-infrared bands. Sixty-one percent (r**2) of the total biomass variance was explained by the AVHRR visible channel, and a similar amount was explained by the joint regression of the visible and near-infrared channels. Multiple regression and multispectral classification techniques were then used in a 'Train and Test' procedure to determine their comparative biomass prediction capabilities. Both techniques produced total biomass estimates to within 1% of the actual value, but the classification technique did so with a residual standard error considerably less than that for the regression technique. These results suggest a potential for the accurate regional estimation of coniferous forest biomass from AVHRR satellite imagery, and contribute toward developing the procedures that will be necessary to assess whether world vegetation--and its associated stored carbon--is a key element in controlling the quantity of carbon in the atmosphere. If a relationship can be found, then the theorized dependency of climate on atmospheric carbon may permit its regulation through the management of world vegetation.

Longwell, J. S. and M. Bennett (1956). Correspondence and notes regarding water supply at Brockway Hot Springs, Lake Tahoe, California, (Correspondence with Maillard Bennett, General Manager, Brockway Hot Springs).

Longwell, D. (1973). Remarks, Region IX. Conference on Environmental Quality Sensors (Second) Held at National Environmental Research Center, Las Vegas, Nevada.

The Pacific Southwest Region (IX) of EPA includes Arizona, California, Hawaii, Nevada, American Samoa, Guam, and the Pacific Islands Trust Territory. Due to the complex topography and associated environmental problems, remote sensing techniques have great application in the region. An ongoing study of Lake Tahoe is using remote sensing to detect algal growth and sediment plumes. Photographic and thermal infrared imagery were used for an extensive aerial survey of the San Francisco Bay area to identify outfalls. Aerial photographs taken at Moss Landing (CA) and in the Los Angeles area documented sediment plumes for enforcement purposes. Current aerial photography missions include a survey of oil fields in the Bakersfield (CA) area, and a survey of the Las Vegas-Lake Mead vicinity to aid in siting sampling stations.

Lord, E., United States Geological Survey, et al. (1883). Map of the Carson Valley : [Nev.]. [Washington, D.C.?], United States Geological Survey.

Lowry, M. M., United States Lake Tahoe Basin Management Unit, et al. (1994). Blackwood Creek water quality monitoring report, water year 1980-1993, USDA Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

Luck, R. F. (1973). Natural decline of an insecticide-induced outbreak of the pine needle scale, Chionaspis pinifoliae (Fitch), at South Lake Tahoe, California. Berkeley, CA, University of California.

Luck, R. F. and D. L. Dahlsten (1975). Natural decline of a pine needle scale (Chionaspis pinifoliae [Fitch]), outbreak at South Lake Tahoe, California following cessation of adult mosquito control with malathion [Pinus contorta, Pinus jeffreyi]. .

Lynard, W. G., E. J. Finnemore, et al. (1980). Urban Stormwater Management and Technology: Case Histories, Metcalf and Eddy, Inc., Palo Alto, CA.

This report is the third in a series on urban stormwater and combined sewer overflow management. It presents 12 case histories representing most promising approaches to stormwater control. The case histories were developed by evaluating completed and operational facilities or ongoing demonstration projects that have significant information value for future guidance. Essential elements of the case history evaluations cover approch methodology, design considerations, costs, effectiveness, and environmental and socioeconomic impacts. Eight of the case histories assess Best Management Practices (BMPs) and expand the data base on source control methodology, focusing principally on planning and storage alternatives. Special considerations are given to flood and erosion control measures also having a dual benefit of stormwater control. The project sites evaluated are Bellevue, Washington; Montgomery County, Maryland; Lake Tahoe, California; The Woodlands, Texas; Orange County, Florida; San Jose, California; Middlesex County, Connecticut; and Boulder, Colorado. The remaining four case histories evaluate the control of combined sewage overflows and document a systems approach in applying unit process alternatives. The effectiveness and unit costs of storage and treatment processes are presented, together with evaluations of areawide and systemwide integration of these technologies. Storage, the key element of an integrated approach, can involve storage/wet-weather treatment or storage/dry-weather treatment, or both. The project sites are Seattle, Washington; Saginaw, Michigan; Mount Clemens,Michigan; and Lancaster, Pennsylvania.

Mabury, S. A. (1993). Hydroxyl Radical In Natural Waters (California, Photolysis), University Of California, Davis.

Indirect or sensitized photolysis is important for the degradation of aquatic pollutants in natural waters. Hydroxyl radical is the most reactive of the intermediaries in this degradation. It was hypothesized that the photo-oxidative capacity of natural field waters is driven by the interaction of sunlight with various dissolved constituents via the production and consumption of hydroxyl radical. The dynamics of hydroxyl in several natural waters was investigated, and a laboratory system for measuring the reactivity of organic chemicals towards hydroxyl was developed in order to more thoroughly determine the role of hydroxyl in limiting the persistence of aquatic pollutants. The dynamics of hydroxyl production and consumption is largely driven by the interaction of sunlight with various dissolved constituents. Numerous pathways exist for producing hydroxyl; the mechanisms by which hydroxyl is produced in field waters was investigated by monitoring the most active species responsible for its production. Hydrogen peroxide, nitrate, copper, iron, DOC, and hydroxyl radical were measured in field waters from rice fields, Clear Lake, and Lake Tahoe in California, employing a combination of analytical techniques during sunlight irradiation experiments. Additionally, the scavenging of hydroxyl by carbonate species, and the resultant secondary product the carbonate radical, was also investigated. Results indicate that a photo-Fenton reaction dominates in waters with elevated levels of copper. Nitrate and iron were shown to be ready sources of hydroxyl via direct photolysis while hydrogen peroxide was only a minor source. Carbonate radical levels were found to be approximately 10$\sp{-14}\ M$ in each of the waters tested, and would be an important sink for some organic pollutants. Steady-state concentrations of hydroxyl were highest in rice fields (10$\sp{-16}\ M$) containing copper, iron or nitrate, and lowest in Clear Lake water (10$\sp{-18}\ M$) due to high scavenging rate constants. Lake Tahoe water showed low hydroxyl production rates but high concentrations given the absence of dissolved organic matter that scavenges hydroxyl. The laboratory system for experimentally determining the reactivity of organic compounds towards hydroxyl uses a standard competitor, p-nitroso-N,N-dimethylaniline (PNDA), to compete with a particular pesticide for hydroxyl. Hydroxyl is produced by the photolysis of hydrogen peroxide, and the degree to which the pesticide competes with PNDA for hydroxyl, reveals its reactivity. Results indicated that carbaryl was the most reactive, carbofuran and MCPA were of intermediate reactivity and hexazinone one of the least reactive of the pesticides tested. Experiments in irradiated field water showed that dissipation of the pesticides followed the order of reactivity.

MacDonald, C. and W. E. Rudge (1929). Lake Tahoe, California. Mount Vernon, N.Y., Priv. print. for Claire MacDonald by W.E. Rudge.

Machida, D. T. and J. B. Gussman (1988). The California Tahoe Conservancy: Applying the Principles. Coast. Manage. 16(1): 39-46.

This paper reports on the utilization and advantages of the conservancy model at Lake Tahoe and discusses the programs of the California Tahoe Conservancy. In 1984, the Conservancy was activated by the California Legislature. The conservancy model was adopted because it offered several important advantages. Among these is an orientation toward a broad range of resource protection objectives and a goal of resolving land use conflicts. The Conservancy's acquisition and restoration programs are unique because of their special focus on water quality objectives. The agency is implementing new programs for the transfer of development rights in the Lake Tahoe Basin.

Mackey, P. F. (1968). Evolution of Land Use Patterns in the Lake Tahoe Basin with Emphasis on the Spatial Patterns Resulting from Early Transportation and Mining Developments. Geologic Studies in the Lake Tahoe Area, California and Nevada. J. R. Evans and R. A. Matthews. Sacramento, CA, Geological Society of Sacramento: 67-81.

Maloney, F. E. and J. O. N. Heaton (1971). Nevada (Analysis Of State Water Pollution Law and Comparison With Present and Proposed Tennessee Law). The 1971 Water Pollution Study for the State of Tennessee, [publisher and place published unknown].

The state board of health is supreme in all non-administrative health matters and includes within its area of control the water pollution problem. water pollution matters, however, are but a samll part of the area of its interest. in defining potential polluters, nevada law does not specifically include either the state or federal governments, creating a serious gap in coverage. administrative procedures for water pollution control are essentially nonexistent. there is no classification of water, standards for streams or effluents, or financial incentives to aid in pollution control. procedures are established for the inspection and control of water supply systems. no permit system is used for the state as a whole; however, as concerns the lake tahoe watershed, permits must be issued prior to construction of any building or water or sewage system. all enforcement of the water pollution laws is by judicial action initiated by the attorney general. the board of health has no enforcement powers. pollution of state waters constitutes a misdemeanor. strict controls are placed upon boat owners. two tables compare nevada pollution control law to the present and proposed law of tennessee.

Marrin, D. L. (1983). Ontogenetic changes and intraspecific resource partitioning in the tahoe sucker, Catostomus tahoensis [Fish, food habits, habitat, prey density, subalpine lake, California]. Environ Biol Fish 8(1): 39-47.

Martin, S. K. (1987). The Ecology Of the Pine Marten (Martes Americana) At Sagehen Creek, California, University Of California, Berkeley.

Pine marten (Martes americana) ecology was studied at Sagehen Creek, California on 40 km$\sp2$ of the Tahoe National Forest. Ten marten were fitted with radio collars and located an average of 41 times for investigation of movement patterns, den use, and habitat preferences. Nine radio-collared marten were continuously monitored for a total of 2,780 hours to study activity patterns. Habitat was characterized by measuring 42 variables on plots centered on 146 marten locations. Three 4- to 10-week track plate surveys were completed. Prey availability by habitat type was investigated by trapping small mammals on 20 trap lines during June and September 1981, 1982, and 1983. Food habits were studied by analyzing the contents of 100 marten scats. The average home range size was 1.39 km$\sp2$ for all marten. Snags, stumps and logs were preferentially selected as den sites. An activity peak for all marten was observed in early afternoon hours and males were more active than females at night. Discriminant function analysis separating sites used by marten from randomly selected sites developed several models accounting for 31-54% of the variation in the data. High basal area, downfall cover, living ground cover and log density characterized marten habitat. Trapping and census data for several small mammal species revealed that deer mice (Peromyscus maniculatus) and voles (Microtus montanus and Phenacomys intermedius) were most abundant in habitats preferentially used by marten and that chipmunks (Eutamias sp.) and chickaree (Tamiasciurus douglasii) were distributed evenly throughout most habitats. The most common small mammal prey items, measured by percent frequency of occurrence in scats, were montane vole (10.6%), chickaree (6.8%), and chipmunk (5.8%). Prime marten habitat is found in mature forests dominated by red fir, a mixture of red fir and white fir (Abies concolor), and lodgepole pine (Pinus contorta) with a total basal area of 30-60 m$\sp2$/ha. Downfall cover of 10-20%, stump densities of 50-90/ha, and log densities of 20-50/ha contribute to optimal marten habitat within the preferred forest types.

Martin, J. P. (1990). Ecogeographic analysis of Lake Tahoe tributaries, San Jose State University.

Martinelli, D. M. (1989). Geophysical Investigations Of the Northern Sierra Nevada-Basin and Range Boundary, West-Central Nevada and East-Central California, University Of Nevada, Reno.

The seismicity, heat flow, and crustal thickness of the Sierra Nevada-Basin and Range transition were examined in the Reno-Carson City-Lake Tahoe region. From seismic reflection and refraction data the crustal structure exhibits crustal thinning from the Sierra Nevada (40 km) to the Basin and Range (29 to 33 km). Heat flow values in the Tahoe Basin are transitional between the high values of the Basin and Range province and the low values of the Sierra Nevada. The seismicity of the area for the years 1980-1987 was examined. The main result from the seismicity study is that the hypocentral depths shallow from the Sierra Nevada into the Basin and Range which is consistent with the changes in heat flow and crustal thickness. A significant transitional zone, 20 to 30 km wide exists in the crustal properties between these two provinces.

Massoth, H. P., III (1978). Salt Toxicity to Conifers In the Lake Tahoe Basin, University Of Nevada, Reno.

Matthews, R. A. (1968). Geological Hazards of the Lake Tahoe Basin Area. Geologic Studies in the Lake Tahoe Area, California and Nevada. J. R. Evans and R. A. Matthews. Sacramento, CA, Geological Society of Sacramento: 14-26.

Matthews, R. A. and California Division of Mines & Geology (1968). Preliminary geologic map of the Lake Tahoe basin, northern half. Sacramento, CA, California Division of Mines and Geology.

Matthews, R. A., C. Schwarz, et al. (1970). Lake Tahoe Basin, a preliminary bibliography, 1969, Resources Agency, Department of Conservation, Division of Mines & Geology, Sacramento, CA; Pacific Southwest Forest & Range Experiment Station, U.S. Department of Agriculture, Berkeley, CA.

Matthews, R. A. and A. L. Franks (1971). Cinder Cone Sewage Disposal At North Lake Tahoe, California. Water And Sewage Works 118(1): 2-5.

As a result of extensive field investigations and evaluations ‘cinder cone’ was selected as sewage disposal area to handle 20 mgd of sewage. seismic refractions gave indications of rock formations and that the effluent will flow towards the truckee river drainage to the west. four drill holes were made and carefully studied by bore hole television cameras. results of the drilling and water testing of these holes indicated that the subsurface would accept the effluent 1500 ft of trenches were made in the area and graphed into 4 groups. percolation rates of group 1 was 620 gpm after 30 hours and decreased to 300 gpm after 200 hours. group 2 a similar material to group 1 has a percolation rate of 250 gpm after 200 hours. this decreased rate is due to shorter trench length rather than variation of material. tests indicate that percolation rate in group 3 and 4 may be too rapid to provide filtration and treatment. data from spring no. 8 showed an increase in chloride with increase in coliform count. no change of the quality of water of the other sampling areas was detected. (rayaan-texas)

Mavko, B. B. (1980). Crustal and Upper Mantle Structure Of the Sierra Nevada, Stanford University.

During the summers of 1977 and 1978 an array of eight temporary short-period seismic recorders was deployed in the Sierra Nevada. The four northernmost stations were deployed during the summer of 1977 between Lassen Park to the north and Lake Tahoe to the south. The remaining four stations were deployed during the summer of 1978 extending the array south to Bridgeport. The combined eight-station coverage of the array extended approximately 350 km in a north-south direction along the axis of the Sierra. The purpose of this study was to look for lateral variations in the upper mantle velocity structure beneath the Sierra using teleseismic P-wave residuals. Such variation, in the form of gradual thinning of the high-velocity lithosphere from north to south, has been postulated to explain the difference in elevation between the high southern Sierra and the low northern Sierra. In addition, the Sierra Nevada province marks the western boundary of the Basin and Range, a region known to have a particularly thin lithosphere and a low-velocity upper mantle. Since teleseismic P waves arriving in the Sierra pass through the crust as well as the upper mantle, it was necessary to determine first the effects of crustal structure on travel time. A number of existing gravity and seismic refraction studies indicate a deep crustal root under the Sierra, extending to about 47 km under Lake Tahoe and thickening to about 57 km farther south under Mt. Whitney. North of Lake Tahoe the crust is only poorly constrained by the existing refraction studies. Therefore, several east-west crustal profiles were constructed in the northern region based on the Bouguer gravity. These indicate a northward thinning of the crust to about 35 to 38 km under Mt. Lassen. A three-dimensional model of the crustal root, constructed from the various gravity and refraction profiles, indicates a monotonic increase in travel time from north to south of as much as 0.4 sec, due to crustal effect alone. After correcting the observed teleseismic residuals for crustal and topographic effects there is still a variation of as much as 0.5 to 0.5 sec from north to south across the array (arrivals relatively later to the south). In addition, there are significant variations in travel time patterns depending on the azimuth of wave arrivals. Two simple modeling approaches have been used to infer the upper mantle velocity structure from the observed variations in travel time. In model 1 it is assumed that lateral velocity variations are distributed throughout a fixed depth range of about 60 to 160 km. The resulting best fit indicates a north-south trend in upper mantel P velocities from about 7.9 km/sec near Lassen, to low velocities of 7.6 km/sec near Mono Lake. Superimposed is an east-west trend near Lake Tahoe from relatively fast velocities (7.85 km/sec) on the west to relatively slow velocities (7.7 km/sec) on the east. In model 2, a fixed velocity contrast is assumed between the lithosphere and asthenosphere, with variations in travel time resulting from variations in lithospheric thickness. The preferred model indicates a thinning of the lithosphere from 110 km near Lassen to 60 km near Mono Lake. The increase in elevation from north to south in the Sierra can be isostatically compensated with either a variable lithospheric thickness or a variable crustal thickness, although neither extreme seems realistic. A particularly attractive range of models, compensated by a combination of variable crust and lithosphere, has the variable lithosphere inferred from the teleseismic observations and a lithosphere-asthenosphere density contrast slightly less than or equal to 0.04 g/cm(‘3).

McBride, J. R. and D. F. Jacobs (1986). Presettlement forest structure as a factor in urban forest development. Urban Ecol 9(3-4): 245-266.

Characteristics of presettlement forests at Menlo Park and South Lake Tahoe, CA were compared with the present characteristics of the urban forests in these cities. Urbanization of forest types in both cities led to decreased tree density (in Menlo Park from 279 to 43/ha; in South Lake Tahoe from 761 to 373/ha), decreased tree cover (in Menlo Park from 92 to 34%; in South Lake Tahoe from 57% to 19%). In contrast, urbanization of the oak savannas at Menlo Park has resulted in an increase in tree density from (4 to 35/ha) crown cover (from 14 to 25%) and the number of species (from 3 to 130). The number of tree species has increased in both cities as a result of urbanization of presettlement forests (in Menlo Park from 5 to 145; in South Lake Tahoe from 1 to 6). The uneven-aged structure of presettlement oak savannas at Menlo Park has been modified to an all-aged structure as a result of tree planting and the mortality of older age classes.

McDonald, K. R. (1965). Wastewater Reclamation At Lake Tahoe, California. Water And Sewage Works 112(10): 366-370.

Transformation of wastewater into high-grade useable water is achieved at south lake tahoe's sewage reclamation plant. the process includes flocculation; the floc is removed by filtration in two multimedia pressure separation beds of special design. final polishing is in twin columns of activated carbon. the plant is automated and includes equipment for regeneration of the carbon. key to the tertiary treatment process is the addition of alum and a polyelectrolyte to the water before filtering. the 10 ft. in diameter by 38 ft. long separation beds operate under pressure, in series at 5 gpm/sq. ft. backwash flow is 15 gpm/sq. ft. the two carbon columns operate in parallel. each is 12 ft. in diameter and 24 ft. high with 14 ft. depth of carbon bed. (bean-awwarf)

McDonald and Smart (1974). Tahoe regional general plan implementation: financial feasibility, McDonald & Smart, San Francisco, CA.

McEvoy, J., S. Williams, et al. (1970). Visual pollution in the Lake Tahoe Basin : a report to the Tahoe Regional Planning Agency based on the application of a quantitative method of assessing the visual environment, University of California, Davis, CA.

McEvoy, J., III (1972). Multi- and Interdisciplinary Research - Problems Of Initiation, Control, Integration, and Reward. Policy Science 3(2): 201-208.

Some of the difficulties of initiating and completing interdisciplinary research involving both bio-physical and social systems are reviewed. drawing on experience as project director of a large interdisciplinary project concerned with man's environmental effects on lake tahoe, a structural analysis is included of the organization of universities which has the effect of inhibiting interdisciplinary research. specific suggestions for the conduct and design of such projects are made. the political implications of recent changes in national science policy are also reviewed. (davis-chicago)

McGauhey, P. H., R. Eliassen, et al. (1963). Comprehensive Study On Protection Of Water Resources Of Lake Tahoe Basin Through Controlled Waste Disposal [Prepared for the Lake Tahoe Area Council]. San Francisco, CA, Engineering Science, Inc.

The lake tahoe shore development for recreational purposes, one of the world's clearest lakes, has increased resident human population and subjected it to aggravated eutrophication influences. this detailed base line study was undertaken to determine resources of basin, evaluate its present status, and suggest programs to avoid further deterioration. topical coverage of 16 chapters indicates its scope: introduction; geography of basin; climatology and hydrology; geology and hydrology; land use patterns; population forecasts; water consumption; existing sewerage facilities; quantity and characteristics of wastes; ground disposal studies; limnology and hydrography of lake tahoe, lacustrine eutrophication; methods of effluent disposal; design criteria and cost estimating bases; alternative treatment and disposal systems; summary and conclusions. nine appendices include: list of figures; proposed compact terms for tahoe basin; glossary of limnological terms; analytical methods used; temperature measurements; microplankton analyses; chemical characteristics; periphytic microorganisms; primary productivity measurements. these studies suggest that lake tahoe is very sensitive to additions of plant nutrients, and that additional nitrogen will be more damaging to its water quality than phosphorus. ideally, control of eutrophication should be accomplished by diversion of effluents from the lake, or by distillation of secondary effluents--at great expense.

McGauhey, P. H., G. A. Rohlich, et al. (1968). Eutrophication Of Surface Waters-Lake Tahoe, Lake Tahoe Area Council, South Lake Tahoe, CA.

Increasing eutrophication of surface waters in the u.s. has directed attention to a need for methods of assaying influents. the need for applying bioassay techniques to determine the algal growth stimulating potential of influents to surface waters is particularly acute at lake tahoe because of the uinque clarity of the lake waters. both batch and continuous chemostat techniques were applied in the laboratory to determine the biostimulatory effects on lake tahoe water of various concentrations of sewage effluents, surface runoff, and seepage from inhabited and uninhabited land areas as a prelude to demonstration tests with pilot ponds simulating shallow areas of the lake. the green alga s. gracile was used as a test organism, with the specific or maximum mass growth rate of cells as the principal parameter of growth response. lake tahoe as well as the majority of inflows to the lake were found to be nitrogen-limiting. added phosphorus had little effect on eutrophication. algal growth rates for sewage effluents were found to be significantly higher than that resulting from equivalent concentrations of nitrogen and phosphorus. numerous shortcomings of bioassay techniques are identified.

McGauhey, P. H., Lake Tahoe Area Council, et al. (1970). Eutrophication of surface waters--Lake Tahoe (Indian Creek Reservoir), Lake Tahoe Area Council, South Lake Tahoe, CA: xi, 141 p.

McGauhey, P. H., Lake Tahoe Area Council, et al. (1970). Eutrophication of surface waters--Lake Tahoe, pilot pond and field studies: third progress report, Lake Tahoe Area Council, South Lake Tahoe, CA: x, 109 p.

McGauhey, P. H., G. L. Dugan, et al. (1972). Eutrophication of surface waters--Lake Tahoe, U.S. Environmental Protection Agency, U.S. G.P.O., Washington, D.C.

McGauhey, P. H., E. J. Middlebrooks, et al. (1972). Manmade Pollution and America's 100,000 Lakes. Public Works 103(3): 87-88.

To combat the problem of pollution of our lakes, it has been advised that research be done to determine several factors in relation to sewage effluents and their effects on the eutrophication process: (1) the concentration at which nitrogen and phosphorus will trigger or support substantial algal growth, (2) the growth stimulating effect of sewage that has had its p and n partially removed, and (3) the ability of nutrient removal processes to reduce n and p to levels below that critical to algal growth. in addition, it is felt that since increasing populations tend to accelerate pollution in lake basins, the need for pollution research takes on other aspects: (1) the residual ability of tertiary sewage effluents to stimulate algal growth; (2) the ultimate fate of nutrients removed from sewage in a basin; and (3) the effect of man's near-shore and shoreline modifications on the beauty and biology of the system. lake tahoe is cited as an example of efficient wastewater reclamation and treatment. (mackan-battelle)

McGauhey, P. H., D. B. Porcella, et al. (1975). Eutrophication Of Surface Water - Lake Tahoe's Indian Creek Reservoir, Lake Tahoe Area Council, South Lake Tahoe, CA.

From april 1969 to october 1974 field and laboratory analyses and observations were made at approximately weekly intervals to evaluate the relationship between the quality of water impounded at indian creek reservoir (icr) and the reclaimed water exported by the south tahoe public utility district. the reclaimed water comprised from 70 to 80 per cent of the annual impoundment. on the average the reclaimed water contained 0.1 to 0.2 mg/l of phosphorus and 15-24 mg/l of ammonia, the latter making it toxic to fish implanted in icr. however, as the reservoir matured, nitrification-denitrification removed most of the nitrogen from the system and by march 1970 the reservoir had become a excellent trouth fishery. excess n is comparison with p evidently precluded blooms of blue green algae but low phosphorus did not prevent the impoundment from becoming typical of a highly productive environment, with vascular plants invading to considerable depths because of the high degree of clarity of the reclaimed water. by 1974 the biosystem was at an approximately steady state. this state may not remain because of the appearance of epiphytic blue green algae which caused taste and odor problems in the water and in the fish. it is concluded that the reservoir responds to more complex factors than are measurable by analysis of reclaimed water. the results show why a system of wastewater reclamation must be designed on the basis of the natural as well as the man-controlled components of the system, and points the way to the necessary parameters and institutional concepts if water is to be reclaimed for a specific purpose.

McGlashan, N. V. (1905). The legend of Tahoe. Sunset Magazine.

McGlashan, C. F., M. N. McGlashan, et al. (1986). From the desk of Truckee's C.F. McGlashan : his letters to Eliza Donner Houghton, Donner Party survivor, investigative report of a massacred wagon train, Truckee-Tahoe adventures and more. Truckee, CA, Truckee-Donner Historical Society.

McKenna, S. A., N. L. Ingraham, et al. (1992). Stable Isotope Study of Bank Storage Mechanisms in the Truckee River Basin. Journal of Hydrology JHYDA7 134(1): 203-219.

River, groundwater, and snow samples were collected in the Truckee River drainage basin in northern California and Nevada to determine the mechanisms of bank storage. Lake Tahoe, the source for the Truckee River, had average stable isotope concentrations of delta-deuterium (delta-D) of -57 and delta-oxygen-18 (delta-O18) of -5.5. These compositions are more enriched than the average local precipitation, calculated to be -117 in delta-D and -15.8 in delta-O18, due to continued evaporation during the long residence time of the water in the lake. Thus, Lake Tahoe water can be easily recognized allowing for easy tracing as bank storage. An enrichment threshold value was developed to explain the stable isotopic ratios observed in the Truckee River. A delta-D value of -85 was determined to be the threshold value, below which evaporation can explain the isotopic composition observed in the Truckee River, and above which the presence of Lake Tahoe water is required. There does not appear to be a direct relationship between the delta-D value of the Truckee River and the discharge to the river from Lake Tahoe, at least in the upper reaches of the basin. The rise in delta-D of the river to a value similar to that of the lake appears to move progressively upstream and is thought to be related to the discharge of the bank-stored Lake Tahoe water. (Author's abstract)

McKeon, O. F. (1946). The railroads and steamers of Lake Tahoe. The Western Railroader. San Mateo, CA. 9: 1 p. l., 22 p.

McLaren, F. (1975). Areawide Waste Treatment and Erosion Control Planning. Lake Tahoe Research Seminar III, South Lake Tahoe, CA.

Under section 208 of the Federal Water Pollution Control Act, the Tahoe Regional Planning Agency (TRPA) was designated the planning agency for the Tahoe Basin, and is the only such agency in Region IX. The purpose of the project is to develop a regional water quality facilities plan, not a report or study. It will define implementable improvements necessary to control surface water runoff in the Tahoe Basin's erosion control program. Water quality standards will not be reevaluated; the program will be designed to implement existing standards. Management of all the surface water runoff, especially from urban areas, will be basic to the plan. Runoff from filling stations, golf courses, parking lots, logging areas, and streets will be considered, as well as fertilizer use, waste disposal in marinas, solid waste management, septic tanks, and shoreline erosion. (See also W78-00260), (Lynch-Wisconsin)

Medford, B. (1974). Research Needs for the Lake Tahoe Basin, Lake Tahoe Area Research Coordination Board, South Lake Tahoe, CA.

This tentative assessment of research needs is intended to provide a channel of communication between researchers, sponsors and research users. Trends relating to environmental quality in the Lake Tahoe area are the conflicting use of natural resources, the failure of the market system to account for long-range costs such as pollution, and the democratization of recreation leading to increased demand for recreation opportunities and facilities, and expansion of recreation home ownership. Problems afflicting the Lake Tahoe Basin are: the threat of irreversible water pollution, degradation of the pure air, overdevelopment in places, under-development elsewhere, traffic congestion, crowded facilities, severe seasonal fluctuations in the economy, a shortage of housing in middle and low income categories, uncontrolled erosion, damaged vegetation along highways, and a high frequency of social problems. Six broad categories of research needs are surveyed: air, water, land and vegetation, fish and wildlife, social sciences, and resource systems.

Melgin, W. L. (1985). The Influence of Hillslope Hydrology on Nitrate Transport in a Forested Watershed, Near Lake Tahoe, University Of Nevada, Reno.

Merchant Maps (1990). South Lake Tahoe. Cincinnati, OH, Merchant Maps Division.

Meyer, P., Tahoe Research Group, et al. (1970). What is the TRPA : a bureaucratic hassle, an eco-sell-out, or a pragmatic problem solver? Davis, CA, University of California - Tahoe Research Group.

Meyer, P. (1974). The Scientist and Decision Making At Lake Tahoe. Lake Tahoe Research Seminar II, South Lake Tahoe, CA.

The ward valley plan adopted by placer county, nevada, in 1970 was investigated in an attempt to determine the ways scientists influence the content of public policies. to gather data, 40 interviews were conducted, public documents were examined, and public hearings were attended. it was found that the suggestion to make a land-use plan for ward valley first came from the technicians on the county staff, who initially determined both the nature of the problem that faced the county and the general approach the county would take to solve it. after developing their proposal, the staff presented it to the planning commission and received permission to produce a plan. after gathering information, the staff drafted a plan without much direction from the commissioners or supervisors. the staff presented their plan at public hearings. it was the only such plan presented; no one besides the staff had invested the time and energy to produce a detailed plan for the valley. consequently, the county politicians had no respectable alternative, and the board of supervisors simply adopted the plan recommended by the staff. the influence of academic scientists on the ward valley plan was very gradual and unrecognized and occurred over a number of years prior to the staff's work.

Middlebrooks, E. J., E. A. Pearson, et al. (1971). Eutrophication Of Surface Water: Lake Tahoe. J Water Pollut Contr Fed 43(2): 242-251.

Although n and p are major factors in the nutrient-rich, or eutrophic condition that leads to algal blooms, their presence is not always the critical factor in eutrophication. an effort was made to develop suitable methods of assaying the algal growth-stimulating potential of various influents to lakes and streams and to apply these methods to an evaluation of their ability to increase the eutrophication of water. a test algae, selenastrum gracile, was used to assess quantitatively biostimulation by exposure to surface runoff, seepages, effluents from various wastewater treatment processes, and lake tahoe (california) water. initial growth response to the test algae was much greater with batch-type assay data than with steady-state conditions. both batch and continuous flow assays indicated that the biostimulatory properties of secondary effluents were much greater than that from raw or primary treated wastes. wastewater effluents of all types showed higher growth response rates than could be accounted for by the amount of n and p present in the samples.--copyright 1971, biological abstracts, inc.

Middlebrooks, E. J., D. B. Porcella, et al. (1971). Biostimulation and Algal Growth Kinetics Of Wastewater. J Water Pollut Contr Fed 43(3 Part 1): 454-473.

An investigation was made of the biostimulatory characteristics and algal growth potential of wastewater effluents and surface runoff in lake tahoe. specific parameters studied were the maximum growth rate and the maximum cell concentration for waters that have undergone various degrees of treatment. growth rates increased linearly with total n, and algal growth approached a maximum rate at an initial total p concentration of 50 micro g/l. all types of wastewater effluents apparently are toxic to algal growth in the assay used, and deviations from the expected growth response predicted by n and p concentrations could be caused by the presence of toxicants. all effluents could be expected to increase the algal productivity of lake tahoe.--copyright 1971, biological abstracts, inc.

Mietens, C. (1990). (Exanthema subitum, Lake Tahoe disease and herpesvirus type 6 (HHV-6) infection.). Klinische Paediatrie 202(2): 67-68.

Miller, L. (1899). Loye Holmes Miller papers, 1899-1957.

Miller, L. H. (1920). Journal, Tahoe trip, 1919, [publisher and place published unknown].

Moana Corporation (1970). Chinquapin. Tahoe City, CA, Moana Corporation.

Morgan, M. D., S. T. Threlkeld, et al. (1978). Impact of the introduction of kokanee (Oncorhynchus nerka) and opossum shrimp (Mysis relicta) on a subalpine lake. J. Fish. Res. Board Can 35(12): 1572-1579.

Introductions of (M. relicta) and (O. nerka) are common management tools for improvement of local sport fisheries. This paper summarizes published information from varied sources and presents supplemental data on the impact of these introductions on the Lake Tahoe zooplankton and fish communities. Concomitant with peak spawning runs of kokanese and the establishment and high densities of Mysis was the disappearance of the three pelagic cladoceran species in the lake. Population dynamics analysis of the cladoceran populations indicate that their elimination was due to increasing death rates (related to Mysis and kokanee predation) and decreasing birth rates (possibly related to cultural eutrophication). Changes have also been observed in the fish populations. Lake trout have altered their food habits to include large quantities of Mysis, but this has been done to the exclusion of other prey types. Thus, improvement in lake trout condition has been indicated only in years when Mysis is abundant. Recent evidence of a sustained decline in the mysid population suggests that unless lake trout shift back to more traditional food sources, their condition could deteriorate to below pre-mysid levels. Finally, mean weight and abundance of kokanee spawners have declined since the cladoceran disappearance, suggesting a negative impact on the whole population which fed heavily on cladocerans.

Morgan, M. D. (1979). The Dynamics Of an Introduced Population Of Mysis Relicta (Loven) In Emerald Bay and Lake Tahoe, California-Nevada, University Of California, Davis.

Morgan, M. D. (1980). Life history characteristics of two introduced populations of Mysis relicta-. Ecology 61(3): 551-561.

Introducted M. relicta- take 4 yr to reach reproductive age in Lake Tahoe, California-Navada and 1-2 yr in Emerald Bay, an isolated (for Mysis-). The duration of embryonic stages in the Emerald Bay population ranged from 50 d for the egg stage to 6 d for the laste embryonic stage. The number of eggs per egg-bearing female in Emerald Bay increased significantly with the total length of the female. A decline in brood size with age of the brood occurred in Emerald Bay but not in Lake Tahoe. The average number of eggs per brood in Lake Tahoe was significantly less than in Emerald Bay. However, there was no difference in the number of stage 5 embryos per brood in both systems. Differences in generation time and total reproductive output in the Lake Tahoe and Emerald Bay populations were most closely related to differences in the overall production and mean depth of the 2 systems. In addition, these traits and whether reproduction is seasonal or continuous among other mysid populations are strongly correlated with the total production of the environment. These results suggest that differences in M. relicta- life history traits among populations may represent a phenotypic and not an evolutionary life history adaptation.

Morgan, M. D., C. R. Goldman, et al. (1981). Impact of Introduced Populations of Mysis Relicta on Zooplankton in Oligotrophic Subalpine Lakes. Congress In Japan, Kyoto, Japan.

The crustacean zooplankton in Fallen Leaf Lake, California in July 1913 and August 1970 was dominated by Daphnia pulicaria, D. rosea, Bosmina longirostris and Diaptomus sp. Samples from August 1978 and 1979 revealed that only Bosmina was still abundant. Both Daphnia species were no longer present and Diaptomus existed as a rare population. Similarly, the crustacean zooplankton of neighboring Donner Lake was dominated by D. rosea, B. longirostris, Diaptomus pallidus and Epischura nevadensis in August 1970 but by August 1978 and June 1979, only Bosmina and Epischura were still abundant. D. rosea and Diaptomus were rare. The cladoceran fauna of nearby Lake Tahoe, California-Nevada (D. pulicaria, D. rosea and B. longirostris) disappeared from the plankton shortly after 1970. Detailed studies have implicated predation by Mysis relicta (introduced into the lake between 1963 and 1965) as the primary cause of these extinctions. Mysis was also introduced into Donner and Fallen Leaf Lake in 1965 and is therefore considered the most likely reason for the decline of the cladoceran populations in these lakes.

Morgan, M. D. (1981). Abundance, Life History, and Growth of Introduced Populations of the Opossum Shrimp (Mysis Relicta) in Subalpine California Lakes. Canadian Journal of Fisheries and Aquatic Sciences 38(8): 989-993.

Lake productivity was an important factor in the growth of opossum shrimp (Mysis relicta), introduced into Donner Lake and Fallen Leaf Lake, California, in 1965. This species is important in the food dynamics of fish populations. The overall densities of populations in Donner Lake were 238 per sq meter in August 1978, 123 per sq meter in June 1979, and 108 per sq meter in November 1980. In Fallen Leaf Lake, the densities were 114 per sq meter in August 1978 and 103 per sq meter in June 1979. These figures indicate that the mysids are well-established throughout both lakes. Mysids reproduced in the spring at ages 1 and 2 years, living for 2 years. In nearby Lake Tahoe, a much less productive lake, the growth rate of mysids was much slower, taking twice as long to reach similar population densities. The Lake Tahoe population was not reproductive during its first 2 years. (Cassar-FRC)

Morris, R. J., C. M. Skau, et al. (1970). A Preliminary Study Of the Relationships Between Stream Water Quality and Watershed Characteristics For the Truckee River, University of Nevada-Reno, Center for Water Resources Research.

Water quality along the truckee river between lakes tahoe and pyramid in northeast california and northwest nevada was investigated. the six major sampling sites defined five major watersheds along the truckee river between the outlet dam at lake tahoe and the inlet to pyramid lake at nixon. each watershed was characterized by: (1) area; (2) percentage area logged from 1959 through 1968; (3) percentage area burned from 1959 through 1968; (4) percentage area covered by paved and dirt roads; (5) soil-type percentage for each of eight types common to the area; and (6) vegetation of land-use percentage for each of twelve kinds found in the entire truckee watershed. results of chemical analyses for nitrate and organic nitrogen, phosphate, and boron are tabulated. the overall levels of nitrogen and phosphate are comparatively low from tahoe dam to boynton lake (just above the sewage treatment plant at reno). the levels fluctuate around that separating oligotrophic and eutropic conditions, commonly taken as 0.1 mg/liter for nitrogen and 0.01 mg/liter for phosphate. boron concentrations ranged from .03 mg/liter below verdi to 3.18 mg/liter at steamboat above sewage treatment plant.

Morris, F. A. and Environmental Monitoring Systems Laboratory (1981). Meadowland natural treatment processes in the Lake Tahoe basin : a field investigation, Environmental Monitoring Systems Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Las Vegas, NV.

Moshiri, G. A., C. R. Goldman, et al. (1970). The Effects Of Variations In Oxygen Tension On Certain Aspects Of Respiratory Metabolism In Pacifastacus Leniusculus (Dana) (Crustacea:Decapoda). Physiological Zoology 43(1): 23-29.

Responses of the crayfish, pacifastacus leniusculus, from lke tahoe to variations in oxygen tension were determined under laboratory conditions. these results were supplemented by experiments which yielded data on ventilation rates, also under conditions of varying oxygen levels. results show the relationship between oxygen concentration and uptake to be linear within the range tested. ventilation rate remained constant with a decrease in oxygen level down to 2.5 ml/1, at which point it started to decline. the efficiency of oxygen utilization showed a mean of 22.1% down to a concentration of 3.88 ml/1, at which point it began to increase. in addition, a direct relationship was observed between utilization efficiency and increase in temperature. these results indicate that in this species the patterns of ventilation and oxygen utilization are direct consequences of a decrease in metabolism rather than adaptations for the regulation of oxygen uptake. (svensson-washington)

Moyer, H. E. (1968). The South Lake Tahoe Water Reclamation Project. Public Works December: 87-94.

Moyle, P. B., D. M. Baltz, et al. (1983). Instream flow requirements of native California stream fishes, Water Resources Center, University of California, Davis, CA.

Muir, J. (1900). Lake Tahoe in Winter. Sierra Club Bulletin 3(2): 119-126.

Mullen, J. R. and P. Nady (1985). Water Budget for Major Streams in the Central Valley, California, 1961-77., U.S. Geological Survey, Water Resources Div., Tahoe City, CA.

A compilation of annual streamflow data for 20 major stream systems in the central Valley of California, for water years 1961-77, is presented. The water-budget tables list gaged and ungaged inflow from tributaries and canals, diversions, and gaged outflow. Theoretical outflow and gain or loss in a reach are computed. A schematic diagram and explanation of the data are provided for each water-budget table. (USGS)

Murvosh, C. M. (1992). On the occurrence of the water penny beetle Eubrianax edwardsii in lentic ecosystems (Coleoptera: Psephenidae). Coleopt. Bull. 46(1): 43-51.

The occurrence and distribution of the water penny beetle, Eubrianax edwardsii (LeConte), was studied in Lake Tahoe, Walker Lake, and Pyramid Lake in Nevada, and Upper Salmon, Haven, Goose, and Gold Lakes in the Sierra Nevada of California. Although larvae were relatively common in Gold Lake, only one was found in the stream outflow. Larvae were more abundant close to shore, but could be found as far out as 15 m and in water almost 2 m deep. The probability of finding a larva increased with the size of the rock, but most (181) rocks sampled had no larvae, while 32 rocks had 1, 2 rocks had 2, 1 rock had 3, and no rocks bore more than 3 larvae. The cause(s) of these patterns is (are) unknown. Little is known about the ecology of this insect. Larvae were easily found along the six shore sites of Gold Lake and in Goose Lake. They were not collected in any of the other sampled lakes.

Myles, G. A., University of Nevada - Center for Water Resources Research, et al. (1966). Water based recreation in Nevada, Tahoe, Center for Water Resources Research, Desert Research Institute and Max C. Fleischmann College of Agriculture, University of Nevada, Reno, NV.

National studies estimate that the U.S. population will double by the year 2,000, but that in this same period the demand for outdoor recreation will triple. with nevada's rapidly expanding population, estimated to be 500,000 in 1966, and increasing tourist travel by automobile, it is likely that the demand for water based recreation within the state will exceed national averages. the purpose of this study is to provide information concerning: (1) the use of water based recreational areas, (2) desire for satisfaction with facilities and services, (3) the using public's willingness to pay for use of areas and facilities, (4) the expenditures of visitors, and (5) characteristics of recreational users and the effect of these characteristics on demand for various areas, facilities and services. a survey was conducted at major water areas providing information for all of nevada's major water recreation areas. results are given for each area because each has its own peculiarities and information is more meaningful on an area basis. a summary of and recommendations for all areas are provided. this work is concerned primarily with lake tahoe located in the sierra nevada mountains at 6,000 ft.

Myles, G. A. (1967). Water Based Recreation In Nevada: Western Desert and Northern Lakes, University of Nevada, College of Agriculture, Reno, NV. 74.

A study of nevada's water-based recreational facilities was conducted, june 18-sept 10, 1965, by 7 students from the university of nevada. it included lakes tahoe, pyramid, topaz, walker and lahontan reservoir in the west; rye patch and wildhorse reservoirs, ruby and angel lakes in the north, and lakes mead and mojave in the south. information sought covered use of water-based recreational facilities, satisfaction with or desire for facilities and services, public willingness to be charged for use of areas and facilities, expenditures of visitors and characteristics of visitors which affected demand for facilities, areas and services. reviews and summaries of reports for each of the above lakes, except lakes mead and mojave and lake tahoe which are covered in separate volumes, were given. on the basis of the findings, recommendations included charging of high prices for facilities with exclusive features for higher socio-economic groups and nominal fees for those of lower groups satisfied with fewer services; facilities for younger aged groups; a wide variation of facilities where feasible; more definitive directions for tourists; insect control; and more accurate estimates of visitor numbers.

Myrup, L. O., T. M. Powell, et al. (1979). Climatological estimate of the average monthly energy and water budgets of Lake Tahoe, California-Nevada. Water Resour Res 15(6): 1499-1508.

Nachlinger, J. L. (1985). The Ecology Of Subalpine Meadows In the Lake Tahoe Region, California and Nevada (Phytosociology, Phenology, Plant Associations, Sierra Nevada Vegetation, Snowpack Augmentation), University Of Nevada, Reno.

Nachlinger, J. L. (1988). An ecological survey of the candidate Lyon Peak Needle Lake Research Natural Area, Tahoe National Forest, California. Berkeley, CA, Pacific Southwest Forest and Range Experiment Station, U.S. Forest Service.

Nakao, D. I. and California Office of Transportation Laboratory (1976). Revegetation of disturbed soils in the Tahoe region : final evaluation, June 1974-June 1976, California Dept. of Transportation, Sacramento, CA.

Nakao, D. I., M. M. Hatano, et al. (1976). Highway Operation and Plant Damage, California State Dept. of Transportation Laboratory, Sacramento, CA.

A five-year study was undertaken by Caltrans in 1973 to study the effects of deicing salts on terrestrial vegetation and to explore other possible causes of plant damage, both natural and man-made, and to recommend alternative courses of action. The study is divided into two phases: (1) soil chemistry and salt analysis, and (2) vegetation damage assessment and recommendations for mitigation. The Environmental Branch of the Transportation Laboratory is performing phase 1, and the University of California at Davis has contracted to perform that portion of the research dealing with vegetation (phase 2). An interim report was prepared on the first phase of the study for the period of April 1973 - June 1975. Fifteen study sites, in and around the Tahoe Basin, were selected for in-depth study. A total of 2,459 soil samples were analyzed. Generally, salt concentrations in the soil are highest next to the roadway, decreasing with increased distance from the roadway. Concentrations are higher in drainage paths running through the downhill section of a study site. Salt application rates were recorded for possible correlation with soil analysis, topography, and plant damage. Ozone concentration data monitored from August 1974 through July 1975 indicated that the levels are below the Environmental Protection Agency air quality standard of 0.08 PPM (hourly average). (Sims-ISWS)

Nakao, D. I., R. B. Howell, et al. (1976). Highway Operation and Plant Damage-Data Appendix (Soil Chemistry, Salt Application, Ozone, Precipitation), California State Dept. of Transportation Laboratory, Sacramento, CA.

The Transportation Laboratory is engaged in a study of the effects of deicing salts on roadside vegetation in and around the Lake Tahoe Basin. The portion of the study dealing with soil chemistry, salt application rates, ozone, and precipitation was reported in an Interim Report dated January 1976. This Appendix Report contains the backup data for that Interim Report.

Nakao, D. I., K. L. Baumeister, et al. (1979). Deicing salt application rates at terrestrial vegetation study sites in the Lake Tahoe vicinity (1974-1978), California Office of Transportation Laboratory, Sacramento, CA.

Narnhagen, E., E. R. Byron, et al. (1988). Epischura Density as a Factor Controlling the Establishment of Bosmina Populations in Lake Tahoe. Internationale Vereinigung fur Theoretische und Angewandte Limnologie, Verhandlungen IVTLAP 23(4): 2082-2086.

Conditions are explored under which Bosmina longirostris populations can successfully colonize Lake Tahoe and coexist with Mysis relicta. The timing of the decline of Epischura in the late summer and autumn months is probably the most important factor determining whether Bosmina will occur in any given year. If Epischura populations decline in August or September, Bosmina is free to grow throughout September and October and can achieve high densities depending on food availability. If Epischura populations persist into October or November before declining in abundance, Bosmina will not be able to colonize the lake because of inherent resting egg production and declining ambient temperatures. The impact of Mysis predation on Bosmina populations has apparently been to shift Bosmina vertical distribution higher in the water column. Bosmina population abundance is now controlled by Epischura abundance to a large extent. In short, Bosmina populations in Lake Tahoe do not exhibit high enough birth rates to overcome the impact of invertebrate predation and their ability to colonize the lake is essentially controlled by the population behavior of their predators. (Miller-PTT)

Naslas, G. D. (1991). Infiltration, Runoff, Nutrient and Sediment Transport Analysis Of Soils In the Lake Tahoe Basin Through Rainfall Simulation, University Of Nevada, Reno.

Quantitative erosion, infiltration and nutrient transport data for the Lake Tahoe Basin are limited. Meeks and Umpa soils were subjected to a simulated storm event, using a modular simulator, in order to determine infiltration, runoff and sediment transport rates and runoff was analysed for soluble nutrients. Three slope gradients and four plot conditions were studied per soil type. The interaction of soil type and plot condition controlled maximum nitrate concentration, with mean maximum nitrate concentrations of 1.486 and 0.57 mg l-1 for the Umpa and Meeks respectively. The interaction between soil type, plot condition and slope significantly controlled infiltration and runoff (P = 0.0011) and erosion (P = 0.0164). Maximum 1-hr final infiltration rates of 4.5 and 6.1 cm hr-1 were measured for the Meeks and Umpa soils respectively. Wooded plots exhibited strong water repellency resulting in 75-97% of the applied water running off. Sediment and nitrate release were not related.

Naslas, G. D., W. W. Miller, et al. (1994). Effects of soil type, plot condition, and slope on runoff and interrill erosion of two soils in the Lake Tahoe basin. Water Resour. Bull. 30(2): 319-328.

Few studies have addressed sediment discharge due to interrill erosion from natural and minimally disturbed alpine and subalpine forested watersheds. Infiltration, runoff, and surface erosion of two Tahoe Basin soils under several conditions were investigated using rainfall simulation. A significant three-way interaction among soil type, plot condition, and slope was identified. Although high erodibility was commonly associated with disturbance and/or high slope, this was not always the case. Soil type, plot condition, slope, and duration of the event were all found to be important factors in determining the amount of erosion. Decreased water clarity in Lake Tahoe has been partly attributed to increased algal growth associated with surface runoff and erosion from adjacent watersheds. Interpretive evaluation for resource management planning should be event based and carefully delineated on a site-specific basis.

Naslas, G. D., W. W. Miller, et al. (1994). Sediment, Nitrate, and Ammonium In Surface Runoff From 2 Tahoe Basin Soil. Water Resources Bulletin 30(3): 409-417.

Nathan, H. and P. Barusch (1976). Tahoe: the bistate stalemate [Environmental protection]. .

Nathenson, M. and United States Geological Survey (1989). Chemistry of Lake Tahoe, California-Nevada, and nearby springs, Dept. of the Interior, U.S. Geological Survey, Menlo Park, CA.

National Automobile Club and C. E. Erickson & Associates (1960). Map of Lake Tahoe recreational area. Berkeley, CA, C.E. Erickson & Associates.

Neilson, J. A. (1972). Lake Tahoe vegetation I : a symposium, Institute of Governmental Affairs, University of California, Davis, CA.

Neilson, J. A. (1973). Lake Tahoe vegetation II : natural vegetation zones, Institute of Governmental Affairs, University of California, Davis, CA: 35 leaves.

Nelson, S. N., J. C. Goddard, et al. (1976). A guide to the research resources of the University of California, Davis, with respect to Lake Tahoe and the Lake Tahoe Basin. Davis, CA, Office of Research Development, University of California.

Nevada Dept. of Highways (1930). Automobile roads from Carson City and Reno to Lake Tahoe and vicinity. Carson City, NV, State of Nevada Department of Highways.

Nevada Fish & Game Commission and California Dept. of Fish & Game (1962). Angler's guide to Lake Tahoe, State Printing Office, Carson City, NV.

Nevada Legislature - Legislative Commission (1978). Feasibility of creating a new county to govern the north shore area of Lake Tahoe, Legislative Commission of the Legislative Counsel Bureau, State of Nevada, Carson City, NV.

Nevada Legislature - Legislative Commission (1986). Review of the activities of the Tahoe Regional Planning Agency, Legislative Commission of the Legislative Counsel Bureau, State of Nevada, Carson City, NV.

Nevada Legislature - Legislative Commission (1988). Review of the activities of the Tahoe Regional Planning Agency, 1987-1988, Legislative Commission of the Legislative Counsel Bureau, State of Nevada, Carson City, NV.

Nevada State Dept. of Conservation & Natural Resources (1970). Compacts for the future, Nevada-California, Lake Tahoe, Truckee, Carson and Walker Rivers, Nevada State Dept. of Conservation & Natural Resources, Carson City, NV.

Nevada State Dept. of Health - Division of Public Health & Engineering (1953). Lake Tahoe watershed; report on water pollution control, Nevada State Dept. of Health - Division of Public Health & Engineering, Carson City, NV.

Nevada State Engineers and California Dept. of Engineering (1949). Joint report on the use of water in the Lake Tahoe watershed, Nevada State Engineers, Carson City, NV.

Nevada Tahoe Regional Planning Agency and Raymond P. Smith Associates (1969). A general plan for Lake Tahoe, Nevada. [Nevada], Nevada Tahoe Regional Planning Agency.

Nichols, S. L. and Nevada Bureau of Mines & Geology (1973). South Lake Tahoe folio: tinted relief map. Reno, NV, Bureau of Mines and Geology.

Nichols, S. L. and Nevada Bureau of Mines & Geology (1975). Glenbrook folio: tinted relief map. Reno, NV, Nevada Bureau of Mines and Geology.

Nichols, S. L. and Nevada Bureau of Mines & Geology (1975). Marlette Lake folio: tinted relief map. Reno, NV, Nevada Bureau of Mines and Geology.

Nolan, K. M. and B. R. Hill (1991). Suspended-Sediment Budgets for Four Drainage Basins Tributary to Lake Tahoe, California and Nevada, 1984-87, U.S. Geological Survey, Sacramento, CA.

Effective management of lands surrounding Lake Tahoe, California and Nevada, requires an understanding of processes controlling sediment delivery to the lake from tributary streams. Erosional processes were monitored along four Lake Tahoe tributary basins during 1984-87, and sediment budgets were formulated to identify processes that supply sediment to tributary streams. Data collection was adequate to describe the processes most important in the mobilization, transport, and storage of sediment in three of the four study basins. In the fourth basin, Logan House Creek, measured sediment output did not compare favorably with sediment output predicted by the sediment budget. Erosional processes in Logan House Creek apparently are operating too slowly to be adequately quantified in a 4-year study. Channel erosion mobilized more than 95% of the sediment in study basins with balanced sediment budgets. Average annual sediment yields from the study basins ranged from 0.7 to 67.9 megagrams/sq km. Differences in the processes and rates of channel erosion and in the sources of sediment within channel systems seem to be controlled by differences in precipitation, geology, basin physiography, and, to an unknown degree, land use. Because alluvial channels are the dominant source of mobilized sediment in the study basin, land-use changes virtually anywhere in a basin could affect sediment yields in that basin.

North Tahoe Public Utility District and California Department of Parks & Recreation (1980). Kings Beach State Recreation Area : general development and resource management plan, California Department of Parks & Recreation, Sacramento, CA.

North Tahoe Public Utility District (1987). Master water plan, North Tahoe Public Utility District, Tahoe Vista, CA.

Nylund, V. and K. Westman (1981). Frequency of visible symptoms of the crayfish plague fungus (Aphanomyces astaci) on the American crayfish (Pacifastacus leniusculus) in natural populations in Finland. Freshwater Crayfish 5: Apers-From.

The occurrence of the brown spots indicative of crayfish plague fungus (A. astaci) was investigated in three lakes inhabited by self-propagating populations of the American crayfish (P. leniusculus). The 236 crayfish examined came from catches made with crayfish traps. In two of the lakes, in which the crayfish populations originated from adults imported in 1969 from Lake Tahoe, Nevada, USA, the frequency of infected crayfish was high - 47% and 52%. In one lake, in which the population had developed from juveniles imported from Sweden in 1971, the crayfish showed no brown spots at all. AN: 0910099 ASFA 1978 - 1987

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O'Donnell, C. M., R. L. Webb, et al. (1951). Airport proposed for Lake Tahoe : report, California Aeronautics Commission, Sacramento, CA.

O'Rourke, E. V. (1990). Sounds and images of the fabulous fifties : history of the Tahoe Truckee Unified School District, 1949-1956. Sacramento, CA, E.V. O'Rourke.

Orcutt, R. G., L. D. Bottoroff, et al. (1975). Optimal Planning Of Regional Wastewater Systems and Their Impacts On Stream Quality With a Case Study Of the Carson River Basin. Available From The National Technical Information Service, Springfield, Va(En): 14.

The problem of wastewater transportation, treatment, and utilization in the carson river and lake tahoe basins served as a basis for the development of the methodologies presented. a general heuristic algorithm for determining near optimal regional wastewater facilities was derived. dynamic programming was employed for the suboptimization of interlinked wastewater transportation systems. the diurnal variation of dissolved oxygen due to photosynthesis was modeled. a regression relationship involvnig nutrients, flow, and temperature was used to estimate the magnitude of the photosynthesis component of the model. possible future population growth patterns in the carson valley and the nevada portion of lake tahoe were analyzed with the algorithm to determine the near optimal wastewater facilities to serve them. the impacts of these systems on dissolved oxygen levels in the carson river were assessed with the simulation model. sensitivity analysis of significant parameters was performed to achieve a better understanding of their significance in achieving a solution to the type of problem under consideration. (fallon-nevada)

Orlob, G. T., L. G. Selna, et al. (1966). Development Of a Mathematical Model For Prediction Of Temperature In Deep Reservoirs-Phase Ii: High Discharge-Volume Ratio Reservoirs, Water Resources Engineers, Inc., Lafayette, CA.

The modification of the mathematical model for computation of temperature distribution in reservoirs to make it useful for that of reservoirs which have highly variable horizontal cross-sections or which experience time varying independent inflow and outflow is discussed. the mathematical model is designed to account for net heat flow input from the atmosphere. using this model, it would be possible to simulate a complete annual cycle of temperature change in an operating reservoir. certain assumptions, such as the independence of heat flow and reservoir surface temperature, would continue to restrict the versatility of the model. the objective of this report is to give a detailed account of the generalizations made in the one dimensional reservoir temperature model mentioned in the phase-i report. the model was tested using the data obtained in the lake tahoe studies.

Orme, A. R. and Tahoe Regional Planning Agency (1971). The shore-zone system for Lake Tahoe : a report prepared for the Tahoe Regional Planning Agency, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Orr, R. T. and J. Moffitt (1971). Birds of the Lake Tahoe region. San Francisco, CA, California Academy of Sciences.

Otton, J. K., R. A. Zielinski, et al. (1989). Uranium in Holocene Valley-fill Sediments, and Uranium, Radon, and Helium in Waters, Lake Tahoe-Carson Range Area, Nevada and California, U.S.A. Environmental Geology and Water Sciences 13(1): 15-28.

The uranium content of sediments in the Lake Tahoe-Carson Range area of Nevada and California approaches 0.6%; however, the average is in the range of 300-500 ppm. Waters associated with these sediments locally contain as much as 177 ppb uranium. Modest levels of helium and radon also occur in these waters. Uraniferous waters are clearly entering the private and public water supply systems in some parts of the study area; however, it is not known how much uranium is reaching users of these water supplies. Many of the waters sampled in the study area exceed the published health effects guidance level of the Environmental Protection Agency. Regulatory standards for uranium in waters have not been published, however. Much uranium is stored in the sediments along these stream valleys. Estimates for a marsh and a fen along one drainage are 24,000 and 15,000 kg, respectively. The potential effects of man-induced environmental changes on the uranium are uncertain. Laboratory studies of uraniferous sediment rich in organic matter may allow us to evaluate the potential of liberating uranium from such sediments and creating transient increases in the level of uranium moving in water in the natural environment. (Doria-PTT)

Owen, P. H. and J. P. Barry (1972). Electrochemical Carbon Regeneration, Environics, Inc. Huntington Beach, CA Environmental Protection Agency.

Experimentation was conducted to investigate a process of electrochemical regeneration of granulated activated carbon spent in the adsorption treatment of municipal secondary effluent. electrochemically regenerated carbon and virgin carbon were compared by their respective abilities to remove soluble cod organics from sand-filtered secondary effluents during simultaneous dynamic exhaustion. it was found that electrochemical regeneration of granular activated carbon can restore the working capacity for removing soluble cod organics to from 42 to 61% of the capacity of virgin carbon. the 61% of cod capacity electrochemically regenerated is about 77% as good as the average thermal regenerated capacity. as compared to thermal regeneration of carbon, the costs of electrochemical regeneration are much lower. based on the electrolysis cell energy requirement measured as 15.3 watt hours per gram cod adsorption capacity regenerated, the calculated cost of electrical power to regenerate and rinse the carbon spent in treating 1000 gallons of lake tahoe-type waste water was 0.66 cents. this is equivalent to 3.2 cents per pound of carbon at a dosage of 207 lbs carbon per million gallons of effluent.

Paerl, H. W. and C. R. Goldman (1972). Heterotrophic Assays In the Detection Of Water Masses At Lake Tahoe, California. Limnol Oceanogr 17(1): 145-148.

A sensitive biological method for water mass detection was successfully tested in the extremely oligotrophic waters of lake tahoe, california. a trace amount of 14c dissolved acetate is added to water samples and microbial incorporation monitored; assimilation rates demonstrate the presence of water masses originating from stream outflow. the same technique also shows microbial stimulation of tahoe water when stream water is added in culture experiments. autoradiographs indicate that bacterial cells, sometimes associated with detrital matter, are responsible for the acetate uptake.--copyright 1972, biological abstracts, inc.

Paerl, H. W. (1973). The Regulation Of Heterotrophic Activity By Environmental Factors At Lake Tahoe, California - Nevada, University Of California, Davis.

Paerl, H. W. (1973). Detritus In Lake Tahoe: Structural Modification By Attached Microflora. Science 180(4085): 496-498.

Water samples were collected from lake tahoe over a vertical profile of 0 to 440 m to investigate microbiological utilization of detritus. subsamples were filtered through metricel filters, fixed with glutaraldehye, dehydrated by stepwise immersion in increasing concentrations of ethyl alcohol, portions mounted and gold plated, and viewed by scanning electron microscopy (sem). subsamples were also monitored for microbial heterotrophic activity as a measure of mineralization rates by determining acetate uptake. total particulate carbon, and acetate concentrations were determined in samples taken from all depths. in a separate study, detritus was collected from ward creek, a tributary of lake tahoe, homogenized, sterilized, and divided into dialysis bags which were impervious to detritus and microorganisms, but allowed passage of nutrients and metabolic waste products. two sets of dialysis bags were used: one containing sterile detritus and one containing lake water and live microorganisms. both sets were incubated in lake tahoe and periodically examined by light microscopy and sem. the results show that readily identifiable groups of microorganisms present on nonliving particulate organic matter (detritus) in the upper waters of lake tahoe are attached in specific ways and appear responsible for detrital aggregation. this microflora is associated with active heterotrophic metabolism, but deeper waters possess little detrital microflora and little heterotrophic activity. (little-battelle)

Paerl, H. W., R. C. Richards, et al. (1975). Seasonal Nitrate Cycling As Evidence For Complete Vertical Mixing In Lake Tahoe, California-Nevada. Limnology And Oceanography 20(1): 1-8.

A study of annual nitrate cycling in lake tahoe provided evidence that the lake is both oligotrophic and holomictic. beginning with the spring phytoplankton bloom, a sequence of biological nitrogen transformations isresponsible for formation of a nitrate gradient, characterized by a distinct ‘nitracline.’ the main processes responsible are nitrate depletion by phytoplankton uptake and deep water nitrification by bacteria. sinking detritus appeared to be the main source of reduced nitrogen available for nitrification. as cooling proceeded during fall and winter 1972, depression of the nitracline revealed the process of vertical mixing and eventual turnover of the water mass. (jess-isws)

Paerl, H. W. and N. J. Williams (1976). The Relation Between Adenosine Triphosphate and Microbial Biomass in Diverse Aquatic Ecosystems. Internationale Revue Der Gesamten Hydrobiologie 61(5): 659-664.

The ratio of carbon to adenosine triphosphate (ATP) in living phytoplankton cells was consistent over depth and nutrient level in water samples from Lake Tahoe, California. The ratio fluctuated by no more than + or - 1% of the mean between maximum and minimum nutrient conditions. A survey of lakes differing in trophic level and having diverse phytoplankton and bacterial assemblages demonstrated that ATP can accurately measure total living microbial biomass. ATP discriminates living from dead or detrital material because it rapidly breaks down to mono- and di-phosphate nucleotides in extracellular solution or dead cells. Only living cells, therefore, contain appreciable amounts of ATP. Results indicate that conventional phytoplankton enumeration methods tend to overestimate biomass among armored species (such as diatoms) harboring intracellular remnants from former growth periods. Previous attempts to measure carbon-ATP ratios of natural microbial communities failed because of the difficulty of separating living from nonliving components. The present study overcame this problem by autoradiographic examination of carbon-14 labelled viable cells, which allowed separation of the phytoplankton. Since both ATP determinations and labelling could be performed on natural algal communities determining carbon-ATP ratios was possible. (Lynch-Wisconsin)

Paerl, H. W. and S. M. Merkel (1982). Differential Phosphorus Assimilation in Attached vs. Unattached Microorganisms. Archiv fur Hydrobiologie 93(2): 125-134.

One aspect of particle-related phosphorus uptake was investigated - differential uptake activities of attached vs. free floating bacteria in natural aquatic ecosystems. This is significant in determining the relative importance of phosphorus uptake and cycling on particle-bound vs. free-floating microorganisms. Microautoradiography was used to study the uptake of phosphorus. A variety of aquatic ecosystems was studied, exhibiting a range of trophic states. Lake Tahoe, California, a deep ultra-oligotrophic lake, was studied, as was Heart Lake, Ontario, which is a small, shallow, eutrophic lake, and Lake Taupo on the North Island of New Zealand, which is a deep oligo-mesotrophic lake. Samples were also taken from the Newport River Estuary in North Carolina. In all systems studied particle-rich waters showed higher uptake rates per unit volume than particle-poor waters. Bacteria associated with particles were responsible for elevated uptake rates and exhibited higher relative uptake rates per cell than free-living bacteria. Differences in cellular phosphorus uptake between attached and unattached bacteria were greatest under oligotrophic and least under eutrophic conditions. The significance of these findings with regard to particles as nutrient-concentrating microenvironments in natural waters is discussed. (Baker-FRC)

Paget, F. and California Division of Water Resources (1949). Report on the use of water in the Lake Tahoe Watershed in California, Dept. of Public Works, Division of Water Resources, Sacramento, CA.

Palme, L. and R. A. Curletti (1955). Vikingsholm : an authentic Viking castle in the romantic Sierra Nevada of California. Santa Barbara, CA, C. W. Haagen.

Palmer, D. F., T. L. Henyey, et al. (1979). Paleomagnetic and sedimentological studies at Lake Tahoe, California-Nevada. Earth Planet. Sci. Lett. 46(1): 125-137.

Three cores taken in Lake Tahoe were split into two complete replicates for paleomagnetic study stratigraphic and mineralogical analysis. Stratigraphic correlation is based on two distinctive horizons (volcanic ash and diatomite) and upon three different sedimentological regimes dominated by (1) poorly bedded silts and muds, (2) well bedded graded units, and (3) finely laminated silts. These correlations served as the standards for the evaluation of the paleomagnetic data. Extrapolation of SUP-14C dates obtained in the upper sections of the Lake Tahoe sediments suggests that the lower sections of the cores may reach ages of 25,000-30,000years B.P. X-ray, optical, Curie point, and hysteresis measurements show that magnetite is the only important magnetic mineral in the sediments and occurs in the size range of 10 m. Hematite is essentially absent. Based on large changes in the declination and inclination of the natural remanent magnetism (NRM) within single graded layers the paleomagnetic signature is a post-depositional remanent magnetism (PDRM). This PDRM is believed to be caused by magnetic orientation during compaction. Paleomagnetic measurements show three regimes that are correlated with the stratigraphic regimes. NRM declination and inclination data show good correlation between the three cores and agree well with the correlation based on sediment character. NRM intensity variations are due largely to the variations in magnetite content and its occurrence as either single detrital grains or as inclusions within the larger silicates. Thus the variation in paleo intensity was not determined.

Parker, V. T. and M. P. Yoder Williams (1989). Reduction of survival and growth of young Pinus jeffreyi by an herbaceous perennial, Wyethia mollis. Am Midl Nat 121(1): 105-111.

Pearson, E. A., E. J. Middlebrooks, et al. (1971). Kinetic Assessment Of Algal Growth. Chemical Engineering Progress, Symposium Series 67(107): 5-14.

It is well known that nutrients such as nitrogen and phosphorus are required for algal metabolism. however, the question remains, is nitrogen or phosphorus usually or frequently limiting the growth rate or standing stock in most receiving waters. to effectively control the rate of eutrophication of our natural waters, this question must be answered. it is not enough to remove nitrogen and phosphorus from wastewaters in hopes of reducing the growth rate or standing stock of plankton in waters concerned. there is an urgent need to develop methods or techniques for assessing the biostimulatory character of waste effluents, natural runoff, etc., estimating the level of consequences one might expect for a given level of rate-limiting nutrient or substance. in no single case is this need more urgent than in the case of lake tahoe. although action to remove sewage effluents from the basin is well underway, human activity in the area is rapidly increasing and it is not known whether other inputs to the lake should be controlled to limit the rate of eutrophication or enrichment of the lake. a laboratory method of evaluating the capacity of aquatic environments to grow algae is definitely needed. (gutierrez-texas)

Pepper, J. E. (1972). An approach to environmental impact evaluation of land-use plans and policies: the Tahoe Basin planning information system, University Of California, Berkeley.

Pepper, J. E., R. E. Jorgensen, et al. (1974). Influences on wastewater management on land use: Tahoe Basin, 1950-1972, Office of Research and Development, U. S. Environmental Protection Agency, Washington, D.C.

Pepper, J. E. and Pepper Bice Associates (1976). Density transfer systems : Options for the Lake Tahoe Basin, Pepper Bice Associates.

Perkins, M. A. and L. A. Kaplan (1978). Epilithic periphyton and detritus studies in a subalpine stream. Hydrobiologia 57(2): 103-109.

The accumulation of epilithic periphyton in Ward Creek, a permanent stream within the Lake Tahoe basin, California, was measured weekly at three stations from July through Sept, 1972. Subsamples were analyzed for total carbon and adenosine triphosphate content. The mean total carbon content at three stations over the period of investigation was 0-.-508 0-.-263 mg carbon cm-SUP--2-. Live biomass, as estimated from ATP measurements, averaged 0-.-121 0-.-115 mg carbon cm-SUP--2-. It was estimated that approximately 76% of the organic carbon accumulating on rock substrates was present at detritus. Scanning electron microscopy of rock substrates suggested that much of this detrital accumulation may consist of diatom stalk materials. AN: 8156510 ASFA 1978 - 1987

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Peterson, D. L. and Pacific Southwest Forest Range Experiment Station (1992). Guidelines for evaluating air pollution impacts on class I wilderness areas in California. Albany, CA, U.S. Dept. of Agriculture.

Phillips, B. R. M., Grefe Inc., et al. (1978). The cumulative impacts of shorezone development at Lake Tahoe.

Pierce-Arrow Line (1924). Lake Tahoe, the scenic daylight way, Pierce Arrow Line.

Pillsbury and Hillen (1902). Lake Tahoe and a guide to its mountains, lakes and trails. Tallac, CA, Pillsbury and Hillen.

Pinkerman, K. O. and California Office of Transportation Laboratory (1979). South Lake Tahoe cold weather carbon monoxide and hydrocarbon study : final report, California Dept. of Transportation, Office of Transportation Laboratory, Sacramento, CA.

Pisani, D. J. (1977). Lost parkland: lumbering & park proposals in the Tahoe-Truckee Basin SO: J-For-Hist, Jan 1977, 21 (1): 4-17. Map. Ref. .

Pisani, D. J. (1977). Federal Reclamation and Water Rights in Nevada. Agricultural History 51(3): 540-558.

Since their initiation in 1905, Federal reclamation projects in Nevada have exacerbated water rights controversies between California and Nevada, as well as between these states and the Federal Government. The dispute over the Federal Government's claim to Lake Tahoe's surplus water, the conflict between the Reclamation Bureau and established agricultural interests in Nevada, and the controversy over the use of Pyramid Lake water exemplify the complications introduced by Federal reclamation projects. Much confusion could have been avoided by post-poning these projects until already existing water rights controversies had been settled. However, the Federal Government is not entirely to blame, as the limited water supply could not satisfy all competing users and the legal system could not adjust quickly enough to the increased importance of water for industrial and recreational use, as opposed to agricultural needs. (Russell-Arizona).

Placer County and Planning Associates (1969). North Tahoe general plan. Auburn, CA, Placer County.

Placer County Planning Dept. (1976). North Tahoe urban design study : environmental impact report, Placer County Planning Dept, Auburn, CA.

Porcella, D. B., P. H. McGauhey, et al. (1971). Biological Response to Tertiary Treated Effluent In Indian Creek Reservoir. Preprint, Presented At 44th Annual Conference Of Water Pollution Control Federation, Session 25: 3-8.

Indian creek reservoir receives tertiary effluent from the south tahoe public utility district. an on-going study is observing the effects of nutrient removal (mainly phosphorus) and the possibility of impoundments as a process for reclaiming water from sewage. the reservoir is changing from a low diversity and high production to a higher diversity and lower production aquatic ecosystem, a more balanced system less likely to be disturbed. high levels of nitrogen and phosphorus exist, although considerable removal of both nitrogen and phosphorus occurs in the reservoir. a balance accounted for phosphorus, but a deficit was found for nitrogen that was attributed to nitrification-denitrification. algal growth was observed that was associated with benthic algae. the diversity of benthic organisms was lower than expected in a mature reservoir, but is apparently increasing. fish survival during the 1971 season indicates that the reservoir continues to be a suitable environment for planted trout species. aquatic vascular plants are present in some abundance, particularly in the shallow water areas. though sufficient phosphorus is available no objectionable algal blooms have occurred. water quality, both chemically and biologically, differs dramatically from the tertiary effluent, from which it predominantly derives, suggests impoundment as an economical process to reduce nitrogen following phosphorus removal. (morgan-texas)

Porcella, D. B. and P. H. McGauhey (1976). Before Removing Nutrients...Re-Analyze Lake Tahoe. Water and Wastes Engineering 13(2): 17-19.

The use of tertiary effluent as irrigation water for the Indian Creek Reservoir is discussed in relation to the effect of nutrient addition on algal blooms. Observations made at the reservoir after its filling revealed a water quality which is conducive to aquatic weed development but not to phytoplankton blooms. Influent nutrient levels indicated that substantial plant productivity should be observed, and the aquatic weed growth confirmed this to be the case. Factors which may have a role in controlling the presence and quantity of blue green algae in Indian Creek Reservoir include: the presence of excess inorganic nitrogen relative to low phosphorus concentrations, low levels of trace elements which may be limiting to blue greens and other algal groups, the low phosphorus levels in reservoir waters, low concentrations of biostimulatory organic compounds which are probably removed by activated carbon treatment, and the possible toxicity of high nitrogen levels to specific algae. (Kreager-FIRL)

Porter, D. R. (1985). Alluvial pursuit : Lake Tahoe's environmental conundrums. Urban Land 44(4): 34-35.

Post, R. L. (1989). Woods rose (Rosa woodsii). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Post, R. L. (1989). Western serviceberry (Amelanchier alnifolia). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Post, R. L. (1989). Squaw carpet (Ceanothus prostatrus). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Post, R. L. (1989). Red osier dogwood (Cornus stolonifera) [Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext]. (89-67): 2.

Post, R. L. (1989). Mountain whitethorn (Ceanothus cordulatus). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Post, R. L. (1989). Lewis flax (Linum lewisii). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Post, R. L. (1989). Greenleaf manzanita (Arctostaphyos patula). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Post, R. L. (1989). Antelope bitterbrush (Purshia tridentata). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Powell, T. M., P. J. Richerson, et al. (1975). Spatial scales of current speed and phytoplankton biomass fluctuations in Lake Tahoe. .

Prater, E. B. (1857). Eli B. Prater letters : to his family, 1857-1890.

Price, R. C. (1966). Statement to Assembly Interim Committee on Water [on the California-Nevada Interstate Compact and its relationship to the subject of export of sewage from the Lake Tahoe Basin]. South Lake Tahoe, CA, Dept. of Water Resources.

Price, R. C. (1966). California beautiful : waters to enjoy, State of California, The Resources Agency, Department of Water Resources, Sacramento, CA.

Reid, J. G. and California Legislature Assembly Interim Committee on Water (1965). Pollution of Lake Tahoe, a brief summary : a staff report to the Assembly Interim Committee on Water, California Legislature Assembly Interim Committee on Water, Sacramento, CA.

Reinhardt, D. and Tahoe Regional Planning Agency (1970). Environmental planning conference for Lake Tahoe, May 3-4, 1970 : preliminary report and summary, Tahoe Regional Planning Agency, Crystal Bay, NV.

Reno Evening Gazette (1885). Truckee Basin and Lake Tahoe directory for 1884-5 : giving name, business and residence of the adult population on the line of the C.P.R.R., from Truckee to Wadsworth, inclusive, also of Lake Tahoe. Reno, NV, Reno Evening Gazette, Book & Job Print.

Resource Concepts Inc., Nevada Dept. of Transportation, et al. (1990). Roadside erosion control and revegetation needs associated with the use of de-icing salt within the Lake Tahoe Basin. Carson City, NV, Resource Concepts, Inc.

Reuter, J. E., S. L. Loeb, et al. (1982). Nitrogen fixation in periphyton of oligotrophic Lake Tahoe. First International Workshop On Periphyton Of Freshwater Ecosystems, Vaexjoe, Sweden.

Heterocystous blue-green algae dominate the biomass of the upper sublittoral (similar to 2-60 m) epilithic periphyton community in nitrogen deficient, oligotrophic Lake Tahoe. Representative genera are Calothrix, Polypothrix, Nostoc and Scytonema . Samples obtained from three locations using SCUBA were assayed for N-fixation using the acetylene reduction technique. Seasonal rates ranged from 4-561 mu gN m super(-2) h super(-1) with a distinct summer maximum and winter minimum. Laboratory experiments along with physico-chemical lake data suggest that temperature regulates the seasonal cycle of N-fixation. This community is perennial, actively fixes N throughout the entire year and is in sharp contrast to the ephemeral nature of planktonic N-fixers. The estimated loading rate of nitrogen resulting from periphyton N-fixation was 0.03 kg N ha super(-1) (of lake surface) yr super(-1), which is very small (< 1%) in relation to other inputs of inorganic-N. The ability of this community to utilize atmospheric N sub(2) appears to be a successful adaptive strategy for survival in N-deficient environments.

Reuter, J. E. (1983). Inorganic Nitrogen Uptake By Epilithic Periphyton Communities In Oligotrophic, Nitrogen Deficient Lakes (Tahoe, Castle, Nevada, California), University Of California, Davis.

The research conducted for this dissertation focused on nitrogen metabolism in the epilithic periphyton communities growing on rocks of N-deficient Lake Tahoe and Castle Lake. The goals of this study were to: (1) quantify the seasonal patterns of total inorganic-N (as N(,2), NH(,4)(‘+) and NO(,3)(‘-)) assimilation by eulittoral (splash zone) and sublittoral (submerged) communities, (2) determine the physico-chemical parameters regulating N-uptake, and (3) characterize periphyton inorganic-N uptake in a variety of other N-deficient lakes. The sublittoral community in Lake Tahoe was perennial with viable biomass present throughout the year. Heterocystous blue-green algae (e.g. Calothrix, Tolypothrix, Scytonema and Nostoc) dominated the biomass in this zone. These species were also found to dominate the biomass in the sublittoral of the other N-deficient lakes. Rates of N(,2)-fixation were measured using the acetylene reduction technique and annual areal rates ranged from 4-561 (mu)g N m(‘-2) hr(‘-1) with a distinct summer maximum and winter minimum. Rates of biomass specific N(,2)-fixation (per unit Chl a, nitrogen and ash-free dry weight) showed similar trends. The annual loading of N in Lake Tahoe due to N(,2)-fixation was 0.23-0.35 g N m(‘-2) bottom yr(‘-1). N(,2)-fixation activity was essentially undetectable in the epipelic community growing on the soft sediments in Castle Lake. The phytoplankton communities in the lakes studied were in striking contrast to the periphyton communities because pelagic N(,2)-fixing species were completely absent. Solar radiation appeared to be the most important factor controlling the vertical distribution of heterocystous species while temperature was considered to regulate the seasonal pattern of N(,2)-fixation. Inorganic-N levels are low throughout the year and experimental evidence indicates that under ambient conditions this parameter does not influence N(,2)-fixation. The kinetics of NH(,4)(‘+) and NO(,3)(‘-) uptake fit the Michaelis-Menten equation. Half-saturation constants (K(,t)) were usually very large (100-500 (mu)g N l(‘-1)), i.e. two orders of magnitude greater than ambient substrate levels. These data indicated that these communities did not have a high affinity for low concentrations of inorganic-N. Estimates of total daily N-uptake showed that sublittoral periphyton in Lake Tahoe depended on N(,2)-fixation as its major source of N. This pathway accounted for 30-90% of the total daily N-uptake on an annual basis. The ratio of total daily C/N uptake ranged from 16-65 and exhibited no apparent seasonal pattern. However, the correlation between PC/PN and C/N uptake was positive and significant ($p < .05$).

Reuter, J. E., S. L. Loeb, et al. (1986). The physiological ecology of nuisance algae in an oligotrophic lake. ALGAL BIOFOULING. Evans, L: 115-127.

Periphyton growth in oligotrophic Lake Tahoe appears to be regulated by nutrient input and provides additional evidence of cultural eutrophication. A stalked diatom community, Gomphoneis herculeana , dominates the biomass in the eulittoral (splash) zone, and it is the luxuriant growth of this alga which has caused algal biofouling problems in this pristine lake. The rates of nitrogen uptake at natural substrate levels, measured under no flow (static) conditions were too low to account for this community's N-demand. Water movement (e.g., wave action) may be an important mechanism which acts to increase the bio-availability of nutrients and therefore allows these algae to achieve high rates of growth even though ambient substrate concentrations are low.

Reuter, J. E., S. L. Loeb, et al. (1986). Inorganic nitrogen uptake by epilithic periphyton in a N-deficient lake. Limnology and Oceanography 31(1): 149-160.

Seasonal patterns of dissolved inorganic nitrogen and inorganic carbon uptake by the sublittoral epilithic periphyton community in N-deficient, oligotrophic Lake Tahoe were examined. The biomass dominants of this community, N sub(2)-fixing blue-green algae (e.g. Calothrix, Tolypothrix), and Nostoc) were persistent and retained their nitrogenase activity throughout the year. Seasonal rates of N sub(2) fixation exhibited considerable variation, with a distinct summer maximum and winter minimum. Uptake of both NO sub(3) super(-) and NH sub(4) super(-) followed Michaelis-Menten kinetics. K sub(t) values were typically extremely high (>100 mu g N liter super(-1)) compared to the ambient concentrations of these forms of nitrogen (<10 mu g N liter super(-1)). N sub(2) fixation was the most important source of inorganic N to the yearly N budget of this benthic community. Low ambient substrate concentrations coupled with a low physiological affinity for these substrates at ambient levels were responsible for the relative unimportance of NO sub(3) super(-) and NH sub(4) super(-) uptake.

Reuter, J. E., T. Djohan, et al. (1992). The use of wetlands for nutrient removal from surface runoff in a cold climate region of California--results from a newly constructed wetland at Lake Tahoe. Journal of Environmental Management 36(1): 35-53.

Pollutant removal by wetlands represents a potential mitigation technique for treating urban runoff in the cold climates of the Sierra Nevada. This is especially encouraging in the Lake Tahoe Basin, where research has demonstrated the link between nitrate and phosphorus, and a precipitous increase of algal growth in the lake. In September 1987 a plastic-lined, gravel-filled wetland was constructed for experimental purposes and is the first demonstration of its kind in a subalpine region of the western United States. The primary objective of our research was to evaluate the effectiveness of this system in removing nitrogen, phosphorus, iron, suspended sediments and other constituents from runoff. Data collected between August 1987 and March 1989 show that the average per cent removal of total Kjeldahl-N as it passed through the wetland was low at -3%. In contrast, nitrate concentrations declined by greater than +85-90%. Changes in particulate phosphorus concentrations between inflow and outflow decreased by +47%, however, the soluble-P component showed a -28% reduction due to a contamination of the gravel during construction.

Reynolds, J. H. and J. A. Cissell (1980). Land Application of Waste Water. Journal of the Water Pollution Control Federation 52(6): 1284-1290.

Various research studies dealing with the application of waste water to the land are cited for brief review. Design parameters were investigated in a winter spray irrigation study and in a study applying raw and secondary treated waste water to overland areas in Oklahoma. Specific case studies were reported from South Tahoe Public Utility District; Toulumne County, California disposal system; Tallahassee, Florida; Michigan State University Water Quality Management Facility; West Dover, Vermont; Puerto Rico; and Oahu, Hawaii. Long-term effects of land applications were studied on the high plains of west Texas. Effects on groundwater nitrate concentrations and microbial penetration were also investigated. The impact of such practices on the quality of surface waters was investigated in Muskegon County, Michigan. Movement and adsorption characteristics of a virus in a soil column of loamy sand were assessed using waste water seeded with poliovirus. Several forest ecosystems irrigated with treated municipal waste water were examined. Proceedings of a 5-day symposium on water reuse contained several papers dealing with land application. (Baker-FRC)

Rez, P. (1991). Proceedings Of Lake Tahoe Workshop On Electron Energy Loss Spectroscopy -. Microscopy Microanalysis Microstructures Ta Microsc Mic 2(2-3): R5-R5.

Rhodes, J. S., C. M. Skau, et al. (1983). Techniques for evaluating spatial and temporal variability in surface water quality as related to soil moisture and subsurface water flux in forested watersheds, University of Nevada, Reno in cooperation with Water Resource Center, Desert Research Institute, Reno, NV.

Rhodes, J., C. M. Shau, et al. (1984). Nitrate nitrogen flux in a forested watershed -- Lake Tahoe, USA. Recent Investigations In The Zone Of Aeration 2: 671-680.

Nitrate nigrogen is the limiting factor for algal growth in oligotrophic Lake Tahoe, U.S.A. Studies attempt to trace NO sub(3)N from precipitation to streamflow through intermediary aeration zones of snow and soil vadose zones on a nearby 79.6 ha, forested watershed. Instrumentation consists of a precipitation network, 46 piezodmeters, 31 neutron soil moisture across tubes, 40 pressure-vacuum soil water samples and a recording stream gage. Over 99% NO sub(3)N in precipitation was depleted as measured in streamflow. Hydrologic processes favoring denitrification and plant uptake are thought to be responsible. Fractionation in snow was observed but only minor amounts reached the channels.

Rhodes, J. J. G. (1985). A Reconnaissance Of Hydrologic Nitrate Transport In an Undisturbed Watershed Near Lake Tahoe (Precipitation, Groundwater, Snowmelt), University Of Nevada, Reno.

Richards, R. C., C. R. Goldman, et al. (1975). Where Have All the Daphnia Gone. the Decline Of a Major Cladoceran In Lake Tahoe, California-Nevada. Verhandlungen International Verein Limnologie 19: 835-842.

An investigation was made into the causes of the virtual disappearance of daphnia from lake tahoe. it is suspected that the change in the zooplankton community structure was due to introduction of 11.1 million kokanee salmon fry into the lake from 1949-1960 and the introduction of 333,000 opossum shrimp (mysis relicta) in 1963-1965 to provide forage for game fish. a primary productivity increase of 25 percent occurred from 1967-1971. decline in the cladoceran population may be due to competition with the mysids for food. there are indications that adult mysis prey upon cladocerans and rotifers. another possible reason for decline of daphnia is the heavy utilization of them as food by kokanee. interaction of two nearly simultaneous species introductions at different trophic levels has caused disruption throughout the lake tahoe ecosystem. research must deal with the fate of daphnia, feeding habits of mysis and the fishery as the system stabilizes. (katz)

Richerson, P. J. (1969). Community Ecology Of the Lake Tahoe Plankton, University Of California, Davis.

Richerson, P., R. Armstrong, et al. (1970). Contemporaneous Disequilibrium, a New Hypothesis to Explain the 'Paradox of the Plankton'. Proceedings of the National Academy of Sciences 67(4): 1710-1714.

Unexpectedly high diversity found in even small samples of lake phytoplankton has been termed 'the paradox of the plankton.' a small volume of water, for example 10 ml, usually shows some tens of species where the competitive exclusion principle might lead to expectation of only one or a few species. patches of water may exist in which one species competes advantageously relative to the others. they are stable enough for considerable patchiness among phytoplankton, but are obliterated frequently enough to prevent exclusive occupation of each niche by a single species. with epilimnion mixing, only one or at most, a few niches for primary producers might be expected. in samples from castle lake, california, a high degree ofpatchiness for many phytoplankton species was found, indicating mixing rate is sufficiently slow in relation to the algal productivity rate, for many different niches to exist simultaneously. in lake tahoe, productivity per unit biomass ratios show that turnover times for carbon are often less than one day. high diversity is associated with high productivity per unit biomass and high zooplankton populations. a contemporaneous disequilibrium model is a plausible explanation of the diversity.

Richerson, P. J., B. J. Dozier, et al. (1975). The Structure of Phytoplankton Associations in Lake Tahoe (California-Nevada). Verhandlungen International Vereinigung Limnologie 19: 843-849.

Phytoplankton associations and their diversity as related to the physical environment were investigated in Lake Tahoe and its Emerald Bay (essentially a separate lake, about 1/10th of the dimension of the main lake, connected over a 2.5 m-deep sill). These 1973 observations were a portion of a larger study to relate phytoplankton distribution as directly as possible to physical environmental conditions. Physical measurements included current speed, current fluctuations and temperature structure. Biological measurements included in-situ chlorophyll fluorescence and phytoplankton sample enumeration. Diversity spectra were analyzed by several techniques, including averaged and unaveraged methods. The observations confirmed the existence of spatial heterogeneity in phytoplankton associations. Even in the horizontal direction, patterns may exist on length scales ranging downward to about 200 m. The results were generally consistent both with the comparisons of chlorophyll and with turbulence measurements which showed divergence in the spectral form of chlorophyll and velocity variance at similar length scales. The cause for the lack of regular variation in phytoplankton community structure observed is obscure. (Auen-Wisconsin).

Richerson, P. J., M. Lopez, et al. (1978). The Deep Chlorophyll Layer of Lake Tahoe. 20th Congress, Internationale Vereinigung fur Theoretische und Angewandte Limnologie, Copenhagen, Denmark.

Six hypotheses offered by several authors to explain the occurrence in lakes of deep chlorophyll maxima in the vicinity of the compensation depth were evaluated with 1976-77 data for ultraoligotrophic Lake Tahoe (California-Nevada). All six fit Lake Tahoe to some degrees, but none too strongly. Shade adaptation was surprisingly unimportant. The six hypotheses are: (1) The layer may be a by-product of shade adaptation; chlorophyll per unit cell biomass may increase with depth, but not biomass itself. (2) Zooplankton biomass may be higher above the maximum and grazers may prune the upper part of the profile. (3) Better nutrient conditions at depth may permit biomass to accumulate despite low photosynthetic rates. (4) Lower respiration rates could permit differential biomass accumulation at depths; such lower rates could be due to low temperatures or secondarily to better nutrient conditions which favor cells with smaller surface-to-volume ratios. (5) The layer could result from differential sinking rates of cells in nutrient-poor surface waters compared with nutrient-rich deeper waters. (6) Eucaryotic cells may be able to compete with bacteria for organic substrates at low temperatures, and it has been shown that heterotrophic uptake is a very strong function of temperature in Lake Tahoe. The Lake Tahoe epilimnion is consistently dominated by the very small diatom Cyclotella stilligera, while at the deep maximum (peak at 105 m) the much larger C. ocellata was dominant.

Roberts, F. C., R. F. Luck, et al. (1973). Natural decline of a pine needle scale population at South Lake Tahoe. [Chionaspis pinifolaie]. Calif-Agric 27(10): 10-12.

Rogers, J. H., United States Soil Conservation Service, et al. (1972). Soil survey of the Tahoe Basin area, California and Nevada : an interim, unedited report, U.S. Dept. of Agriculture, Soil Conservation Service, Forest Service, Portland, OR.

Rogers, J. H., United States Soil Conservation Service, et al. (1974). Soil survey, Tahoe Basin Area, California and Nevada, U.S. Soil Conservation Service and Forest Service, Portland, OR.

Rohlich, G. A. (1972). A Lake--How Does It Behave. Conference On The Management Of Recreational Lakes, Marinette County, WI, Wisconsin University Center.

The definition of a lake as a body of water surrounded by land is too restrictive, since the entire lake basin influences the character and behavior of the lake. the importance of stratification, benthos, and eutrophication are discussed. unpolluted waters have a wide variety of species and a dynamic biological balance. under eutrophic conditions, there are comparatively few species which dominate with the consequent absence of biological balance. domestic and industrial waste waters are sources of organic materials and energy. the trophic nature of a lake is influenced by climatic conditions, topography, conformation, wind patterns, geology, erosion, and human influences. techniques for measuring eutrophication are discussed. eutrophication affects water quality, water supplies, recreational uses, and agricultural uses. approaches which have been taken to solve eutrophication problems are mentioned, e.g., diversion of effluents around a lake (as in lakes mendota and kegonsa, madison, wisconsin; lake tahoe, nevada-california; and lake washington, washington); urban drainage; removal of weed debris and rough fish; dredging of lake sediments; withdrawal of hypolimnetic water; watershed zoning; and control of nuisance plant growth.

Rosecrance, J. D. (1984). The Degenerates Of Lake Tahoe: a Study Of Persistence In the Social World Of Horse Race Gambling (Nevada), University Of California, Santa Barbara.

Horse racing, America's number one spectator sport, is also an important social phenomena affecting the daily lives of millions of Americans. The horse racing industry is supported by a hard core of regular patrons whose continuing support and steadfastness are amazing. These "regulars" sustain participation despite the financial, social and psychological costs associated with this activity (most knowledgeable observers agree that 95 percent of all horse players lose money from this endeavor). This phenomena has led to a specific research question: Why do inveterate horse players persist in an activity that is personally so costly? The behavior patterns of inveterate horse players have not been adequately investigated by social science researchers. The matrices of the racing world are frequently incomprehensible and seemingly irrational to outside observers. The procedure used to address the research problem was participant-observation of inveterate horse players in their natural environment. The subjects selected for this study were the approximately 65 horse players who regularly frequent Harrah's Race Book, Lake Tahoe, a legal offtrack betting establishment. The researcher, himself a veteran horse player, is a long-standing member of this group and was assured an ease of entree. Because of prior experience the researcher had developed a reservoir of empathetic knowledge which facilitated data collection. The use of the grounded theory approach (Glaser and Strauss, 1967) served as an overall guide to the collection and analysis of data. The format selected for presenting the study was to proceed from an ethnographic accounting to substantive generalization, culminating in a discussion of the theoretical implications of the research. When the ethnographic data was analyzed, the rewards of group membership (such as reaffirmations of self-worth and a secure, relaxed atmosphere) emerged as the most salient factor in the persistence demonstrated by Harrah's regulars. Since group membership can only be maintained by sustained participation, discontinuance of the activity is extremely problematic. The prevailing social relationship in this milieu is a form of comradeship--the sharing of specialized contingencies. Although sociologists have not prominently identified this form of relationship, similar patterns can be located in a wide variety of settings. Order No: AAC 8402471 ProQuest - Dissertation Abstracts

Rosenfeld, R. and Tahoe Regional Planning Agency (1971). An ordinance regulating the construction of piers, breakwaters, harbors, barriers, and other structures and altering shoreline and underlying lands within the lakes of the Tahoe Basin. Berkeley, CA, R. Rosenfeld.

Rush, F. E., B. R. Scott, et al. (1972). Bathymetric Reconnaissance Of Marlette and Spooner Lakes, Washoe County and Carson City, Nevada, U.S. Geological Survey, Carson City, NV.

Maps, curves, and tables describe bathymetric data for marlette and spooner lakes between carson city and lake tahoe in the carson range of the sierra nevada. marlette lake is at an altitude of 7,838 feet and spooner lake, at about 6,980 feet. marlette lake is about 1,600 feet higher than lake tahoe and about 3,200 feet higher than carson city. both lakes drain to lake tahoe. the principal source of water for the lakes is snowmelt. the marlette lake basin has an area of 3.0 square miles and spooner lake basin, about 1.2 square miles. precipitation at marlette and spooner lakes averages about 27 inches per year, or an average annual total of each basin of about 4,500 acre-feet and 1,700 acre-feet, respectively. of these amounts, an estimated 60% runs off to the lakes. a continuously recording, electronic fathometer was used to measure the depths of marlette and spooner lakes, making a total of 19 traverses on marlette lake and 17 on spooner lake.

Rush, F. E., United States Geological Survey, et al. (1973). Bathymetric reconnaissance of Lake Tahoe, Nevada and California, State of Nevada, Dept. of Conservation and Natural Resources, Division of Water Resources, Carson City, NV.

This bathymetric map (scale 1:62,500) of lake tahoe in california and nevada is based on a soundings map of the u.s. coast and geodetic survey (1923). the deepest sounding in the lake, 1,646 feet and the only sounding greater than 1,600 feet, was about 6 miles due east of the truckee river outlet and along the axis of the lake. most of the steep slopes shown by the closespacing of the bathymetric coutours on the east and west sides of the lake are of fault origin. in addition, a fault scarp extends southwestward from stateline point at the north end of the lake towards the deepest point in the lake. about 2 miles north of emerald bay at rubicon point, the lake depth increases 1,300 feet in about the same horizontal distance, producing a bottom slope of about 45 deg from horizontal. smaller maps and illustrations show general distribution of lake-bottom sediments; approximate mean annual precipitation in the lake tahoe basin; mean monthly flow of upper truckee river near meyers, california; flow from lake tahoe to truckee river; and annual variations in stage of lake tahoe. summary tables are presented for lake morphometry, water temperature, water quality, light penetration, and dam-design.

Rybock, J. T. (1978). Mysis Relicta Loven In Lake Tahoe: Vertical Distribution and Nocturnal Predation, University Of California, Davis.

Sabatier, P. A., S. M. Hunter, et al. (1987). The devil shift : perceptions and misperceptions of opponents. The Western Political Quarterly 40(3): 449-476.

Sabatier, P. A. and S. Hunter (1989). The incorporation of causal perceptions into models of elite belief systems. The Western Political Quarterly 42(3): 229-261.

Sabatier, P. A. and N. W. Pelkey (1990). Land development at Lake Tahoe, 1960-84 : the effects of environmental controls and economic conditions on housing construction, FAU/FIU Joint Center for Environmental and Urban Problems, Fort Lauderdale, FL; Institute of Ecology, University of California, Davis, CA.

Sabine, C. (1992). Magmatic Interaction In the Crystal Range Suite, Northern Sierra Nevada Batholith, California, University Of Nevada, Reno.

The approximately 225-km$\sp2$ Desolation study area lies at the northern end of the Sierra Nevada batholith, southwest of Lake Tahoe. The area is underlain by early- to middle-Jurassic metasedimentary and metavolcanic rocks of the Mount Tallac pendant, a group of middle-Jurassic plutonic rocks, and several Cretaceous plutons. Extensive glaciated exposures and a diversity of igneous lithologies ranging from leucogranite to anorthosite ideally suit the area for geologic and remote sensing studies. Among Jurassic plutons is the Crystal Range suite, which includes the Pyramid Peak leucogranite and numerous consanguine dioritoid bodies, hybrid rocks, and microdiorite dikes. Dioritoid and leucogranite magmas interacted as demonstrated by field (lobate contacts, composite dikes, hybridization), petrographic (ocellar quartz, rapakivi texture, acicular apatite), and geochemical evidence (Harker diagrams, variation across contact zones). Low initial $\sp{87}$Sr/$\sp{86}$Sr ratios indicate a mantle origin for dioritoids; a range of higher ratios in leucogranite suggests melting of an isotopically diverse crust. Alignment of the Crystal Range suite, dioritoid bodies, and foliation patterns with regional structural trends in metamorphic rocks suggests emplacement was influenced by geologic structures. The Crystal Range suite was among the earliest plutonic units to invade metamorphic rocks. A U-Pb zircon age from Pyramid Peak leucogranite is 164 $\pm$ 7 M.A. thesis. A model is proposed in which crustal anatectic leucogranite magma is generated by underplating of mafic magma from the mantle. Faults and shear zones provide conduits for concomitant ascent and interaction of mafic and felsic magmas early in a plutonic cycle. As plutonism continues, melting and magmatic interaction in the lower crust generate large volumes of intermediate magma. Thermal softening produces a more ductile crust, allowing ascent of large diapiric plutons. Other mafic-felsic suits in the Sierra Nevada batholith intrude metamorphic rocks and are surrounded by younger plutons as predicted by the model. Thermal Infrared Multispectral Scanner imagery led to discoveries of a large mafic body, obscured by vegetation, and a silicic facies of a mafic granodiorite and allowed discrimination of plutons according to composition. Correlation of wavelengths of emittance minima with pluton compositions produced images that semiquantitatively depict variation in SiO$\sb2,$ SCFM, quartz, and hornblende content. Order No: AAC 1345766 ProQuest - Dissertation Abstracts

Sacramento Ridesharing Project (1981). Lake Tahoe transportation alternatives, winter 1981-1982, California Dept. of Transportation, Sacramento Ridesharing Project, Sacramento, CA.

Sangwan, B. and Indian Chief Publishing House (1990). The Complete Lake Tahoe guidebook. Tahoe City, CA, Indian Chief Publishing House.

Sato, S. (1985). Lake Tahoe: A vanishing jewel? Shiga Conference ‘84 on Conservation and Management of World Lake Environment, Otsu, Japan.

A description is given of the Lake Tahoe basin, its institutional evolution and struggles and management strategies of the past and present, indicating the lesson to be learned from incongruous development. The possibility of halting the development to preserve the environment is examined.

Schaffer, J. P. (1984). The Tahoe Sierra : a natural history guide to 106 hikes in the northern Sierra. Berkeley, CA, Wilderness Press.

Schaffer, J. P. (1985). Desolation Wilderness and the South Lake Tahoe Basin. Berkeley, CA, Wilderness Press.

Scharpf, R. F., M. Srago, et al. (1974). Conifer damage and death associated with the use of highway deicing salt in the Lake Tahoe Basin of California and Nevada, Dept. of Agriculture, Forest Service, California Region, San Francisco, CA.

In the winter of 1972-73 severe damage to conifers was observed along the major state and county highways in the lake tahoe basin. local foresters suspected highway deicing salt as the cause of damage. a biological evaluation was begun in the spring of 1973 to determine the cause and distribution of damage to the roadside conifers, the species affected, and the relationship of tree damage to the distances of trees from the highways. estimates from the evaluation indicated that some 3000 trees died or were damaged on more than 300 locations in the basin. browning of foliage, branch dieback, and in many cases, dead trees of all sizes and ages were observed. damage and death were greater for trees near highways and less for trees at greater distances from the highways; in some cases damage occurred up to 60 feet from the pavement. tests in the greenhouse, which involved adding different concentrations of salt solution to potted trees, duplicated symptoms and damage observed in the field. it was concluded that salt applied to the highways is a major cause of damage and death to roadside conifers in the basin. damage probably will continue to occur if the use of sodium chloride for highway deicing continues at the present level. (see also w76-07793) (sims - isws)

Scharpf, R. F., R. V. Bega, et al. (1981). Elytroderma disease reduces growth and vigor, increases mortality of Jeffrey pines at Lake Tahoe Basin, California, U.S. Dept. of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA.

Scharpf, R. F. and R. V. Bega (1988). Elytroderma disease in young, planted Jeffrey pine, South Lake Tahoe, California, U.S. Department of Agriculture, Forest Service Pacific Southwest Forest and Range Experiment Station, Berkeley, CA: 2.

Scharpf, R. F. (1991). The role of pests in the ecology of pine-fir forests at South Lake Tahoe, California. Soc-Am-For-Natl-Conv., San Francisco, CA, The Society (Bethesda, MD).

Schlesinger, D. A., A. M. McCombie, et al. (1983). An evaluation of climatic, morphoedaphic, and effort data as predictors of yields from Ontario sport fisheries. Ont. Fish. Tech. Rep. Ser.(10).

The purpose of this study was to determine the relative usefulness of the morphoedaphic index (MEI = total dissolved solids/mean depth), angling effort (E), lake surface area (A), and long-term mean annual air temperature in the lake vicinity (TEMP) for predicting sport fishing yields (Y) for a set of 85 Ontario lakes, 6 Minnesota lakes, and Lake Tahoe, California. Angling effort proved to be the best single independent variable, producing the equation: log sub(10) super(Y) = 0.668 (log sub(10) super(E)) - 0.507 with r super(2) = 0.611 where Y is stated in kg/ha/yr and E in angler-hours/ha/yr. When the MEI is given in mg/L/m, it considerably improved the correlation. In contrast, lake surface area and TEMP were of questionable value as independent variables, as indicated by a step-wise regression analysis.

Schmidt, A. R. (1980). Is it too late for Tahoe? [Environment impacts]. Am For 86(5): 16-19, 56-59.

Schmidt, W. J. (1985). Structure Of the Northern Sierra Nevada, California, Rice University.

Structural features on megascopic, mesoscopic, and microscopic scales have been examined in a study area located in the central portion of the northern Sierra Nevada (west of Lake Tahoe). Structures observed within the study area are correlated with regional deformational events of the northern Sierra Nevada. Although at least four regionally extensive deformational events have affected the rocks of the northern Sierra Nevada, the effect of only three events are recognized in the study area. Structures associated with post-Ordovician/Silurian and pre-Late Devonian deformation were not identified due to overprinting of later deformational events. There is ample evidence supporting extensive late Paleozoic-early Mesozoic deformation in the study area. Structures from this event formed as the result of compressive deformation along a northwest-striking, east-dipping convergent plate boundary along the western margin of the Sierran province and may be related to the accretion of an exotic terrane, Sonomia. Although a significant component of strike-slip motion may have existed along the plate boundary, the structures appear to be related to the normal component of convergence. The intense, short-lived Nevadan orogeny deformed rocks throughout the study area. This latest Jurassic event is thought to be the result of an arc-continent collision. Nevadan structures, which have an anomalous north to north-northeast trend in the study area, are often indistinguishable from late Paleozoic-early Mesozoic structures due to similarities in style and orientation. Analysis of strain from quartz microfabrics indicates that Nevadan deformation is, at least locally, non-coaxial. The non-coaxial deformation is probably related to left-lateral oblique convergence. The last deformational event that affects rocks in the study area occurred in the Cretaceous. Cretaceous structures have a consistent northwest trend throughout the northern Sierra Nevada. The anomalous trend of Nevadan structures in the study area is most likely related to Cretaceous deformation. In the northern Sierra Nevada, post-Nevadan, dextral oroclinal folding, which occurred prior to or during the Cretaceous deformational event, is the result of right-lateral oblique convergence.

Schultz, F. M. and C. Lake Tahoe Area (1959). Early history of the Lake Tahoe Area Council, Lake Tahoe Area Council.

Schulze, K. L. (1968). Tertiary Treatment Of Waste Water. Developments In Industrial Microbiology 9: 175-185.

Using data obtained from continuous flow culture of bacteria, it was demonstrated that secondary waste water treatment processes are inherently incapable of attaining high grade removal of nutrients, especially nitrogen and phosphorus compounds. activated sludge plants have maximum removal capability of 49% for nitrogen and 33% for phosphate related to primary effluent. this necessitates the development of tertiary treatment. a survey of the physico-chemical and biological tertiary treatment methods and their results were presented. special emphasis was placed on an attempt to assess the possibility of large scale nutrient removal by biological means. pilot plants at lebanon, ohio and full scale operations at santee valley and lake tahoe public utility district plants in california were described. it is suggested that combination of a tertiary treatment slip with irrigation for crop production be used as a possible solution. it is urged that industry substitute another detergent filler for phosphates. (waid-texas)

Schumann, H. H. (1975). Operational Applications of Satellite Snowcover Observations and Landsat Data Collection Systems Operations in Central Arizona. NASA Workshop on Operational Applications of Satellite Snowcover Observations, South Lake Tahoe, CA, National Aeronautics and Space Administration.

Repetitive Landsat and NOAA-4 satellite imagery together with aerial surveys are being evaluated to develop an operational capability for mapping snowcover distributions on the Salt-Verde watershed of central Arizona. Satellite telemetry is being used also for near-real time relay of hydrologic data to aid in the management and operation of reservoirs on the Salt and Verde Rivers. For use in rating satellite imagery, the depth and distribution of snowcover was measured by examination of oblique aerial photographs of snow markers. This method allowed rapid and economical determination of snow depths. The Landsat Data-Collection System (DCS) relays hydrologic data from remote and relatively inaccessible earth-based sensors. The Landsat telemetry system relays information from streamflow- and snow-monitoring installations located in the upper parts of the Salt-Verde Watershed.

Schuster, R. O., E. C. Toftner, et al. (1977). Tardigrada of Pope Beach, Lake Tahoe, California. .

Schwarz, C. F. (1982). Conceptual Ecologic Modeling In Regional Environmental Management and Land Planning: a Case Study Of Lake Tahoe Water Color Transparency, University Of California, Berkeley.

The main value of conceptual ecologic modeling (CEM) for land use planners is for visualizing and understanding the factors affecting their problems. CEMs of land use problems are usuallyfeasible and provide the general analysis planner's most often need. I used CEMs to study the protection of lake water color and transparency. I developed a general then a detailed CEM of natural factors affecting those qualities. I estimated the areal distribution of nutrients (nitrogen and phosphorus) and potential suspended sediments on watersheds. I developed other detailed CEMs of nutrient and sediment release and delivery to the lake, their horizontal and vertical dispersal in it, lake nutrient cycling, their effect on water color and transparency via increased lake organic matter production, and suspended sediment deposition. Management of nutrient stores and accumulation processes is needed to offset water quality damages caused by urbanization. Careful, periodic removal of biomass and litter deposits and quick reestablishment of forest cover are the only feasible methods. CEMs for the lake revealed that capability classification based solely on a site's qualities is inadequate. It does not account for the antagonistic or synergistic effects of off-site conditions. Classification must include upslope and downslope conditions affecting the net consequences of land alterations. I recommend a classification scheme using ratings of above and below ground conditions affecting release and transmission of nutrients and sediments along the fall line on which projects are proposed. I include a rating of channel delivery efficiency from the base of fall lines to the lake. The complexity of information in CEMs poses potential communication difficulties. Planners encourage public participation in their analysis process. They must also explain the reasons for their recommendations to decisionmakers. This problem can be readily overcome by using modern science communication techniques. The graphical nature of CEMs is inherently advantageous for communication. CEMs are useful for organizing and synthesizing scientific information on many planning problems, for communicating understanding of possible consequences of alternative land use decisions and as stimuli of insights producing a comprehensive range of environmental management alternatives.

Schweickert, R. A., J. R. Firby, et al. (1985). Field trip guide: the Northern Sierra Nevada / Nevada and California. Reno, NV, University of Nevada - Reno.

Scott, E. B. (1964). The saga of Lake Tahoe; a complete documentation of Lake Tahoe's development over the last one hundred years. Crystal Bay, NV, Sierra-Tahoe Publishing Company.

Scott, V. H., R. A. Matthews, et al. (1978). Groundwater resources of the South Tahoe Public Utility District. Davis, CA, Dept. of Water Science and Engineering, University of California, Davis.

Seagraves, A., A. Seagraves, et al. (1987). Tahoe : lake in the sky. Lakeport, CA (P.O. Box 1141, Lakeport 95453), WESANNE Enterprises.

Sebastian, F. and R. Sherwood (1969). Clean Water and Ultimate Disposal. Water And Sewage Works 116(8): 297-300.

The unique application of thermal systems for solid waste reclamation and disposal at the south tahoe phosphate removal and water reclamation plant was presented. three unique thermal processing systems were employed. bartlet snow pacific multiple hearth furnaces were used in the thermal treatment systems. the first system processes a relatively wet dewatered sludge, 15-20 percent total solids, obtained from the addition of lime to raw primary sludge. elimination of all odors and steam plume was obtained. lime treatment of the sewerage plant effluent produces another distinct sludge which was centrifuged producing a cake of about 50% moisture. this sludge was recalcined at temperatures approaching 1900 deg f. for eventual recovery of the lime. dry lime storage was possible without the associated dust problems by the application of a thermal disc cooler. the tdc utilized water as the heat transfer liquid and decreased the temperature of the calcined lime from 1400deg f to less than 400 deg f. there was virtually no recarbonation as the system was totally enclosed. the third system was used in the regeneration of activated carbon at the cost of $0.023 per lb. (galwardi-texas)

Sebastian, F. P. (1970). Waste Water Reclamation and Reuse. Water And Wastes Engineering 7(7): 46-47.

In march 1968 the south tahoe (calif.) water reclamation plant, the first, largest and most fully integrated plant in the world today producing water of potable quality directly from sewage effluent, began operation and has since processed one billion gallons of waste water, enough drinking water quality effluent for the annual household needs of 30,000 people. the incremental cost of discharging secondary effluent is $.166 per 1000 gallons. the stated operational cost includes carbon adsorption and regeneration at $.036 per 1000 gallons. public resistance to the use of renovated water is lessening. use of this type of water in long distance space flights will help increase public acceptance. according to the u. s. public health service, drinking water standards do not apply to direct use of reclaimed water for drinking. research is reportedly planned to establish the needed standards for water from heavily polluted sources. the potential benefits of purified waste water are greater than the incremental costs. the value of secondary effluent is generally nil, whereas tertiary effluent ranges in value from $.09 per 1000 gallons to the cost value of fresh water, on san francisco peninsula, of $.18 to $.376 per 1000 gallons. the virtual elimination of biostimulants and elimination of the need for ocean outfalls with unknown effects on bay and ocean ecology can be accomplished with tertiary treatment. a simplified flowsheet of south tahoe water reclamation plant is included in the article. (selby-texas)

Sebastian, F. P. (1971). Tahoe and Windhoek: Promise and Proof Of Clean Water. Chemical Engineering Progress, Symposium Series 67(107): 410-412.

Technical and economic achievements in water reclamation have been demonstrated in full-scale operations at lake tahoe, california, and windhoek, south west africa. at these locations it has been shown that sewage effluent can be safely treated to produce drinking quality water. the plant at tahoe consists of a conventional activated sludge plant with an added tertiary system. a significant step in compatibility of thermal reclamation processes used at tahoe is the development of exhaust gas cleaning devices that cool and clean the gases so effectively that particulate matter is unmeasureable. in the first years of operation the effluent was better than the standards set, the median bod was 0.98 mg/liter and the median cod was 10.83 mg/liter. the total operating cost of the tertiary process based on 7.5 million gal/day is 14 cents/1000 gal. and the amortization cost is 8.75 cents/1000 gal, while the incremental cost above secondary treatment is 1.5 cent/person/day. during trial runs undertaken to study the overall performance of the plant, test work included a determination of the fate of polio viruses, bacteria, and parasites. tests showed little or no viruses were present passing into the chlorination tank, giving no indication as to the effectiveness of the levels of chlorine used. as a result of the tests it was shown that completely acceptable water could be produced from specified sewage effluents. (gutierrez-texas)

Sebastian, F. P. (1974). Purified Wastewater-the Untapped Water Resource. Journal Water Pollution Control Federation 46(2): 239-246.

Purified wastewater has become an increasingly important source of water. a recent u.s. government study of 155 communities with populations over 25,000 indicates, for example, that 145 presently have some raw waste in their water supplies. several communities, including windhock, south west africa; lake tahoe, california; colorado springs, colorado; and rye meads, u.k., have recently applied advanced waste treatment technology to boost existing tap, trout lake, swimming, irrigation, and industrial cooling water supplies. treatment plants for the respective communities utilize biological-algae-physical-chemical, biological-physical-chemical, biological-physical-chemical, and extended-biological techniques to meet required quality standards. some earlier problems of wastewater reuse have been resolved. first, problems of dissolved solids buildup have not resulted because not all water is recycled. second, a number of toxic materials present in wastewater are effectively eliminated in the advanced treatment stage. third, potential hazards from viruses have been virtually nonexistent to this point. cost estimates for the summarized advanced treatment methods indicate conventional primary-secondary-tertiary treatment is more expensive than independent physical-chemical treatment for similar effluent, although the latter is generally more expensive in producing water up to primary-secondary treatment quality. potential benefits arising from the development of an advanced treatment potential, in addition to increased water supplies, are listed. (schroeder-wisconsin)

Sedway Cooke Associates and Tahoe Regional Planning Agency (1972). Tahoe region basinwide conservation and development suitability policies and criteria. San Francisco, CA, Sedway Cooke Associates.

Sedway/Cooke (1981). Final Environmental Impact Statement; South Tahoe Public Utility District and Douglas County Sewer Improvement District No. 1, Appendix B: Mitigation Program, Sedway/Cooke, San Francisco, CA.

The Mitigation Task Force, which was created to coordinate the actions of the agencies with authority to reduce the environmental impacts of the proposed expansion of the South Tahoe Public Utility District, has identified 97 measures to be implemented by 28 agencies. The measures and the agency responsible for implementation of each measure are presented in a matrix. There are 13 areas of impact: water resources and water quality; geology and soils; biology; noise; meteorology and air quality; visual resources; land use and housing; transportation; recreation; public services/fiscal concerns; utilities; cultural, archeological and historical resources; and the Carson Valley. In the water resources and quality category there are sixteen required measures in the areas of erosion and drainage projects, on-site runoff controls, development restrictions, and forest practices; and one recommended measure, monitoring. For each measure, the statements of the responsible agencies are given, and implementation statements from all agencies are also presented.

Seibert, H. and M. Penniman (1975). Revegetation and Erosion Control at Heavenly Valley. Lake Tahoe Research Seminar III, South Lake Tahoe, CA.

At Heavenly Valley in the Lake Tahoe Basin of California and Nevada, the largest ski resort in the U.S. with 20 square miles of skiable terrain, one of the biggest problems in any ski area is erosion during the spring runoff. The entire mountain at Heavenly Valley is granodiorite which has been weakly glaciated, resulting in a shallow soil mantle. The surface consists of rocks mixed with finer soil. Because of its sandy nature, the soil has poor internal stability and a small amount of water causes erosion. Serration, berms, heavy jute netting, log placement, and revegetation (grass, squaw carpet, manzanita) were used in an effort to control erosion from snowmelt. Grass planting (wheatgrass and alpine timothy), using a mulching process and jute netting, cost about $10,000 per acre. To prevent vegetative disruption, ski lifts have been installed by means of helicopters, at a cost of $23,000 per lift. A table showing cost breakdown is appended to this paper, which is the test of a slide presentation.

Sercelj, A. and D. P. Adam (1975). A late Holocene pollen diagram from near Lake Tahoe, El Dorado County, California. .

Sharp, J. V., R. L. Bateman, et al. (1970). Digital Simulation Model Of Inorganic Water Quality Of Tahoe-Truckee System, Nevada-California, Progress Report., University of Nevada-Reno, Center for Water Resources Research, Reno, NV.

This is a progress report on research to develop a digital model to simulate inorganic water quality in a complex system. for purposes of developing the model, the tahoe-truckee river system was studied. regular and special analysis contributing to development and testing of the model are preliminary analyses of geology, geomorphic features, soils, and groundwater; daily stream flow records from many stations; monthly flow records; and reservoir storage and release records. the digital model, now approaching final stages of refinement, contains a hydrologic model providing monthly flows, a set of predictive equations, and a set of equations for simulating regulation. the purpose of the model is to describe and predict variation of water quality in terms of total dissolved solids so that accurate management decisions in areas of water quality control, waste disposal and pollution control can be made. by use of the model at its present state of refinement, the observed amounts of total dissolved solids is reasonably near the simulated amounts, and further development of the model is expected to produce more accurate simulation. many parts of the model are given as formulae. (yensen-arizona)

Shea, P. J., M. I. Haverty, et al. (1984). Effectiveness of fenitrothion and permethrin for protecting ponderosa pine trees from attack by the western pine beetle [Tahoe National Forest, Eldorado National Forst]. J Ga Entomol Soc 19(4): 427-433.

Shedd, R. A. (1977). Lake Tahoe historical sketches. South Lake Tahoe, CA, R.A. Shedd.

Shellito, J., Lake Tahoe Environmental Education Consortium, et al. (1976). Tahoe reflections : an anthology, 1974-1976. South Lake Tahoe, CA, Lake Tahoe Environmental Education Consortium.

Shireman, H. C. (1972). Filtration Boasts Tertiary Treatment, Mixed-Media Filters, Plus Filter Aids, Turn In a Top Performance. Water And Waste Engineering, New York, Vol9, No4, P34 37.

In-depth, coarse-to-fine filtration in mixed media downflow beds, utilizing alum or polymer filter aids, can play an important part in many overall treatment schemes. coarse-to-fine filtration adds to overall plant reliability in terms of continuous operation, consistent effluent quality, and backing up biological and chemical treatment upsets. filtration prior to granular carbon adsorption protects the carbon against fouling by suspended solids and colloidal matter. the selection between pressure filters or open gravity beds is based on the overall economies of pumping and construction materials. lime, alum, or nonionic, anionic, or cationic polymers may be used as filter aids on mixed media beds, and can maintain turbidity as low as0.05 jtu. the optimum dose of filter aid allows the terminal head loss (usually 10 ft.) and turbidity breakthrough (about 1 to 2 jtu) to occur simultaneously. filter underdrain systems are used to support the filter media, collect the filtered water, and distribute the backwash water uniformly over the bed. a bed of supporting gravel (usually 8 to 18 in. in depth and 2 in. to 10 mesh in gradiation) is used between the fine media and the underdrain. in sewage filters, a 3 in. thick layer of coarse (1 mm) garnet is needed between the fine media and supporting gravel. a detailed evaluation of mixed media filters on stream in south tahoe from 1965 to 1970 is included along with typical removals, cost tables, and a flow diagram. (barron-texas)

Shlemon, R. J. (1972). A quantitative study of soil erodibility in the Lake Tahoe Basin, Institute of Governmental Affairs, University of California, Davis, CA.

Siddiqi, F. H. (1984). Strength Evaluation Of Cohesionless Soils With Oversize Particles (Rockfill Dams, Cyclic Earth Static System Compliance Correction), University Of California, Davis.

Modeling criteria to be used for the preparation of the conventional laboratory specimens needed for the prediction of the static and cyclic strength behavior of the “total” material containing oversized particles, is presented and its validity discussed. To experimentally verify the validity of the modeling criteria, laboratory static and cyclic triaxial tests were performed on the assumed prototype material with 2-inch maximum size particles and the modeled conventional specimens with 1/2-inch maximum size particles. The results obtained for the assumed prototype and the modeled specimens were compared and conclusions regarding the validity of the modeling criteria were drawn. Two distinctly different types of gravelly materials were selected for the study. One material came from Lake Valley Dam, a rockfill dam located in the Sierras, approximately 50 miles northwest of Lake Tahoe, and owned by the Pacific Gas and Electric Company of San Francisco. The other material came from Oroville Dam. Where as the Lake Valley gravel is very well graded, the Oroville gravel is more uniformly graded. To investigate the influence of relative density on the modeling criterion, the tests were conducted on samples with wide range of relative density. The specimens of the Lake Valley gravel were prepared at relative densities of 40 and 60 percent for cyclic tests and 58 percent for static tests. A relative density of 84 percent was utilized for cyclic testing of the Oroville gravel. The modeling criteria presented in this study very closely predicted the cyclic and static undrained strength behavior of the assumed prototype materials.

Siebert, H. L., R. G. Bailey, et al. (1972). Land use planning at Lake Tahoe. .

Sierra Libraries Information Consortium (1978). . Living at Tahoe : the land use decision making process, Tahoe City, CA, Bureau of Governmental Research, University of Nevada, Reno, NV.

Sierra Pacific Power Company and E.D.A.W. Inc. (1978). Lake Tahoe Basin : electrical transmission master plan and environmental impact assessment, Sierra Pacific Power Company.

Simpson, R. G. (1974). Selected Hydrologic Data, Sagehen Creek Basin Near Truckee, California, 1954-72, U.S. Geological Survey, Menlo Park, CA.

Sagehen creek in tahoe national forest near truckee, calif., drains a near-virgin environment. since december 1953 the average discharge of sagehen creek has been 12.4 cubic feet per second, the annual peak flows range from 27 to 765 cubic feet per second, and minimum daily flows occur in autumn and are generally about 2.0 cubic feet per second. mean water temperature is about 2 deg c in the winter and 13 deg c in the summer. sediment concentration during 1968-72 has ranged from 1 to 26 milligrams per liter. conductivity measurements ranged from 40 to 140 micromhos. results of coliform bacteria counts and chemical analyses of water samples and surveys of plant and animal life have indicated no pollution. little or no scour or fill has occurred, and no changes in channel alinement have been noted. (knapp-usgs)

Singer, M. (1974). Erodibility Of Tahoe Soils. Lake Tahoe Research Seminar II, South Lake Tahoe, CA.

The erosion program at tahoe has three major focuses: (1) to measure actual amounts of erosion occurring on different kinds of soil, (2) to determine actual erodibility of soils, and (3) to trace the sources of sediments found in streams. plots were established at seven sites on seven different soil series. the plots were 50 feet long and 6 feet wide, surrounded on three sides by redwood borders which were buried in the soil and extend a bit above the soil surface so that just erosion and just sediment movement within those borders could be measured. at the bottom end of the plots a pit was dug and lined with a cloth so that the sediment could be caught and weighed after different storm events. rainfall on each of the sites was measured. the data from the plots were used to develop mathematical models to predict erosion. the basic chemical and physical properties of the different kinds of soils found in the tahoe basin were used to trace sediments from their source to the lake.

Sinton, P. and F. S. Walter (1962). Childhood memories of summers at Lake Tahoe. San Francisco, CA, Grabhorn Press (Priv. print.).

Skalski, A. M. (1983). Factors and Effects Of Crowding On Lake Tahoe Beaches, University Of Nevada, Reno.

Skau, C. M. (1970). College Sees Need For Resource Management...Thus Need For a Renewable Natural Resources Division. .

The renewable natural resources division, university of nevada, is concerned with education, research, development and management of undeveloped areas such as rangelands, forests, streams and lakes. a master plan is developed for the tahoe basin, based on hydrologic, vegetation and soil studies. improvement of wildlife habitat is advocated for rangelands. soil surveys offer methods of interpreting species distribution. environmental effects on quality are emphasized. (popkin-arizona)

Slayback, R. D. and R. F. Clary, Jr. (1987). Vegetative solutions to erosion control in the Tahoe basin. Erosion control : your’re gambling without it, Conference XVIII International Erosion Control Association, Reno, NV, International Erosion Control Association, Pinole, CA.

Slayback, R. D. (1988). Plants for erosion control in the Tahoe Basin. Am Nurseryman 167(1): 166.

Sloane, B. A. and T. E. Dickinson (1979). Computer Modeling for the Lake Tahoe Basin: Impacts of Extreme Land-Use Policies on Key Environmental Variables. Journal of Environmental Systems 9(1): 39-56.

A socio-economic computer simulation model of population, growth and land-use in the Lake Tahoe Basin utilizes the best available statistical data and incorporates views of regional planners and interested citizens. The model compares broad long-range social and economic implications of potential governmental policies. Major variables or submodels are: available jobs; locally employed seasonal residents; housing demand; housing supply; housing market reconciliation; basin acreage; year-round residents employment status; business units; year round residents' age structure; tourist visitor days; tourist amenities; and special factors. Computer simulation runs were made of seven extreme land-use policy packages which included the following policies: (1) construction and subdivision moratorium; (2) housing occupancy limitation, (3) removal of most campground and commercial limitations; (4) increase in number of residential units per acre; (5) additional acres zoned residential; (6) doubling of gambling casino facilities; and (7) new light industry. Each policy package was simulated using three different model versions to accomodate its high sensitivity to assumptions about tourism. Results show that the number of acres developed and the related lake water clarity reduction would be greater with upzoning policies such as density variances than with simulatory ones such as new industry promotion.

Smith, E. R., A. C. Hammon, et al. (1947). E.R. Smith map of Lake Tahoe & vicinity. Bijou, CA, Edw. R. Smith.

Smith, R. M. (1959). Geographic factors relative to the Lake Tahoe Basin, Lake Tahoe Area Council, South Lake Tahoe, CA.

Smith, R. M. (1959). Littoral drift - a study, Lake Tahoe Area Council, South Lake Tahoe, CA.

Smith, R. M. (1960). Aerial mapping : problems, costs and procedures for the Lake Tahoe area, R.M. Smith, Reno, NV.

Smith, R. M. (1960). Objectives of a planning program at Lake Tahoe, R.M. Smith, Reno, NV.

Smith, R. M. (1960). A preliminary survey and analysis of planning and development problems - Lake Tahoe portion of Washoe County, Nevada, R.M. Smith, Reno, NV.

Smith, R. M. and Universal Inc. (1963). A report and analysis of the demographic, economic, geographic and financial aspects of the Lake Tahoe basin and surrounding areas with particular reference to present and future trends in the southshore section, especially as applied to the Nevada (Douglas Co.) portion, in order to ascertain the potential need for a new savings and loan facility proposed to be located at the Kingsburg Grade intersection in Douglas County, Lake Tahoe, Universal Inc.: 28 p.

Smith, R. M. and Lake Tahoe Regional Planning Commission of Nevada and California (1967). A comparison of existing subdivision, zoning & other developmental controls in the Lake Tahoe basin, R.M. Smith, Reno, NV: 55 p.

Smith, R. M. and Lake Tahoe Regional Planning Commission (1969). Reconnaissance report, Lake Tahoe basin area, Lake Tahoe Regional Planning Commission, Reno, NV.

Smith, R. M. and United States Tahoe Regional Planning Agency (1970). Nevada Tahoe general plan; a general plan document for the Nevada portion of the Lake Tahoe Basin, Reno, NV.

Smith, R. M. and Tahoe Regional Planning Agency (1971). Housing study of the Lake Tahoe Basin; a report, [unpublished]: [4], 62 p.

Smith, G. L. (1973). A flora of the Tahoe basin and neighboring areas. San Francisco, CA, University of San Francisco.

Smith, R. C., J. E. Tyler, et al. (1973). Optical Properties and Color Of Lake Tahoe and Crater Lake. Limnology And Oceanography 18(2): 189-199.

Spectral irradiance has been measured as a function of depth in crater lake, oregon and lake tahoe, california. in lake tahoe, secchi disk observations and submarine photometer measurements have been recorded year round since july 1967 and beam transmittance has been measured as a function of depth. from these data the radiant energy input and certain optical properties of the two lakes are presented. since color is a principal esthetic feature of these lakes, a complete color analysis is also presented. this information provides an objective standard with which to compare possible future changes in the optical properties and in the esthetic appearance of crater lake and lake tahoe. the method can be applied generally to quantify the optical deterioration of any aquatic habitat and can detect such deterioration before it is noticeable by casual visual observation. (holoman-battelle)

Smith, J. L. (1975). Water Yield Improvement Research Of the Pacific Southwest Forest and Range Experiment Station and Its Usefulness to Wildland Resource Management. Lake Tahoe Research Seminar IV, South Lake Tahoe, CA, Lake Tahoe Environmental Education Consortium.

The project mission was to determine the effect of vegetation manipulation upon snow accumulation and melt, so that the changes imposed by vegetation manipulation can be programed to accomplish the desired purpose. an ultimate goal is to develop a model that can be used to estimate such use under any level of plant cover and for any complex of soil, aspect and slope. the results of the study suggest a feasible approach in developing such a model. water balances are computed by combining calculations for plant water use, soil water movement and energy balance. the current research task is the combining of all snow hydrology data into models of snowmelt with which a land manager, prior to timber harvest, may predict, the effects of alternative land management practices upon time of water delivery to the streams. a second task is the combining of the snow hydrology, plant water use and soil water movement data into models with which the land manager can determine prior to harvest the optimum form of harvest cut for maximizing water yield, aesthetic considerations, change in time of water yield or other management objectives.

Smith, J. K., A. J. Englande, et al. (1978). Characterization of Reusable Municipal Wastewater Effluents and Concentration of Organic Constituents, Gulf South Research Inst., New Orleans, LA.

Organic concentrates were collected from operating advanced waste water treatment plants for use in health effects testing. After reverse osmosis, the organics were further concentrated and then recovered by liquid/liquid extraction. Also, chemical, physical, and biological analyses were conducted of effluent to determine how the quality of the effluents compared with drinking water criteria. All advanced treatment plants tested were characterized by high quality effluents. Spot samples taken over a six to nine month period at six plants determined that nitrogen (ammonia and nitrate), phenol, odor, carbon chloroform extract, turbidity, and specific heavy metals exceeded drinking water standards in most cases. The plants tested were: Lake Tahoe, California; Blue Plains, District of Columbia; Pomona, California; Dallas, Texas; Escondido, California; and Orange County, California. (Small-FRC)

Smith, Z. G. and United States Forest Service - Pacific Southwest Region (1979). Summary draft environmental impact statement : Land management plan part 2 : Lake Tahoe Basin Management Unit : El Dorado, Placer, Alpine counties, California and Washoe, Douglas counties and Carson City, Nevada, USDA Forest Service, Pacific Southwest Region, Berkeley, CA.

Smith, A. Y. and R. J. Blackwell (1979). Application of Digital Image Processing Techniques and Information Systems to Water Quality Monitoring of Lake Tahoe. Satellite Hydrology, Fifth Annual William T. Pecora Memorial Symposium on Remote Sensing, Sioux Falls, South Dakota.

Lake Tahoe is one of very few natural lakes in the United States which has remained relatively undamaged by the encroaching developments of man. The management of Tahoe's water quality has become a subject of intensive study in recent years in an effort to define and limit the effects of nonpoint source pollutants that are input from the contributing drainage basins. As an aid to the water quality management effort, the Image Processing Laboratory at Caltech's Jet Propulsion Laboratory has interfaced Landsat data with topographic digital imagery from the Defense Mapping Agency, conventional maps, and tabular data to create a comprehensive information data base for Lake Tahoe and its environs. The project used the resources of the JPL developed IBIS programs to augment data gathered by the U.S. Forest Service and Department of Agriculture for the Tahoe Regional Planning Agency. The IBIS dat base method allowed cross correlation of Landsat imagery and topographic data with a variety of environmental parameters relating to such indicators as surface runoff, drainage basin acreage, and terrain configuration. Parameters were evaluated and compared for each drainage basin defined by the Tahoe Regional Planning Agency (1977). The methods used to construct and update the information data base are described and evaluated. In addition, the utility of including Landsat imagery is discussed.

Smith, Z. G. and United States Forest Service (1980). Land management plan part 2 : Lake Tahoe Basin management unit, El Dorado, Placer, Alpine counties California, Washoe, Douglas counties, and Carson City, Nevada : final environmental impact statement, USDA Forest Service, Pacific Southwest Region, Berkeley, CA.

Smith, R. L. and R. S. Oremland (1983). Anaerobic oxalate degradation: Widespread natural occurrence in aquatic sediments. Appl. Environ. Microbiol. 46(1): 106-113.

Significant concentrations of oxalate (dissolved plus particulate) were present in sediments taken from a diversity of aquatic environments, ranging from 0.1 to 0.7 mmol/liter of sediment. These included pelagic and littoral sediments from two freshwater lakes (Searsville Lake, Calif., and Lake Tahoe, Calif.), a hypersaline, meromictic, alkaline lake (Big Soda Lake, Nev.), and a south San Francisco Bay mud flat and salt marsh. The oxalate concentration of several plant species which are potential detrital inputs to these aquatic sediments ranged from 0.1 to 5.0% (wt/wt). In experiments with litter bags, the oxalate content of Myriophyllum sp. samples buried in freshwater littoral sediments decreased to 7% of the original value in 175 days. This suggests that plant detritus is a potential source of the oxalate within these sediments. These results suggest that anaerobic oxalate degradation is a widespread phenomenon in aquatic sediments and may be limited by the dissolved oxalate concentration within these sediments.

Smith, G. L. (1983). Supplement to a flora of the Tahoe basin and neighboring areas. Wasmann J. Biol. 41(1-2): 1-46.

This supplement presents new distribution records and adds 2 new families, 38 genera, 111 species, 14 infraspecific taxa and 2 natural hybrids to the flora of the Tahoe basin and neighboring areas.

Smith, E. (1991). Incline Village/Crystal Bay defensible space handbook : a volunteer's guide to reducing the wildfire threat. Reno, NV, University of Nevada-Reno.

Smith, S. O., California Dept. of Parks & Recreation, et al. (1991). Emerald Bay barges archaeological survey, 1989-1990, California Dept. of Parks & Recreation, Sacramento, CA.

Snider, W. M., J. L. Kershner, et al. (1987). Instream flow requirements of salmonid resources, Lake Tahoe Basin, California and Nevada, Resources Agency, State of California. Dept. of Fish and Game, Sacramento, CA.

Snyder, J. H. (1985). Fiscal Year 1984 Program Report (California Water Resources Center), University of California, Davis, Water Resources Center.

A synopsis is presented of the results of each of the research projects sponsored under the 1984 Water Research Institute Program (WRIP) for the University of California Water Resources Center. It also contains summaries of water problems and issues in California and the Water Resources Center's Program Goals and Priorities, Information Dissemination Activities and Cooperative Arrangements. The California WRIP package is a subset of the Center's overall research program and consists of five projects investigating the following topic areas: The Diffusion of Low-Volume Irrigation Technology in Western Agriculture, Structural Impacts of the Reclamation Reform Act of 1982 on California Agriculture, The Direct Quantification of Atmospheric Dry Acid and Nutrient Deposition on Western Mountain Lakes, Application of a Paired Watershed Research Design to Evaluate Instream Effects of Watershed Management Activities in North Coastal California, Interaction of Nemagon (DBCP) with Constituents of Water-Soil Systems.

South Tahoe Public Utility District and Brown and Caldwell (1959). Specifications for construction of sewage treatment plant, Brown and Caldwell, San Francisco, CA: 126 p.

South Tahoe Public Utility District and Jones & Stokes Associates (1979). Final environmental impact report for the South Tahoe Public Utility District water system master plan, Jones & Stokes Associates, Sacramento, CA.

South Tahoe Public Utility District, Jones & Stokes Associates, et al. (1983). South Tahoe Public Utility District wastewater facilities planning program: draft supplemental environmental impact report, Jones & Stokes Associates, Sacramento, CA.

Southern Pacific Company (1900). Lake Tahoe, California : [brochure]. San Francisco, CA, Southern Pacific Company: 1 sheet ([15] p.).

Southern Pacific Company (1900). By Tahoe shores. San Francisco, CA, Southern Pacific Company.

Southern Pacific Company (1902). Lake Tahoe. San Francisco, CA, Sunset Press: 1 sheet.

Southern Pacific Company (1909). A guide to the Lake Tahoe region, California. San Francisco, CA, Southern Pacific Company.

Southern Pacific Company (1915). The Tahoe country. San Francisco, CA, Southern Pacific Company.

Southern Pacific Company (1926). Tahoe Tavern, California : reached by Southern Pacific, Lake Tahoe Route via Ogden. Lake Tahoe, CA, Lake Tahoe Co.

Southern Pacific Company (1927). Lake Tahoe. [San Francisco, CA, Southern Pacific Company.

Spink Engineering Company (1967). A report on the formation of a municipal water system for the City of South Lake Tahoe, California, Spink Engineering Company, Sacramento, CA.

Squires (ed.), P. (1977). Final Report on The Pyramid Lake Pilot Project, 1970-1975, Volume 1, Text of Report, University of Nevado-Reno, Lab. of Atmospheric Physics, Reno, NV.

A randomized cloud seeding project was carried out over an area of 1052 sq. mi. near Lake Tahoe for 3 winter-spring seasons. Six remotely controlled silver iodide generators were located on the upper western slopes of the Sierra Nevada, and precipitation was measured by means of 23 recording gauges and 54 non-recording gauges. A total of 132 experimental periods (corresponding to forecast synoptic scale storms) averaged some 35 hours in duration. The preliminary statistical analysis is based on a comparison of periods randomly assigned to be seeded, or not seeded, on a 50-50 basis. However, for a variety of reasons, seeding actually occurred for only about half the total hours assigned to be seeded. Thus, the effect of seeding can appear here only in a somewhat diluted form. The varying duration of experimental periods was taken into account by assuming a Gamma distribution of precipitation amounts, with the shape parameter a linear function of duration; the effect of seeding then appeared as a change in the scale parameter. By means of a forecast, storms were classified as heavy, moderate, light or marginal. The evidence for a positive seeding effect is not conclusive; however, the apparent effect or seeding all categories of storms was an increase of 16%. In the group comprising heavy and moderate storms, the apparent increase was 25%. If the true effect had been equal to this, the chance of detecting it, at the 5% significance level, would have been about 1 in 5.

Stafford, A. A. (1936). Touring Tahoe, a handbook of useful information for the Lake Tahoe visitor. Carson City, NV, Stafford's 'MARK TWAIN' Book Shop.

Stander, G. J., L. R. J. Van Vuuren, et al. (1970). Current Status Of Research On Waste Water Reclamation In South Africa. Preprint.

The efficient removal of the predominately organic impurities from waste water calls for the application of more sophisticated techniques than are normally applied in conventional water treatment. the successful operation of large-scale plants at windhoek and lake tahoe have confirmed that a combination of biological, chemical and physical processes may be considered as most feasible current approach in waste water reclamation. research conducted by the national institute of water research has been focused on further refinements to some individual process units. a pilot plant was constructed in pretoria to study the physico-chemical route for waste water reclamation. these investigations have culminated in the design and construction of a 1 million gal/day demonstration plant which will be a basis for further research on waste water reclamation in south africa, with the main objectives of formulating design criteria for larger reclamation plants and to evaluate costs and performance data. particular emphasis is placed on the technique developed for the application of powdered activated carbon as an integral part of the renovation process for the adsorption of dissolved organics from secondary effluents. (selby-texas)

State of California (1971). Special Water Quality Provisions. California Water Code Ann Secs 13950 thru 13951.

If any area of any district in the lake tahoe basin provides a sewer system and treatment facilities sufficient to handle and treat any resultant waste, along with transportation facilities sufficient to transport resulting effluent outside the basin, then the further use of cesspools or other means of waste disposal is a public nuisance. such district shall require all buildings to be connected with the sewer system within a period of not less than 90 days. on or after january 1, 1972, waste from within the lake tahoe watershed shall be placed in sewer systems and treatment facilities only. such waste may be placed in holding tanks until it can be transported to treatment facilities. use of cesspools, septic tanks, or other means of waste disposal after january 1, 1972, shall be a public nuisance. occupying a building which discharges waste in violation of this section is a public nuisance, and actions may be brought to enjoin such occupants. if the regional board of the lahontan region finds that the operation of septic tanks and cesspools will not affect water quality and that sewering would damage the environment, then this section shall not apply. (robinson-florida)

State of California (1975). Fallen Leaf Protection Association v South Tahoe Public Utilities District (Provisions of California Water Code Requiring Specific Property Owners to Connect to Sewer Lines Upheld Against Constitutional Challenge). 120 Cal Rptr 538-47.

Plaintiff property owners challenged the validity of sections of the California Water Code by a cross-complaint alleging inverse condemnation. The plaintiffs' property was located in the Lake Tahoe Basin; plaintiffs disposed of waste through the use of cesspools and septic tanks. The Public Utilities District, in the course of constructing a sewer collector line through the property had sought to restrain plaintiffs from occupying any buildings on their property. In the cross-complaint plaintiffs claimed fair market value of their property, contending that the state lacked the power to compel them to connect to a sewer line, and that certain provisions of the California Water Code were arbitrary, unreasonable, and discriminatory. The California Third District Court of Appeal held that the actions of the state under the Water Code to be a valid exercise of police power in light of legislative determination that a clear and present danger to the environment exists in the Lake Tahoe Basin; that under the circumstances no invidious discrimination against specific property owners could be found; and that a statute based on a permissible legislative purpose is to be presumed valid unless plainly arbitrary.

State of Nevada Permits for Diversion, Transfer, Appropriation of Water from Interstate Streams; Stored Water; Waste Water. Nev. Rev. Stat. secs 533.515 thru 533.540.

A permit for water appropriation may be granted in Nevada when the point of diversion lies outside the state if the other state authorizes the diversion of its water for use in Nevada. No permit will be issued to change the use or to transfer water or water rights of any water appropriated for beneficial use in Nevada for use beyond the state borders. Waters from interstate streams may be diverted within Nevada for beneficial use in another state only when state has a reciprocal water diversion agreement. It is a misdemeanor to divert and not use or to waste water of any river, stream, or creek during the irrigation season. Lake Tahoe may be used by the United States for reservoir purposes to aid the Truckee-Carson reclamation project. Guidelines and procedures are provided for the refunding of water district funds from county treasuries to water users and calimants of rights to waters of the Carson River or its forks. (Mulligan-Florida)

State of Nevada (1963). Protection Of Lake Tahoe Watershed. Nevada Revised Statutes Secs 445.080 THRU 445.120.

For the purpose of protecting lake tahoe, it is unlawful for anyone to construct without a permit: (1) any commercial or private building unless it does not require domestic water or sewage disposal, (2) any water supply system, or (3) any sewage disposal system. when the source of domestic water or place for sewage disposal would create a health hazard, the permit should be denied. direct discharge of sewage or other wastes into any water body within the watershed is prohibited. if discharge into lake tahoe is considered necessary by the health division, the division shall issue a permit subject to the installation of the necessary sewage works to protect the lake. the division is empowered to make necessary rules, regulations, and inspections to carry out the purposes of the act. (gallagher-florida)

State of Nevada (1974). Morales V. Westergard (California-Nevada Interstate Compact and Lake Tahoe Condominiums). Nev. Rev. Stat. sec 522 P2D 1224-25(Nevada, 1974).

Petitioner developers attempted to get their condominium map, which described their development's sewage and water supply systems, approved by the bureau of environmental health. the bureau refused to give its approval, however, finding that the development's use of water from the lake tahoe basin would violate the california-nevada interstate compact. as a result of this decision, petitioner sought a writ of mandamus from the supreme court of nevada to compel the bureau to approve the condominium map. the court granted the relief sought, finding that the development's proposed use of water would not violate the interstate compact. the court noted that water taken by the development from the lake tahoe basin would be returned, except for a minimal amount which would be used for lawn care, to the basin by natural gravity through the closed sewer system. therefore, the compact's aim of controlling and conserving water use within the basin would not be violated by the approval of the condominium map.

State of Nevada (1975). Protection of Lake Tahoe and its Watershed. Nev. Rev. Stat. secs 445.080 thru 445.120.

Written permission must be obtained from the bureau of environmental health before any person, firm, association or corporation can construct any dwelling or building for human occupancy or commercial use, any drinking water procurement or distribution system, or any sewage collection or disposal system in the Lake Tahoe watershed. Permission is also required for any construction in Lake Tahoe, any alteration of the shoreline, or any dredge and fill operation. No permits will be issued if a health hazard or threat to water quality would result. Discharge of wastes into the lake or its watershed is prohibited except in certain instances which require a discharge permit. The bureau of environmental health is authorized to enforce reasonable regulations and to inspect any property in the watershed area to determine compliance with the regulations. Anyone violating any provisions of this act or any regulations promulgated to enforce it shall be quilty of a misdemeanor. (Cocheu-Florida)

State of Nevada (1975). California-Nevada Interstate Compact. Nev. Rev. Stat. sec 538.600.
The major purposes of the California-Nevada Interstate Compact are to promote equitable apportionment of water, governmental cooperation, and future development, use, conservation and control of water within the Lake Tahoe, Truckee River, Carson River and Walker River Basins. Guidelines for the creation, financing and general powers of a California-Nevada Compact Commission are stated. Information regarding storage rights and construction of an overflow weir for Lake Tahoe is given. Allocations and diversion rights for the waters of the Truckee and Carson Rivers are specified. Detailed plans for the distribution of waters of the Walker River are described, including allocations for the Topaz Reservoir and the Walker River Indian Reservation. Waters of the Walker River in excess of allocated amounts shall be administered by a watermaster nominated by the Commission. Both states have the right to develop ground waters and springs within their boundaries if such use does not reduce the water allocated to the other state, and either state may initiate proceedings if it believes its allocation is adversely affected. Violations of this compact shall be investigated by the commission which may take any necessary remedial action including injunctive relief. (Mulligan-Florida)

Stead, S. and R. L. Post (1989). Willows (Salix species). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). White fir (Abies concolor). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). White alder (Alnus rhombifolia). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Western chokecherry (Prunus virginiana). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Sulfur flower, buckwheat (Eriogonum umbellatum). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Sugar pine (Pinus lambertiana). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). River birch (Betula nigra). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Quaking aspen (Populus tremuloides). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Ponderosa pine (Pinus ponderosa). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Mountain spiraea (Spiraea densiflora). Reno, NV, Fact-Sheet-Coll-Agric-Univ-Nev-Reno-Nev-Coop-Ext: 2 p.

Stead, S. and R. L. Post (1989). Mountain pride penstemon (Penstemon newberryi). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Mountain delphinium (Delphinium glaucum). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Moss pink (Phlox subulata). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Leopard lily (Lilium pardalinum). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Jeffrey pine (Pinus jeffreyi). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Incense cedar (Calocedrus decurrens). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Hartweg's Iris (Iris hartwegii). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Evening primrose (Oenothera hookeri). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Crimson columbine (Aquilegia formosa). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Common yarrow (Achillea millefolium). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Common monkey-flower (Mimulus guttatus), Lewis monkey-flower (Mimulus lewisii). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Brewer's lupine (Lupinus breweri), Sierra lupine (Lupinus confertus), Gray's lupine (Lupinus grayi). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Blanket flower (Gaillardia aristata). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Black cottonwood (Populus trichocarpa). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Stead, S. and R. L. Post (1989). Applegate's paintbrush (Castilleja applegatei). Reno, NV, Fact Sheet Coll Agric Univ Nev Reno Nev Coop Ext: 2 p.

Steiner, F. (1983). Regional planning in the United States: Historic and contemporary examples. Landscape Plann 10(4): 297-315.

Landscape planning occurs within the jurisdiction of various levels of government, from local to international. Early ideas about regional planning are traced from the 19th century into the 20th century. The social vision of the New Deal is discussed in relationship to the harnessing of human and natural resources in such projects as the Tennessee Valley Authority, the Columbia Basin Irrigation Project, and the Greenbelt new towns. The ideas about regional planning of John Friedmann and Ian McHarg are contrasted. Examples of American regional planning are summarized, and include: the Appalachian Regional Planning Commission; New York's Adirondack Park Agency; the Tahoe Regional Planning Agency; the New Jersey Pinelands Commission; and the U.S Forest Service's system for land and resource management.

Stollery, D. J. (1969). Tales of Tahoe, Lake Tahoe history, legend and description. Tahoe City, CA, Tahoe City World.

Stone, R. H., III (1980). Contamination Of the Truckee-Tahoe Watershed By Upwind Seeding Programs, University Of Nevada, Reno.

Strome, M. (1980). Passenger rail feasibility study : California access to South Lake Tahoe, [publisher and place published unknown.

Strong, D. H. (1981). Preservation efforts at Lake Tahoe, 1880 to 1980 Nevada, forest lands. J For Hist 25(2): 78-97.

Strong, D. H. (1984). Tahoe, an environmental history. Lincoln, NE, University of Nebraska Press.

Strub, T., T. M. Powell, et al. (1983). Temperature and transport patterns in Lake Tahoe: Satellite imagery, field data and a dynamical model. Congress of the International Assocation of Limnology, Lyon, France.

The use of satellite images, in situ temperature sections, measured winds and a numerical wind-driven model have enabled them to determine the mean spring and summer surface temperature structure at Lake Tahoe. Typical afternoon SW winds cause upwelling on the West and in the South, and the accumulation of warm water on the East. Cold water from the West moves to the Northeast and at least during some periods warm water from the East returns to the West in a large clockwise gyre which occupies the northern half of the open lake. The current pattern in the South is less clear nad may be more variable due to winds that switch from northerly to southerly during the day, and have also been found to be more variable from day to day. Areas of warm water identify locations where water is blown against the shore; these indicate that the shoreline inflows in the Northeast will not be dispersed as rapidly as inflows on the west side. Previous synoptic studies have found high levels of primary productivity in the northeast and southeast corner (Godlman 1974), and we suggest that inflowing water may be trapped against the coast there by the wind-driven currents.

Strub, T. and T. M. Powell (1983). Surface temperature and transport patterns in Lake Tahoe -- comparison between satellite images and a numerical model. Eos Trans. Am. Geophys. Union. 64(45): 743.

Some 62 satellite images showing surface temperature fields during summers of 1980-82 have been analyzed. The authors present the mean fields, sequences of image, and the dominant horizontal patterns of covariability as determined from eigenvector analysis. The data suggest a semi-permanent east-west temperature gradient and a large clockwise gyre in the northern half of the lake. They drive a 3-layer, finite difference, numerical model with actual winds measured during summer, 1982. Model results explain the cold water that upwells on the west and the warm water that accumulates on the east of the basin, as well as the temporal development of the gyre.

Strub, P. T. and T. M. Powell (1986). Wind Driven Surface Transport in Stratified Closed Basins: Direct Versus Residual Circulations. Journal of Geophysical Research 91(7): 8497-8505.

The dynamics of wind-driven circulations in moderate-sized, stratified basins is investigated through numerical modeling of a variety of wind fields observed at Lake Tahoe. Direct and residual circulation characteristics of stratified and homogeneous basins are described. Previous studies of stratified closed basins have emphasized residual circulations that result in a single cyclonic mean gyre during light to moderate winds. Lake Tahoe observations have shown that currents are more constant in direction, with a double gyre pattern of surface circulation dominated by an anticyclonic northern gyre. Model experiments demonstrate that the curl of the wind stress must be included to obtain a direct double gyre circulation similar to observations. Horizontally uniform winds cause a residual circulation similar to that reported at other lakes. The model can be used to calculate the vorticity budget in order to clarify the role of wind stress curl in creating the direct double gyre. (Michael-PTT)

Strub, P. T. and T. M. Powell (1987). Surface temperature and transport in Lake Tahoe: Inferences from satellite (AVHRR) imagery. Cont. Shelf Res 7(9): 1001-1013.

Analysis of satellite infra-red images in summer at Lake Tahoe, California-Nevada, shows that upwelling on the west side of the lake causes an east-west temperature gradient that changes in strength from early spring to late summer, with maximum horizontal gradients in late June and early July. The mean temperature fields, sequences of individual images, and empirical orthogonal function analysis all suggest the presence of a large anticyclonic gyre in the north of the lake and a weaker cyclonic gyre in the south. This agrees with a numerical model of the lake's surface circulation, which has been driven by the measured diurnal summer wind fields. This circulation pattern is different from that reported at other lakes and may be an important factor in maintaining areas of maximum primary productivity seen in past synoptic studies of the lake.

Suhr, L. G. (1971). The Concept Of Wastewater Reclamation. .

The concepts of wastewater reclamation versus its antithesis, that wastewater is fit only for disposal, are discussed. probably the most important aspect of wastewater reclamation is pollution abatement. biological oxygen demand in natural waters is lowered and there is less loss of desirable fauna. the lessened p and n levels in turn lessen eutrophication dangers. the reclaimed waters may be used in agriculture, industrial processes, groundwater recharge or domestic recyling. the economic advantages that may be gained are illustrated by the las vegas, nevada situation where the estimated net costs of recycling may be less than the cost of merely retreating waste water for disposal, and colorado springs where recycled effluent provides 2 qualities of non-potable water. past reclamation projects described are those of chanute, kansas, windhoek, south-west africa, south lake tahoe, california and denver, colorado. the treatment process and removal efficiency for the south tahoe plant are detailed. the major problems of reuse involve bacterial and viral content and dissolved solids content. much public education will be necessary in order to gain widespread acceptance of recycled domestic water. (see also w72-03716) (casey-arizona)

Suk, T. J., J. L. Riggs, et al. (1986). Water contamination with Giardia in back-country areas. National Wilderness Research Conference: Current Research, Fort Collins, CO.

Cysts of Giardia spp. were detected in 27 of 78 water samples collected at remote streams in California's Sierra Nevada range. The data suggest that intensity of human recreational use may play a significant role and/or be a useful indicator in the contamination of surface water with Giardia . Cysts of Giardia spp. were detected in 26 of 309 fecal samples collected from cattle grazing in back-country areas in the Sierra Nevada. The use of monoclonal antibodies allowed the detection of human-infective Giardia in cattle stools. The role of wild mammals in the transmission of human giardiasis remains unclear.

Suk, T. J., K. Sorenson, et al. (1986). Map Showing the Number of Giardia Cysts in Water Samples from 69 Stream Sites in the Sierra Nevada, California. Sacramento, CA, U.S. Geological Survey, Water Resources Div.

During 1984, 60 stream sites were sampled for the presence of Giardia sp. cysts. The sampling sites ranged in elevation from 6,000 to 12,000 feet, and were distributed over a distance of more than 200 miles, from the Lake Tahoe basin in the north to Mt. Whitney in the south. Cysts of Giardia were detected in 27 of 78 samples. The number of cysts detected ranged from 1 to 41. Of the 27 samples positive for Giardia, only 1 cyst was detected in each of 10 samples, 2 cysts were detected in each of 8 samples, 3 cysts were detected in each of 3 samples, 4 cysts were detected in each of 2 samples, and 5, 6, 14, and 41 cysts were detected in 1 sample each. (USGS)

Summit Engineering Corporation (1980). Double Diamond Development : internal circulation analysis, Summit Engineering Corporation.

Sunset Photo-Engraving Company (1880). Sierra highlands. [San Francisco, CA, Sunset Photo-Engraving Company.

Symonds, P. J. (1972). Central places in a resort region: a study of urbanization of the Lake Tahoe Basin. Sacramento, CA, [publisher unknown].

Tahoe City Public Utility District and Dewante Stowell Consulting Engineers (1983). Rubicon water system reconstruction : project report, Dewante and Stowell, Sacramento, CA.

Tahoe Regional Planning Agency (1967). Report On Water Distribution In the Lake Tahoe Region, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Although the largest fresh-water lake in california is within the confines of the tahoe basin, the basin, as a whole, has never had adequate waterdistribution systems to serve the public. there are 66 separate water companies in the tahoe basin, some of which have multiple isolated water systems. present trends in the development of water distribution are discussed. water distribution goals and recommendations of the tahoe regional planning agency are outlined: maintain federal water quality standards; water systems should provide adequate supplies for fire protection as well; existing developed areas should be required to meet these standards; and new developments should be required to meet these standards. a brief description of the various individual water systems is included. (davis-chicago)

Tahoe Regional Planning Agency (1970). Report on Lake Tahoe region solid waste collection and disposal, Tahoe Regional Planning Agency, South Lake Tahoe, CA: iii, 7 p.

Tahoe Regional Planning Agency and Lake Tahoe Regional Fire Association (1970). Report on Lake Tahoe region fire protection, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1970). Report on Lake Tahoe region electrical supply, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency and Lake Tahoe Area Council (1970). Research coordination and utilization, the Tahoe Basin, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1970). Report on water distribution in the Lake Tahoe region, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1970). The plan for Lake Tahoe. South Lake Tahoe, CA, Tahoe Regional Planning Agency.

Tahoe Regional Planning Agency and United States Forest Service (1971). Recreation resources of the Lake Tahoe region : a guide to planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1971). Hydrology and Water Resources Of the Lake Tahoe Region, a Guide For Planning, Tahoe Regional Planning Agency, Committee on Water Distribution, South Lake Tahoe, CA. 26.

Most of the land development activity in the lake tahoe region reveals either lack of awareness of important aspects of the hydrology of the area or else deliberate ignoring of them. only recently has zoning of floodplain areas been recognized as a need. local governmental agencies have not yet developed realistic systems for disposal of storm drainage; present practice is simply either to deliver overland flow from storms directly to lake tahoe or else to the nearest stream and without any treatment to reduce its potential for water pollution. no one in authority has recognized that the effect of increased runoff from urban areas into the natural drainage systems is bad. however, some attention is being devoted to on-site problems in developed areas. several guides to planning are presented. (1) the damage to man's installed facilities caused by such natural events as storms and floods, avalanches, and landslides can be held to a minimum by delineating the areas where they have occurred and zoning to avoid them. (2) the adverse effects of increased runoff caused by changes in land use can be reduced by recognizing these effects in advance and modifying the land use accordingly. (3) the consequences of structural manipulation of water can be evaluated by analyzing the short-term, long-term, off-site, and on-site effects of the proposed change. (4) the shoreline erosion of lake tahoe could be evaluated in terms of damage done during which water levels and the feasibility of lowering the lake during periods when storms are most likely to occur. (5) climatic conditions such as smog or manmade weather modification could be evaluated in terms of their consequences to the natural drainage systems.

Tahoe Regional Planning Agency (1971). Report on Lake Tahoe Region wastewater collection, treatment and disposal, Tahoe Regional Planning Agency, South Lake Tahoe, CA: ii, 1l, [23] p.

Tahoe Regional Planning Agency and United States Forest Service (1971). Geology and geomorphology of the Lake Tahoe Region : a guide for planning. South Lake Tahoe, CA, Geology Committee of Tahoe Regional Planning Agency and Forest Service.

Tahoe Regional Planning Agency and United States Forest Service (1971). Scenic analyses of the Lake Tahoe region : a guide to planning ; prepared for Tahoe Regional Planning Agency and Forest Service, U.S. Department of Agriculture. South Lake Tahoe, CA, Tahoe Regional Planning Agency and Forest Service.

Tahoe Regional Planning Agency and United States Forest Service (1971). Land resources of the Lake Tahoe region : a guide for planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1971). Water Resources In the Lake Tahoe Region, Tahoe Regional Planning Agency, South Lake Tahoe, CA. Committee on Water Distribution. 16.

An overall view of the water resource in the lake tahoe region is presented. this region includes lake tahoe and its outlet, the truckee river. a history is presented of the various claims and uses of the lake tahoe water. the operating policies for the lake tahoe discharge gates as developed over the last 60 years are described. because the region spans two states, california and nevada, a discussion of the california-nevada interstate compact is presented together with nevada state water policy and current divisions and uses of the lake tahoe water in both california and nevada. finally, future needs in the region are examined. (davis-chicago)

Tahoe Regional Planning Agency and United States Forest Service (1971). Vegetation of the Lake Tahoe Region; a guide for planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1971). Proposed regional plan, Lake Tahoe region California-Nevada, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1971). Lake Tahoe region storm drainage, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1971). Report On Lake Tahoe Region Waste Water Collection, Treatment and Disposal, Tahoe Regional Planning Agency, South Lake Tahoe, CA, Committee on Water Distribution.

The basic goals of the waste water program for the lake tahoe basin are: (1) the preservation of water quality in lake tahoe by the removal of waste water from the basin through connections of all waste-producing facilities to an adequate collection, treatment and export system; and (2) encourage and support the development of treatment methods which will produce water suitable for beneficial reuse in the basin. a history of the lake tahoe region waste water collection, treatment, and disposal is presented. the present status of sewage export; policy regarding the disposal of sewage and industrial waste waters within the lake tahoe basin; future service areas; future projects, and an outline of regional waste water treatment plants and export systems are included. (davis-chicago)

Tahoe Regional Planning Agency (1971). Water resources in the Lake Tahoe Region, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1971). Limnology and Water Quality Of the Lake Tahoe Region, a Guide For Planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA, Committee on Water Distribution. 14.

This review of the water quality of lake tahoe provides several conclusions and recommendations pertinent to planning. knowledge of the aquatic ecosystem in the lake tahoe basin is so limited that the ecosystem can be described only by broad trends and care must be taken in predicting the effects of increased human population in the basin. available data indicate that the waters of lake tahoe are still relatively pure. some typical initial signs of pollution are appearing in some tributary streams and several near-shore areas of the lake. the similar deterioration of the aquatic ecosystem caused by urbanization in other areas is starting in the tahoe basin. corrective and preventive action should be taken before the final results of these trends become apparent. several recommendations are: (1) begin soil stabilization practices in these areas contributing sedimentation and require such practices to be followed in future development; (2) improve existing and future storm drainage facilities; (3) consider reduction of area of impervious surfaces and retention of some storm water on-site to be percolated into the soil; (4) prohibit discharge of petroleum and other toxicants into lake tahoe, streams and storm drainage systems; (5) investigate the effects of fertilizers in the tahoe basin; (6) establish streamside environmental zones on each side of all annual streams; (7) use only pesticides that have been proved to be environmentally safe; (8) do not introduce new species into the aquatic ecosystem until ecologic effects have been studied and proven safe; (9) investigate the role of nutrients in the lake tahoe ecosystem. (davis-chicago)

Tahoe Regional Planning Agency (1972). Shoreline ordinance, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1972). Land use ordinance, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1972). Lake Tahoe open space element : revised draft, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency and EDAW Inc. (1973). Lake Tahoe, conservation, recreation & open space elements, Eckbo, Dean, Austin & Williams, San Francisco, CA.

Tahoe Regional Planning Agency (1973). Transportation systems planning process, Tahoe area : study design (revised) and unified work program for the Tahoe Region, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1973). Stateline subregional study : preliminary draft , April 23, 1973, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency and J.B. Gilbert & Associates (1974). 1974 comprehensive planning program : public facilities master plan : storm drainage & surface water runoff, fire services, power & gas supply. Sacramento, CA, J. B. Gilbert & Associates.

Tahoe Regional Planning Agency and Cooper Clark Associates (1974). Natural hazards of the Lake Tahoe basin, California--Nevada, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1974). Lake Tahoe Basin : justification for designation as regional water quality planning agency (Section 208), Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1975). Final environmental impact report on the Tahoe regional transportation plan alternatives : appendix to the draft environmental impact report developed by the Tahoe Regional Transportation Study, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1975). The CTRPA regional plan : draft, May 12, 1975, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1976). Tahoe Basin national recreation areas : feasibility study, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1976). Preserving Lake Tahoe's water quality : a draft plan for the Tahoe basin, January, 1976. South Lake Tahoe, CA, Tahoe Regional Planning Agency.

Tahoe Regional Planning Agency (1976). General Plan update workbook : 1976, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1977). Lake Tahoe Basin water quality management plan, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1978). Tahoe regional plan : proposed, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1978). Impact assessment : Tahoe regional plan : proposed, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1978). Housing and community development element, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1979). Grading ordinance, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1981). Lake Tahoe basin water quality management plan ; Draft environmental impact statement. Sacramento, CA, The Board.

Tahoe Regional Planning Agency and Association of Bay Area Governments (1982). How to protect your property from erosion : a guide for homebuilders in the Lake Tahoe Basin, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1982). Tahoe Regional Planning Agency rules and regulations of practice and procedure. South Lake Tahoe, CA, Tahoe Regional Planning Agency.

Tahoe Regional Planning Agency and California Technical Assistance Associates (1982). Utilization and assessment of public transportation in the Tahoe basin. Sacramento, CA, California Technical Assistance Associates.

Tahoe Regional Planning Agency (1982). 1982 air quality plan for the Lake Tahoe Basin : draft environmental impact statement, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1982). Environmental impact statement for the establishment of environmental threshold carrying capacities, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1983). Regional plan for the Lake Tahoe Basin : draft. South Lake Tahoe, CA, Tahoe Regional Planning Agency.

Tahoe Regional Planning Agency (1983). Regional plan for the Lake Tahoe Basin : part 1, goals and policies, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1983). Environmental impact statement for adoption of a regional plan for the Lake Tahoe Basin, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1983). Environmental impact statement for adoption of a regional plan for the Lake Tahoe Basin, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1986). The regional plan : goals and policies for the Lake Tahoe basin, 1986 : striving for the balance, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1986). Regional plan for the Lake Tahoe Basin : goals and policies, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1986). Environmental impact statement for adoption of a regional plan for the Lake Tahoe Basin, certified February 23, 1984 : draft supplement, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1987). Draft environmental impact report/environmental impact statement, regional transportation plan, Lake Tahoe Basin, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency (1988). Water quality management plan for the Lake Tahoe Region, Tahoe Regional Planning Agency, South Lake Tahoe, CA.
Contents: v. 1. Water quality management plan -- v. 2. Handbook of best management practices -- v. 3. SEZ protection and restoration program -- v. 4. Capital improvements program for erosion and runoff control -- v. 5. Summary -- v. 6. Responsiveness summary and response to comments -- v. 7. Technical appendix.

Tahoe Regional Planning Agency (1988). Compliance measures list and related information and analysis: prepared pursuant to the requirements of Chapter 32, TRPA code of ordinances, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Tahoe Regional Planning Agency, South Tahoe Redevelopment Agency, et al. (1988). South Lake Tahoe redevelopment plan eir/eis, Brady and Associates.

Tahoe Regional Planning Agency and Alpengroup (1990). TRPA community plans environmental impact statement, environmental impact report, Tahoe City, Lake Forest : Placer County Tahoe area general plan amendment, environmental impact report, Alpengroup.

Tahoe Regional Planning Agency (1992). Regional transportation plan : air quality plan for the Lake Tahoe region. South Lake Tahoe, CA, Tahoe Regional Planning Agency.

Tahoe Regional Planning Agency, United States Forest Service, et al. (1993). Cultural and historical significance of the Lake Tahoe region : a guide for planning. Berkeley, CA, California Indian Library Collections [distributor].

Tahoe Regional Planning Agency, United States Forest Service, et al. (1993). Geology and geomorphology of the Lake Tahoe Region : a guide for planning. Berkeley, CA, California Indian Library Collections [distributor].

Tahoe Regional Planning Commission of Nevada and California and Wilsey/Ham/Blair (1964). Lake Tahoe 1980 : regional plan, Wilsey, Ham & Blair.

Tahoe Regional Transportation Study, Tahoe Regional Planning Agency, et al. (1975). Tahoe regional transportation plan : draft. South Lake Tahoe, CA, Tahoe Regional Transportation Study.

Tahoe Research Group - University of California and National Science Foundation - Research Applied to National Needs Program (1975). A multidisciplinary research program in the Tahoe Basin; proposal and progress report, Tahoe Research Group, University of California, Davis, CA: [ii] 159.

Tahoe Research Group - University of California - Davis and National Science Foundation (1971). Research proposal submitted to the National Science Foundation : July 1971, Tahoe Research Group, University of California, Davis, CA.

Tahoe Tavern and Lake Tahoe Ry & Trans Company (1909). Tahoe Tavern, Lake Tahoe, Cal, Tahoe Tavern and Lake Tahoe Railway & Transportation Co.

Talbot, G. J. and I. Bluitt (1907). Letter to Irene Bluitt : Brockway, Calif. : ALS, 1907 July 8, (Contains description of the Brockway Hotel, a Lake Tahoe resort where he worked.).

Tallac House (1890). Baldwin’s Tallac House : the gem of wonderland, the enchanted spot of the West. Lake Tahoe, CA, Tallac House.

Talley, S. N. (1977). An ecological survey of the Babbitt Peak Candidate Research Area on the Tahoe National Forest, U.S. Forest Service Pacific Southwest Region, San Francisco, CA.

Taylor, J. (1989). Alpine Echoes Above Lake-Tahoe - European Sensibilities Shape a Nevada. Architectural Digest 46(7): 84-91.

Tebbutt, T. H. V. (1967). Reclaimed Water For Industry. Effl And Water Treat J 7: 587-593.
Summary information is given of the potential use of reclaimed waste water from industry and the possibilities for thus increasing the supply of potable water in many places. water for cooling is the largest use, with steam generation, process needs, and potable water in that order. re-cycling and utilization of sewage effluent and other good management procedures are suggested as methods of reducing water demand. to prevent growth of micro-organisms, chlorination of sewage water may be necessary but the cost of such treatment is less than half that of using potable water. reclaimed waste water would be of better chemical quality than most available river or canal waters. various processes for contaminant removal are presented. studies in progress to prevent eutrophication of lake tahoe by sewage effluent and the production of good-quality water from industrial effluent at a plant in sw africa are described. (lang-usgs)

Teclaff, L. A. and E. Teclaff (1972). Saving the Land-Water Edge From Recreation, For Recreation. Arizona Law Review 14(1): 39-64.

Water-based recreation depends heavily on the land-water edge and is exacting a significant toll from this ecologically fragile area. the nature of the recreational threat to the land-water edge is examined. the effects of common law water rights such as public rights and navigability, alienation of trustland under navigable waters, and riparian and appropriation doctrines are discussed. both federal and state governments have encouraged the public use of the edge, but these governmental acquisitions represent only a tiny inroad into the amount of privately held land located in the edge zone. legal constraints on the use of the edge are examined including the wild and scenic rivers act of 1968; the rivers and harbors act of 1899; the fish and wildlife coordination act; the national environmental policy act; state plans such as the san francisco bay plan, wisconsin's shoreland zoning system, and the tahoe basin compact; the 1969 proposals of the commission on marine science, engineering, and resources; and the proposed national land use policy act of 1971. possible solutions are advanced for resolving the conflict between use and conservation of the edge.

Templin, W. E., D. B. Green, et al. (1980). Water-Quality Data from Taylor Creek Drainage Basin, El Dorado County, California, July 1975 through October 1976., U.S. Geological Survey, Water Resources Div., Menlo Park, CA.

Data were collected from July 1975 through October 1976 to establish benchmark water-quality conditions in the Taylor Creek drainage basin in California. The Taylor Creek drainage basin is a high-altitude system of lakes and streams which forms one of the tributaries to Lake Tahoe in the Sierra Nevada of California and Nevada. Sampling sites were distributed between the upper and lower reaches of the basin. Streamflow and water-quality data were collected at 13 stream sites. Water-quality data and depth profiles were collected at six lake sites. The reconnaissance included measurement and evaluation of the following selected characteristics: major chemicals, nutrients, fecal coliform bacteria, phytoplankton, periphytic algae, benthic macroinvertebrates, primary productivity, and stream community diversity. (USGS)

Terrill, J. K. and Nevada Bureau of Mines and Geology (1982). South Lake Tahoe quadrangle : land use map. Reno, NV, Nevada Bureau of Mines and Geology.

Theodore J. Wirth Associates and Tahoe Regional Planning Agency (1972). Report and draft environmental impact statement for the Lake Tahoe plan and effectuating ordinances, Theodore J. Wirth Associates: 115 p.

Thomas, H. E. and E. V. Goldsmith (1945). The Shasta, Sierra, Lassen, Tahoe, and Donner strawberries. Berkeley, CA, Agricultural Experiment Station.

Thomas, D. F. (1985). The use of sheep to control competing vegetation in conifer plantations on the Downieville Ranger District, Tahoe National Forest: 1981-1984. .

Thomas, W. H., B. C. Cho, et al. (1991). Phytoplankton and Bacterial Production and Biomass in Subalpine Eastern Brook Lake, Sierra Nevada, California. II. Comparison with Other High-Elevation Lakes. Arctic and Alpine Research ATLPAV 23(3): 296-302.

In ice-free seasons, phytoplankton production in subalpine Eastern Brook Lake, Sierra Nevada, California, ranged from 11.9 to 61.4 microgm C/L/d. Integrated production ranged from 40 to 235 mg C/sq m/d and yearly values would be 23.8 gm C/sq m/yr (1986) and 22.4 gm C/sq m/yr (1987). These values were in the middle ranges of those for other north-temperate, high-elevation lakes. Photosynthetic efficiencies were 0.016 to 0.103% and were similar to those in other subalpine lakes. Near-surface chlorophyll (ice-free season) ranged from 1.46 to 2.62 microgm/L but approached 25 microgm/L under the ice (winter 1987). Ice-free seasonal chlorophyll values in Eastern Brook Lake were similar to those for other Sierra Nevada lakes except Lake Tahoe (lower values), but were generally higher than estimated values for other lakes. Dominant genera (ice-free season) were Chlorella and Disphora. Other genera were dominant in other lakes. Under the ice (1987) a massive bloom of the Chrysophyte Dinobryon occurred; a similar winter bloom was reported for a Colorado lake. Bacterial production ranged from 3 to 19 microgm C/L/d and was similar to that in Austrian alpine lakes, but greater than that for a Norwegian mountain lake. In contrast with other mountain lakes, nutrients were rarely detectable in Eastern Brook Lake and the biota must depend on regeneration. It was concluded that Eastern Brook Lake is oligotrophic, no ultraoligotrophic. (See also W92-01416) (Author's abstract)

Thomas Houseworth & Company (1872). Pacific coast scenery. San Francisco, CA, Thomas Houseworth & Company.

Thomasson, K. (1962). Planktological Notes From Western North America. Arkiv For Botanik, Series 4(14): 437-463.

Ranging form lake tahoe to lakes in the jasper national park, accessible by public transportation, were visited and phytoplankton recorded. these included lake tahoe, crater lake, lake brietenbush in the mt. hood national forest, grand teton lakes, yellowstone lake, two medicine lake, watertown lake, lakes in banff national park, and in the jasper national park. the occurrence of tabellaria teilingii in the grand teton national park lakes is mentioned. the abundant occurrence of ducellieria chodatii in the plankton of some shallow lakes in the canadian rockies is also noteworthy. among the desmids there are some plants which are interesting from a phytogeographical as well as a taxonomical point of view. the phytoplankton of western north american lakes which were visited seems to be definitely boreal. there are few endemic boreo-american phytoplankters to be found, e.g., stephanodiscus niagarae, peridinium volzii f. vancouvererense, and staurastrum natator v. rhomboideum. only lake tahoe seems to differ entirely from a phytogeographical perspective; it has a plankton community related to the lake communities in the eastern united states. the eastern united states have a very rich algal flora, particularly desmids, due to the presence of a phytogeographical element characterized as neotropical. (jones-wisconsin)

Threlkeld, S. T. (1981). The Recolonization of Lake Tahoe by Bosmina Longirostris: Evaluating the Importance of Reduced Mysis Relicta Populations. Limnology and Oceanography 26(3): 433-444.

Bosmina longirostris reappeared in Lake Tahoe after an absence of more than three years. Demographic analyses and feeding experiments suggested that predation by Mysis relicta, which was introduced to the lake, may have been responsible for Bosmina's decline and disappearance. Bosmina reappeared when there was a reduction in Mysis relicta from about 380/sq m. Other factors including biological and physical influences may have had more to do with the reappearance of Bosmina than the reduction in Mysis. Considerable annual variation occurs in Lake Tahoe plankton dynamics, predator assemblages, and in interactions between the littoral and pelagial. Bosmina may have been reintroduced by wind-induced advection from Emerald Bay. (Small-FRC)

Threlkeld, S. T. (1983). Empty loricas and the dynamics of Kellicottia longispina in a subalpine, oligotrophic lake. Biology Of Rotifers - Third International Rotifer Symposium, Uppsala, Sweden.

The seasonal dynamics of K. longispina in Lake Tahoe and an isolated embayment of Lake Tahoe, Emerald Bay, were investigated for an 18-month period in 1977-79. Population birth and death rates were similar in the two systems, although productivity and Mysis relicta densities were higher in Emerald Bay. The timing of population changes was also similar. A major population increase in late winter 1978 was preceded by an increase in egg ratio; the subsequent spring decline of K. longispina was concurrent with decreased birth rates and increased death rates. Empty loricas of K. longispina were occasionally abundant in the plankton samples and seemed to result from K. longispina deaths when densities were high and when egg ratios were declining; it is possible that population senescence was responsible for the high densities of empty loricas observed. A potentially important predator, M. relicta , defecates K. longispina remains in compact fecal pellets; however, it is unlikely that the observed empty loricas resulted from Mysis -related deaths.

Threlkeld, S. T. and J. A. Harrington, Jr. (1985). Contributions of satellite remote sensing to analysis of spatial variability in zooplankton distributions. Hydrobiologia 127(1): 3-8.

Zooplankton populations in Lake Tahoe and other large lakes often exhibit considerable variability due to changing predator assemblages and interactions between littoral and pelagial regions. Wind-induced advection of Emerald Bay populations of Bosmina longirostris into Lake Tahoe was hypothesized to be the mechanisms for Bosmina's reappearance in the main body of that lake in late 1978 following an absence of more than three years (Threlkeld 1981). LANDSAT satellite imagery is examined here to determine if a significant spatial-temporal interaction in water quality in Emerald Bay and Lake Tahoe consistent ith this hypothesis occurred during the period when Bosmina reappeared. Densitometer measurements of LANDSAT MSS band 4 and 5 images were compared by ANOVA; significant station-season interactions weredetected, and enlarged LANDSAT film images revealed plumes, streaks and other surface features which may have been associated with the hypothesized mixing events in Lake Tahoe. A major limitation of this method is the need for pre-flyover "water truth" data for interpretation of detectable surface features.

Tilzer, M. M., C. R. Goldman, et al. (1975). The Efficiency of Photosynthetic Light Energy Utilization by Lake Phytoplankton. Verhandlungen Internationale Vereinigung Limnologie 19: 800-807.

Eight lakes of different trophic state and latitude were compared for degree of overall photosynthetic efficiency as measured by annual means as well as seasonal fluctuations. The study utilized data collected by different investigators in tropical Lake Chad (Africa), highly productive lakes Wingra and Sammamish (U.S.), shallow and very productive Loch Leven (Scotland) and Clear Lake (U.S.), less productive and transparent sub-alpine Lake Tahoe and Castle Lake (U.S.), and alpineVorderer Finstertaler See (Austria). The latter two have thick, light-absorbing ice covers in winter. Efficiencies range from 0.035 to 3% and are mainly controlled by events in the upper layers where light energy inputs are high. Biomass concentrations per unit volume have the greatest effects on efficiency by influencing the percentage of total light which is absorbed by photosynthetic pigments. In oligotrophic lakes photosynthesis per unit of biomass is controlled by both abiotic and biotic factors and governs the seasonal efficiency fluctuation, while in densely populated lakes biomass changes are most important. In extremely turbid lakes, as well as in transparent lakes with extremely low populations, efficiency fluctuations are controlled by variations of total light attenuations, since limitation by plant light attenuation is most pronounced here. (Harris-Wisconsin)

Tilzer, M. M., C. R. Goldman, et al. (1976). Influence of Sediment Inflow in Phytoplankton Primary Productivity in Lake Tahoe (California-Nevada). Internationale Revue der Gesamten Hydrobiologie 61(2): 169-181.

The effects of both dissolved and particulate allochthonous materials on phytoplankton primary productivity were studies under conditions of reduced underwater light intensities and higher nutrient concentrations in a Lake Tahoe sediment plume during maximum spring runoff. Nutrient concentrations in the plume increased in proportion to sediment density whereas light transmission of the water was reduced with little effect on the spectral composition except for red light. Comparison with clear lake water conditions showed that light inhibition of photosynthesis at the lake surface was less pronounced in the plume than in clear water and light limitation occurred more rapidly in deeper layers. Lake experiments and laboratory bioassay results suggested that iron had the greatest stimulatory effect on both photosynthetic activity and biomass growth at maximum sediment densities. It was concluded that: (1) Increased turbidity reduces integral photosynthesis though this effect is diminished by less surface light inhibition, (2) increased nutrient inputs lead to higher primary productivity, and (3) the effects of combined sediment and nutrients inputs is dependent on the increase of the biomass relative to the increase of non-living seston in influencing the portion of underwater light which is absorbed and utilized by the photosynthetic pigments of the algae. (Luedtke-Wisconsin)

Tilzer, M. M., H. W. Paerl, et al. (1977). Sustained viability of aphotic phytoplankton in Lake Tahoe (California-Nevada). .

Tilzer, M. M. and C. R. Goldman (1978). Importance of mixing, thermal stratification and light adaptation for phytoplankton productivity in Lake Tahoe (California-Nevada). Ecology 59(4): 810-821.

Lake Tahoe is highly transparent (Secchi readings 20-42 metres) and never freezes over. Deep mixing throughout its 500-metre water column occurred in March 1974 and 1975. Between June and Oct 1974, a distinct epilimnion of 15- to 30-metre thickness existed. Phytoplankton, which is dominated by diatoms, showed no significant vertical shifts in species composition. Chlorophyll a concentrations were highest at the bottom of the trophogenic zone (75-100 m) during thermal stratification. Maximum photosynthetic rates were observed at greater depths during winter mixing of the lake than during thermal stratification. At a defined light-saturated photosynthetic rate, integral photosynthesis in general was enhanced during thermal stratification relative to levels attained during lake mixing.

Tilzer, M. M. (1978). Predictions of Productivity Changes in Lake Tahoe at Increasing Phytoplankton Biomass. 20th Congress, Internationale Vereinigung fur Theoretische und Angewandte Limnologie, Copenhagen, Denmark.

Regression analysis applied to primary productivity parameters monitored in 1974 in ultraoligotrophic Lake Tahoe (California, Nevada) facilitated predictions of changes in phytoplankton photosynthesis which would accompany increasing phytoplankton biomass (chlorophyll-a) with eutrophication of the lake. Photosynthetic profiles would become compressed vertically but photosynthetic rates per unit volume would rise. An increment of chlorophyll-a from 0.1 to 10 mg/cu m would lead to only a 14-fold increase in average photosynthetic rates in the trophogenic zone, and due to self-shading integral photosynthesis would rise by no more than 80%. With increased phytoplankton biomass, light extinction would increase rapidly, but nonplant light extinction would also rise with enrichment of detritus, bacteria, zooplankton, and dissolved organic matter. A shift toward green in lake color would decrease light extinction, as would an increase in average phytoplankter size. At present maximum winter concentrations of nitrate-nitrogen, the main limiting nutrient, are extremely low (13 mg/cu m); since increases which may be significant for phytoplankton growth are hardly detectable; primary productivity has been used as a measure of changes over the past 18 years, during which productivity has increased about 60%. Data from other lakes are included for comparison. (Lynch-Wisconsin)

Tilzer, M. M. and A. J. Horne (1979). Diel patterns of phytoplankton productivity and extracellular release in ultra-oligotrophic Lake Tahoe. Int. Rev. Gesamt. Hydrobiol. 64(2): 157-176.

Phytoplankton in Lake Tahoe is dominated by diatoms and chrysophytes. High water transparency permits photosynthesis to a maximum depth of over 100 m. Average annual primary production rates in the entire trophogenic zone are 0.5-0.6 g C/mSUP-3/year. Nutrient concentrations and biomass parameters showed little diel variation. Photosynthesis in mixed water columns decreased in the afternoon. This decline can be attributed to inactivation of algae by overoptimal light during mid-day hours. As the summer season progressed, algae became adapted to highlight intensities and thus were less susceptible to light inhibition. Extracellular release by algae averaged 12.57.4% of assimilated carbon without significant vertical differences. Damage of cells by light thus can be excluded. Respiratory losses overnight comprised at least 30% of the carbon assimilated during the preceding day. Integral photosynthesis showed a logarithmic relationship to incident light which can be used to predict daily production rates from mid-day incubation with an error of well below 10%.

Todd, A. H. and J. Rector (1984). State/Federal Relationships in Water Quality Management on the National Forests in California. Options for Reaching Water Quality Goals, Twentieth Annual Conference of the American Water Resources Association Symposium, Washington, D.C.

Much of the water produced in California originates on lands managed by the United States Forest Service (USFS). As a result, the National Forests play an increasing role in providing high quality water for public demands. A framework of cooperative responsibility for control of nonpoint sources of pollution between the USFS and State Water Resources Control Board has been established to meet the guidelines of the Clean Water Act (Section 208). A discussion of the institutional setting in which Federal and State planning is conducted, decisions are made, and conflicts are realized or resolved with regard to meeting water quality goals. How Forest Service water quality management guidelines and Best Management Practices are integrated with the review process of the National Environmental Policy Act is also described.

Townley, J. M. (1980). The Pyramid Lake-Newlands Project Controversy, 1903-1926, Nevada Historical Society and University of Nevada, Reno, NV.

Historical records were used to study the Newlands Project, Nevada's initial Federal reclamation project, during the period 1903 through 1926. Since 1903 there has been controversy over the allotment of Truckee River water among users. In 1923 the Bureau of Reclamation turned over operational control of the project to the locally directed Truckee-Carson Irrigation District. Early U.S. Department of Interior actions to supply water to the Newlands Projectand the effect on Pyramid Lake, now the Pyramid Lake Paiute Reservation, were studied. Records from newspapers, archival collections, and various Federal agencies were used to investigate the problems encountered in construction of the Truckee-Carson Project, the struggle for control of Lake Tahoe as a storage reservoir, and the treatment of the Paiute as a homesteader on the project. From this historical study three publications were prepared that will probably be consulted when the litigation concerning the Truckee-Carson Irrigation District, the Pyramid Lake Pauite Reservation, and the water users of the Truckee and Carson Rivers is examined in Federal court. The study shows that original estimates of potentially reclaimable acreage were high and the actual 60,000 acres reclaimed are not enough to economically justify the creation of the project. Failure to purchase control of the Tahoe City dam forced up land prices in the reclamation district from $22/acre to over $100/acre. The Paiute Indians lost approximately 30,000 acres, were excluded from entry within the project, and were isolated on a reservation with no consideration of Winters Doctrine rights. (Seigler-IPA)

Trexler, D. T. and Nevada Bureau of Mines and Geology (1979). South Lake Tahoe quadrangle: earthquake hazards map. Reno, NV, Nevada Bureau of Mines & Geology.

Trimm, M. and Mountain-Valley Library System (1977). Lake Tahoe, a bibliography : its history, natural history and travel guides : with holding locations for Sierra Libraries Information Consortium, Mountain-Valley Library System, Sacramento, CA.

Tunzi, M. G. and D. B. Porcella (1974). Carbon-14 assimilation, chlorophyll, and particulate organic matter in steady state systems at Lake Tahoe. [Algal gro wth]. .

Tuohy, D. R., W. Jerrems, et al. (1994). A pottery jar from Lake Tahoe, Placer County, California. Berkeley, CA, California Indian Library Collections [distributor].

Twiss, R. H. and Tahoe Regional Planning Agency (1976). Housing policy evaluation : [draft]. South Lake Tahoe, CA, Tahoe Regional Planning Agency.

Twiss, R. H. (1987). Regional Environmental Thresholds and Impact Assessment. The International Symposium on Environmental Impact Assessment, Beijing, China.

Evaluation of certain critical environmental impacts requires information on the regional environmental context. Further, the assessment of regional and community plans (as opposed to individual projects) can be extremely difficult because of the lack of specificity of the plans, the lack of regional environmental information, and the need for improved planning methods. In the Lake Tahoe Basin of California (an area of some 1,360 sq. km), regional development is being planned and controlled on the basis of a rigorous framework of environmental information and planning tools. The creation of "Environmental Threshold Carrying Capacities" has greatly aided the review and testing of plans and project proposals. This paper briefly describes the technical aspects of the unique planning system now in use, in terms of its various components: legal and institutional structure, land and resource inventories, environmental modeling, land capability mapping, the establishment of environmental thresholds, monitoring and enforcement. The accounting system being developed to evaluate planning proposals is presented, with special reference to the planning format, information needs, and the use of a geo-based information system in assessing environmental impacts. Special reference is made to the need to be able to relate assessment of individual projects and community plans to regional constraints.

U.S. Coast Geodetic Survey (1930). United States, California--Nevada, Lake Tahoe. Washington, D.C., U.S. Coast and Geodetic Survey.

U.S. Forest Service - Lake Tahoe Basin Management Unit (1985). Proposed land and resource management plan : Lake Tahoe Basin Management Unit, USDA, U.S. Forest Service, Pacific Southwest Region, San Francisco, CA.

U.S. Forest Service - Lake Tahoe Basin Management Unit (1985). Draft environmental impact statement : land and resource management plan : Lake Tahoe Basin Management Unit, USDA, U.S. Forest Service, Pacific Southwest Region, San Francisco, CA: 461.

U.S. Geological Survey Reclamation Service (1905). Truckee - Carson Project, Nevada. [Reno, Nevada?], U.S. Geological Survey Reclamation Service.

U.S. Geological Surveys West of the 100th Meridian (1881). Topographical map of Lake Tahoe region, Sierra Nevada, California and Nevada. Washington, D.C., U.S. Geological Surveys West of the 100th Meridian.

U.S. Public Health Service and United States Bureau of Reclamation (1964). Water quality control study, American River-Tahoe Basin diversions, California ; a preliminary evaluation of effects on water quality and water use, Dept. of Health, Education, and Welfare, San Francisco, CA.

Unger, C. D. and California Air Resources Board - Planning Division (1979). Meteorology and air quality in the Tahoe basin, California Air Resources Board - Planning Division, Sacramento, CA.

United States (1965). A Bill to Promote the Preservation, For the Public Use and Benefit, Of Certain Portions Of the Shoreline Areas Of the United States, U.S. G.P.O., Washington, D.C.

Actions aimed at establishing national shoreline recreation areas and federal assistance for state-administered shoreline recreation areas are authorized in this bill. the secretary of the interior is directed to investigate what actions are required to preserve the following shoreline areas: (1) cumberland island, georgia; (2) huron mountains, michigan; (3) channel islands, california; (4) fire island, new york; (5) cape flattery, washington; (6) leadbetter point, washington; (7) mosquito lagoon, florida; (8) pigeon point, minnesota; (9) popham-saint john, maine; (10) parramoure island, virginia; (11) great salt lake, utah; (12) lake tahoe, nevada-california; (13) smith island, north carolina; and (14) the shores of hawaii. within two years findings shall be submitted to congress as to: (1) actions needed to preserve such areas; (2) acquisition and development costs; (3) land procurable through donation; (4) recreational suitability; and (5) scenic, scientific, historic, and recreational values. to assist state acquisition and preservation, the secretary may pay one-half the purchase price of state-administered shoreline recreation areas. the secretary of agriculture shall investigate the suitability of national forest lands as shoreline recreation areas.

United States (1971). Wastewater Reclamation, National Industrial Pollution Control Council, Washington, D.C. (Avail from U.S. G.P.O., Washington, D.C.).

Gross withdrawals of water will exceed the ultimate supply of 650 billion gallons per day shortly after 1980. technology needed to recycle wastewater is currently available, as evidenced by south tahoe wastewater district. both industry and agriculture are already practicing limited reuse by treating some of their wastewaters to suitable levels and reusing them in places where a low-quality effluent can be tolerated. however, there are 8 major areas in which progress must be made before wastewater recycling will gain in popularity on a large scale. these progress needs are: (1) development of definitive public health and process engineering design criteria for total use of reclaimed water; (2) development of advanced monitoring and controlling instrumentation and techniques; (3) development of improved pollutant reuse methods; (4) initiation of a feasibility study of wastewater reclamation on a regional scale; (5) continuation of feasibility and pilot studies on wastewater desalting; (6) establishment of an inventory of water demands and sources according to user quantity and quality requirements; (7) determination of values of reclaimed waters for innovative uses; and (8) initiation of a program of public education on the need for water reclamation. (lowry-texas)

United States (1972). Environmental Problems Of the Lake Tahoe Basin, Hearing Subcomm. On Air And Water Pollution Comm. On Public Works, U.S. Senate, 92d Cong, 2d Sess. 21: 31.

This hearing took extensive testimony and documentary evidence on every aspect of the ecosystem of the lake tahoe region; the text of inquiries concerning the region, and committee reports and studies on each aspect are given. included are studies on hydrology and water resources, water distribution and water waste collection and the limnology and water quality of the region. plans for continuation of existing regulatory ordinances and implementation of others to regain the quality of this region are discussed in each study. the tahoe regional planning agency provided a contribution to the hearings. the planning agency has taken some very strong stands. there are now in excess of 53 million dollars in claims pending against the agency for regulation of land use. the hearings are intended to resolve questions and to provide the immediate information, legal and ecological, necessary to work toward the preservation of lake tahoe. (smith-adam-florida)

United States (1981). Act to Grant the Consent of the Congress to the Tahoe Regional Planning Compact, and to Authorize the Secretary of Agriculture and Others to Cooperate with the Planning Agency Thereby Created, U.S. G.P.O., Washington, D.C.

United States (1981). An Act to Provide for the Orderly Disposal of Certain Federal Lands in Nevada and for the Acquisition of Certain Other Lands in the Lake Tahoe Basin, and for Other Purposes, U.S. G.P.O., Washington, D.C.

United States (1982). An Act to Authorize the Secretary of Agriculture to Sell the Portion of the Tahoe National Forest Known as Blyth Arena, U.S. G.P.O., Washington, D.C.

United States - Bureau of Outdoor Recreation (1973). Lake Tahoe, a special place, U.S. G.P.O., Washington, D.C.

United States - Lake Tahoe Basin Management Unit (1982). Land acquisition plan for the Lake Tahoe Basin (P.L. 96-586) : final environmental impact statement, USDA Forest Service, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

United States - Tahoe Regional Planning Agency, Jhk & Associates, et al. (1987). Waterborne transportation feasibility study. San Francisco, CA, Jhk & Associates.

United States Army Corps of Engineers (1969). Flood plain information : Upper Truckee River : South Lake Tahoe, California, United States Army Corps of Engineers, Sacramento, CA.

United States Army Corps of Engineers and El Dorado County (1969). Flood plain information, Trout and Bijou Creeks, South Lake Tahoe, California : prepared for El Dorado County, United States Army Corps of Engineers, Sacramento, CA.

United States Army Corps of Engineers (1971). Flood plain information : Truckee River, Tahoe City, California, United States Army Corps of Engineers, Sacramento, CA.

United States Bureau of Outdoor Recreation - Pacific Southwest Region (1971). Lake Tahoe : strategies to save a lake, United States Bureau of Outdoor Recreation - Pacific Southwest Region, San Francisco, CA.

United States Bureau of Reclamation and United States Army Corps of Engineers (1957). Reconnaissance appraisal of possible ways to relieve flood damage around Lake Tahoe, United States Bureau of Reclamation, Sacramento, CA.

United States Bureau of Reclamation and United States Army Corps of Engineers (1959). Lake Tahoe operation studies, United States Bureau of Reclamation, Sacramento, CA.

United States Bureau of Reclamation (1964). Lake Tahoe Basin, California-Nevada : a reconnaissance appraisal of ways to develop a supplemental water supply for Lake Tahoe Basin, United States Bureau of Reclamation, Sacramento, CA.

United States Bureau of Reclamation (1972). Lake Tahoe Basin, California-Nevada : status report, United States Bureau of Reclamation, Sacramento, CA.

United States Bureau of the Census (1970). Tahoe City, unincorporated, Placer Co., California : [showing 1970 census districts]. Washington, D.C., U.S. Bureau of the Census.

United States Bureau of the Census (1970). Map of the city of South Lake Tahoe, El Dorado County, California : [showing 1970 census districts]. Washington, D.C., U.S. Bureau of the Census.

United States Civil Aeronautics Board (1978). Lake Tahoe service investigation, United States Civil Aeronautics Board, Washington, D.C.

United States Congress - House Committee on Agriculture (1991). Designation of the Lake Tahoe Basin National Forest : report (to accompany H.R. 1058 ... referred jointly to the Committees on Interior and Insular Affairs and Agriculture), U.S. G.P.O., Washington, D.C.

United States Congress - House Committee on Interior and Insular Affairs (1980). Providing for the orderly disposal of certain Federal lands in Nevada and for the acquisition of certain other lands in the Lake Tahoe Basin, and for other purposes : report together with minority views to accompany H.R. 7306, U.S. G.P.O., Washington, D.C.

United States Congress - House Committee on Interior and Insular Affairs -Subcommittee on National Parks and Insular Affairs (1981). Legislative history of the Lake Tahoe Preservation Act (H.R. 7306), U.S. G.P.O., Washington, D.C.

United States Congress - House Committee on Public Lands (1937). Providing for the acquisitions of lands for the Tahoe National Forest and for the Great Smoky Mountains National Park, U. S. G.P.O., Washington, D.C.

Hearings ... Seventy-sixth Congress, first session, on S. 2583, to provide for the acquisition of certain lands for and the addition thereof to the Tahoe National Forest, in the state of Nevada, and the acquisition of certain other lands for the completion of the acquisition of the remaining lands within the limits of the Great Smoky Mountains National Park, in East Tennessee. August 13, 1937

United States Congress - House Committee on Public Works/Subcommittee on Rivers and Harbors (1966). Water pollution hearings on South Lake Tahoe, Calif. Hearings, Eighty-ninth Congress, second session. Washington, D.C., U.S. GPO.

United States Congress - House Committee on the Judiciary (1969). Tahoe regional planning compact. Hearings, Ninety-first Congress, first session ... November 12, 1969, U.S. G.P.O., Washington, D.C.

United States Congress - House Committee on the Judiciary - Subcommittee on Administrative Law and Governmental Relations (1981). Tahoe regional planning compact : hearing before the Subcommittee on Administrative Law and Governmental Relations of the Committee on the Judiciary, House of Representatives, Ninety-scixth Congress, second session, on H.R. 8235 ... November 13, 1980, U.S. G.P.O., Washington, D.C.

United States Congress - Senate Committee on Energy and Natural Resources (1980). Lake Tahoe Basin : report together with additional views (to accompany H.R. 7306), U.S. G.P.O., Washington, D.C.

United States Congress - Senate Committee on Energy and Natural Resources (1982). Sale of Blyth Arena, Tahoe National Forest, Calif. : report (to accompany H.R. 2863), U.S. G.P.O., Washington, D.C.

United States Congress - Senate Committee on Energy and Natural Resources - Subcommittee on Parks/Recreation/Renewable Resources (1981). Lake Tahoe scenic area : hearing before the Subcommittee on Parks, Recreation, and Renewable Resources of the Committee on Energy and Natural Resources, United States Senate, Ninety-sixth Congress, second session, on H.R. 7306 ... Incline Village, Nev., October 13, 1980, U.S. G.P.O., Washington, D.C.

United States Congress - Senate Committee on Energy and Natural Resources - Subcommittee on Water and Power (1990). Truckee-Carson-Pyramid Lake Water Rights Settlement Act : hearing before the Subcommittee on Water and Power of the Committee on Energy and Natural Resources, United States Senate, One Hundred First Congress, second session, on S. 1554 ... February 6, 1990, U.S. G.P.O., Washington, D.C.

United States Congress - Senate Committee on Interior and Insular Affairs (1981). Authorizing the secretary of agriculture to sell the portion of the Tahoe National Forest known as Blythe Arena : report (to accompany H.R. 2863) (including cost estimate of the Congressional Budget Office), U.S. G.P.O., Washington, D.C.

United States Congress - Senate Committee on Public Works - Subcommittee on Air and Water Pollution (1972). Environmentalproblems of the Lake Tahoe Basin. Hearing, Ninety-second Congress, second session. August 21, 1972-Brockway, California, U.S. G.P.O., Washington, D.C.

United States Congress - Senate Committee on the Judiciary (1969). Tahoe regional planning compact : report [to accompany S.118], U.S. G.P.O., Washington, D.C.

United States Department Of Agriculture - Forest Service (1981). Land Acquisition Plan For The Lake Tahoe Basin, Nevada, California, U.S. Forest Service, California Department of Agriculture, San Francisco, CA: 116.

PURACQUISITION OF 29,450 ACRES OF ENVIRONMENTALLY SENSITIVE LANDS WITHIN THE 205,520-ACRE LAKE TAHOE BASIN IN EL DORADO AND PLACER COUNTIES, CALIFORNIA AND WASHOE AND DOUGLAS COUNTIES AND CARSON CITY, NEVADA IS PROPOSED. ALL UNIMPROVED LANDS WITHIN THE BASIN THAT ARE IDENTIFIED UNDER A BROAD DESCRIPTION OF ENVIRONMENTALLY SENSITIVE WOULD BE ELIGIBLE FOR ACQUISITION. EMPHASIS WOULD BE PLACED ON ACQUIRING THOSE LANDS THAT, IF DEVELOPED, REPRESENT THE GREATEST THREAT TO WATER QUALITY IN LAKE TAHOE. LAND WOULD BE RANKED BY RELATIVE SENSITIVITY TO DISTURBANCE. AN 11-TIERED SENSITIVITY HEIRARCHY HAS BEEN DEVELOPED THAT EXTENDS FROM STREAM ENVIRONMENT ZONES AND AREAS OF POOR NATURAL DRAINAGE, WHICH CONSTITUTE THE MOST SENSITIVE LAND, TO AREAS MODIFIED BY HUMAN ACTIVITY WITHIN ZONES FOR COMMERCIAL OR TOURIST PURPOSES. THE COST OF ACQUISITION OF TARGETED LAND RANGES FROM $58 MILLION TO $237.6 MILLION. AT LEAST A PORTION OF THE COST OF THE LAND WOULD BE PAID WITH FUNDS OBTAINED FROM THE SALE OF PUBLIC LANDS IN CLARK COUNTY, NEVADA. POSDECREASES IN LAND DISTURBANCES AND FEWER ADDITIONS TO THE AMOUNT OF AREA COVERED BY IMPERVIOUS SURFACES WOULD IMPROVE WATER QUALITY. ACQUISITION OF THE SENSITIVE LAND WOULD RESULT IN LESS DISTURBANCE OF SOILS AND DESTRUCTION OF VEGETATION, MAINTENANCE OF NATURAL INFILTRATION RATES IMPORTANT TO SURFACE AND GROUNDWATER INTERCHANGE, AND RESTORATION AND STABILIZATION OF CURRENTLY DISTURBED AREAS. MORE HABITAT WOULD BE AVAILABLE FOR WILDLIFE, AND SHORE ZONE AREAS THAT PROVIDE HABITAT FOR THE ENDANGERED TAHOE YELLOW CRESS WOULD BE LESS LIKELY TO BE DISTURBED. OTHER ENDANGERED SPECIES THAT WOULD BENEFIT FROM FEWER CONFLICTS WITH HUMAN ACTIVITY WOULD INCLUDE GOSHAWKS, SPOTTED OWLS, BALD EAGLES, OSPREYS, AND LAHONTAN CUTTHROAT TROUT. VISUAL, RECREATIONAL, AND CULTURAL RESOURCES WOULD SUFFER FEWER DISTURBANCES. AIR QUALITY IN THE BASIN WOULD IMPROVE DUE TO ELIMINATION OF POTENTIAL EMISSION SOURCES. NEGLAND ACQUIRED WOULD BE REMOVED FROM THE COUNTY TAX BASE. FEWER PERSONS WOULD BE ABLE TO LOCATE IN THE BASIN, RESULTING IN LESS LOCAL SUPPORT FOR TRANSPORTATION METHODS DESIGNED TO CURB THE EMISSION OF POLLUTANTS, POORER HORTICULTURAL PRACTICES, AND FEWER PRIVATE FEEDING PROVISIONS FOR WILDLIFE IN TIMES OF STRESS. THE RECREATIONAL POTENTIAL OF THE BASIN WOULD DECLINE DUE TO PROHIBITION OF FURTHER DEVELOPMENT ON ACQUIRED LANDS. THE NUMBER OF LIVESTOCK ALLOWED TO GRAZE WITHIN THE BASIN COULD DECLINE. THE HIGH VALUE OF REAL ESTATE AND HIGH COST OF WATER QUALITY PROTECTION PRACTICES WOULD CAUSE ECONOMIC HARDSHIPS FOR MANY COMMERCIAL ESTABLISHMENTS. LEGSANTINI-BURTON ACT

United States Department of Agriculture - Forest Service (1981). Lake Tahoe Basin Management Unit Land Management Plan, California and Nevada, California Department of Agriculture, Forest Service, San Francisco, CA.

PURIMPLEMENTATION OF A LAND-MANAGEMENT PLAN IS PROPOSED FORTHE 136,871-ACRE LAKE TAHOE BASIN MANAGEMENT UNIT CONSISTING OF PORTIONS OF ELDORADO, TAHOE, AND TOIYABE NATIONAL FORESTS IN EL DORADO, PLACER, AND ALPINE COUNTIES, COLORADO AND CARSON CITY, WASHINGTON, AND DOUGLAS COUNTIES, NEVADA. THE PREFERRED MANAGEMENT PLAN WOULD LIMIT RECREATIONAL DEVELOPMENT TO LOW HAZARD LANDS IN FULLY SERVED AREAS OFFERING WATER ORIENTATION. AREAS OUTSIDE THIS DEVELOPED CORE WOULD BE MANAGED FOR A VARIETY OF RECREATIONAL OPPORTUNITIES. A POTENTIAL SITE NEAR SPOONER JUNCTION THAT IS NOT CURRENTLY SERVED BY SEWER INSTALLATIONS WOULD BE DEVELOPED TO INCREASE THE LIMITED DEVELOPMENT POSSIBILITIES ON THE EASTERN SHORE OF THE LAKE. EXISTING DEVELOPMENTS WOULD BE RETAINED UNLESS SITE-SPECIFIC EVALUATIONS SHOWED THAT CHANGE OR REMOVAL WAS WARRANTED. SKI DEVELOPMENT WOULD BE CONSIDERED ONLY AT SITES IN THE EXISTING FULL SERVICE AREAS THAT ARE EASILY SERVED BY PUBLIC TRANSIT. THE DARDANELLES WITHIN THE LAKE TAHOE BASIN WOULD BE MANAGED FOR PRIMITIVE RECREATION, WHILE THE DARDANELLES OUTSIDE THE BASIN WOULD BE MANAGED FOR SEMIPRIMITIVE RECREATION. THE PORTION OF THE DARDANELLES WITHIN THE ELDORADO NATIONAL FOREST WOULD BE CONSIDERED FOR WILDERNESS STATUS, AND THE FREEL AREA WOULD BE MANAGED AS A ROADLESS AREA, WITH SOME MOTORIZED ACCESS ALLOWED DURING THE WINTER. LINCOLN CREEK AND PYRAMID WOULD BE MANAGED FOR A VARIETY OF LOW-INTENSITY DISPERSED RECREATION USES WITH EMPHASIS ON NONMOTORIZED RECREATION. TIMBER HARVEST WOULD BE ALLOWED ONLY AS NECESSARY TO MAINTAIN OR ENHANCE RECREATION AND OTHER RESOURCE VALUES. PRESCRIBED BURNING WOULD BE ALLOWED TO TREAT INACCESSIBLE LANDS. ONLY 1.25 MILES OF ROAD AND 0.5 MILES OF SEWER AND POWER LINES WOULD BE INSTALLED IN THE AREA YEARLY. ANNUAL COST OF MAINTAINING THE BASIN UNIT UNDER THE PREFERRED PLAN IS ESTIMATED AT $2.7 MILLION IN 1975 DOLLARS. POSTHE PLAN WOULD PROVIDE AN ULTIMATE SUMMER CAPACITY ON EXISTING NATIONAL FOREST LAND FOR 6,670 OVERNIGHT USERS AND 13,500 DAY USERS, AN INCREASE OVER THE PRESENT CAPACITY OF 2,125 AND 6,955 RESPECTIVELY. SKI DEVELOPMENTS WOULD INCREASE SKIER CAPACITY FROM 10,700 VISITORS TO 28,700 VISITORS. ROADLESS AREA CAPAICITY WOULD PROVIDE FOR 1,745 WILDERNESS VISITORS AND 9,940 NONWILDERNESS VISITORS. A TOTAL OF 21,300 ACRES OF WILDERNESS WOULD BE PRESERVED, AND AN ADDITIONAL 13,600 ACRES COULD BE PRESERVED. NEGMANAGEMENT ACTIVITIES WOULD DEGRADE VISUAL QUALITY ON 16 PERCENT OF THE MANAGEMENT AREA AND, IN COMBINATION WITH ACTIONS BY VISITORS, WOULD DAMAGE CULTURAL SITES. DEVELOPMENT AND USE OF RECREATIONAL FACILITIES WOULD DISTURB AND DISPLACE WILDLIFE AND DISRUPT FISHERY RESOURCES. LANDS MANAGED AS WILDERNESS WOULD BE REMOVED FROM USE AS RANGE BY LIVESTOCK RANCHERS, AND COMMERCIAL TIMBER ACTIVITIES WOULD BE PROHIBITED ON WILDERNESS LANDS. PRESCRIBED BURNING ACTIVITIES WOULD DEGRADE AIR QUALITY IN LOCAL AREAS FOR SHORT PERIODS. LEGNATIONAL FOREST MANAGEMENT ACT OF 1976

United States Employment Training Administration and Lawrence Berkeley Laboratory - Physics/Computer Science/Mathematics Division (1982). Report 3, social indicators for planning and evaluation, 1980 census of population. South Lake Tahoe City, California. Springfield, VA, National Technical Information Service: iv, 30 p.

United States Environmental Protection Agency (1971). Eutrophication Of Surface Waters--Lake Tahoe Indian Creek Reservoir, Environmental Protection Agency, Lake Tahoe Area Council.

The water impounded at indian creek reservoir was approximately one-third surface runoff and direct precipitation and two-thirds reclaimed water exported from south tahoe public utility district plant. during 1969 to 1971 field and laboratory studies determined the temporal changes and relationships between water quality characteristics of indian creek reservoir and those of the reclaimed water. reclaimed water contained 0.01 to 0.04 mg/l phosphorus and more than 15 mg/l ammonia. initially the reservoir would not support fish life, but as the reservoir matured, ammonia levels declined to less tha 4 mg/l and by 1970 it was an excellent trout fishery. approximately 70% of the ammonia nitrogen was lost to the atmosphere by nitrification-denitrification. good biological productivity indicated access to other phosphorus sources, probably runoff. relative to conductivity and chemical components the water is of good irrigation quality. bioassays showed growth stimulating ability of reservoir water to exceed that of reclaimed water. various parameters showed that the reservoir responds to more complex factors than those measurable in the reclaimed waste water, raising the question of optimum water treatment for recreational impoundments.

United States Environmental Protection Agency, Nevada Environmental Protection Services, et al. (1978). Report on Lake Tahoe, Carson City, Douglas, and Washoe Counties, Nevada, El Dorado and Placer Counties, California : EPA Region IX, Corvallis Environmental Research Laboratory Environmental Monitoring & Support Laboratory, Corvallis, OR.

United States Environmental Protection Agency (1979). Environmental impact statement : South Tahoe Public Utilities District and Douglas County Sewer Improvement District No.1 proposed wastewater treatment facilities : El Dorado and Alpine Counties, California and Douglas County, Nevada, U.S. Environmental Protection Agency, San Francisco, CA.

United States Environmental Protection Agency (1981). Technical appendices : appendix A : comments on DEIS : final environmental impact statement : South Tahoe Public Utility District and Douglas County Sewer Improvement District No. 1, El Dorado and Alpine Counties, California and Douglas County, Nevada. San Francisco, CA, U.S. Environmental Protection Agency.

United States Environmental Protection Agency, Sedway Cooke & Associates, et al. (1981). Technical appendices : appendix B : mitigation program : final environmental impact statement : South Tahoe Public Utility District and Douglas County Sewer Improvement District No. 1, El Dorado and Alpine Counties, California and Douglas County, Nevada. San Francisco, CA, U.S. Environmental Protection Agency.

United States Environmental Protection Agency, South Tahoe Public Utility District, et al. (1981). Final environmental impact statement : wastewater treatment facilities, South Shore Lake Tahoe Basin, U.S. Environmental Protection Agency, Region IX, San Francisco, CA.

United States Environmental Protection Agency, South Tahoe Public Utility District, et al. (1981). Wastewater treatment facilities, South Shore Lake Tahoe basin, U.S. Environmental Protection Agency, Region IX, San Francisco, CA.

United States Environmental Protection Agency (1981). Technical appendices : draft environmental impact statement : South Tahoe Public Utilities District and Douglas County Sewer Improvement District No. 1, proposed wastewater treatment facilities, United States Environmental Protection Agency, Region, I. X., San Francisco, CA.

United States Environmental Protection Agency, South Tahoe Public Utility District, et al. (1981). South Tahoe Public Utilities District and Douglas County Sewer Improvement District No. 1 proposed wastewater treatment facilities : El Dorado and Alpine Counties, California and Douglas County, Nevada : draft environmental impact statement, U.S. Environmental Protection Agency, Region IX, San Francisco, CA.

United States Environmental Protection Agency - Office of Technology Transfer (1969). Wastewater purification at Lake Tahoe, Environmental Protection Agency, Technology Transfer, Washington, D.C.

United States Federal Insurance Administration (1978). Flood insurance study : city of South Lake Tahoe, California, EL Dorado County, Dept. of Housing and Urban Development, Federal Insurance Administration, Washington, D.C.

United States Federal Water Pollution Control Administration (1966). . Conference in the Matter of Pollution of the Interstate Waters of Lake Tahoe and its Tributaries, U.S. Dept. of the Interior, Federal Water Pollution Control Administration, Washington, D.C.

United States Forest Service and United States Geological Survey (1910). Collection of U.S. Forest Service and U.S. Geological Survey maps of national forest areas in California.

United States Forest Service (1963). Lake Tahoe area : Eldorado-Tahoe-Toiyabe national forests, California and Nevada. Washington, D.C., U.S. Forest Service.

United States Forest Service and Tahoe Regional Planning Agency (1971). Soils of the Lake Tahoe region : a guide for planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

United States Forest Service and Tahoe Regional Planning Agency (1971). Scenic analyses of the Lake Tahoe region : a guide to planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

United States Forest Service and Tahoe Regional Planning Agency Technical Committee (1971). Hydrology and water resources of Lake Tahoe region : a guide fo r planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

United States Forest Service and Tahoe Regional Planning Agency Technical Committee (1971). Fisheries of Lake Tahoe and its tributary waters; a guide to planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

United States Forest Service and Tahoe Regional Planning Agency (1971). Climate and air quality of the Lake Tahoe region; a guide to planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

United States Forest Service and Tahoe Regional Planning Agency (1971). Wildlife of the Lake Tahoe region : a guide for planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

United States Forest Service and Tahoe Regional Planning Agency (1971). Lake Tahoe basin : land capabilities. California, U.S. Forest Service.

United States Forest Service (1972). Lake Tahoe basin land suitabilities planning guide map. California, U.S. Forest Service.

United States Forest Service (1973). Proposed general plan for management of national forest lands in the Lake Tahoe basin - Lake Tahoe Basin Management Unit (portions of the Eldorado, Tahoe, and Toiyabe National Forests) : environmental statement, United States Forest Service, Washington, D.C.

United States Forest Service (1976). USDA-Forest Service environmental statement : land use plan, Truckee-Little Truckee Rivers Planning Unit, Dept. of Agriculture, Forest Service, Tahoe National Forest, Toiyabe National Forest.

United States Forest Service (1978). Trails of the Lake Tahoe basin : Lake Tahoe Visitor Center, Dept. of Agriculture, Forest Service, Washington, D.C.

United States Forest Service (1978). Birds of the Lake Tahoe Basin, Dept. of Agriculture, Forest Service, Washington, D.C.

United States Forest Service (1978). Trees of the Lake Tahoe Basin, Dept. of Agriculture, Forest Service, Washington, D.C.

United States Forest Service - California Region (1917). Route map, Plumas, Tahoe, and Eldorado National Forests, California. San Francisco, CA, U.S. Forest Service, Region 5.

United States Forest Service - California Region (1919). Route map, Plumas, Tahoe, and Eldorado National Forests, California. San Francisco, CA, U.S. Forest Service, Region 5.

United States Forest Service - California Region (1973). General plan for management of national forest lands in the Lake Tahoe basin, 1973 : review draft, Forest Service, California Region, U.S. Dept. of Agriculture, San Francisco, CA.

United States Forest Service - California Region and Lake Tahoe Basin Management Unit (1976). Lake Tahoe Basin Management Unit, California and Nevada : 1976. San Francisco, CA, U.S. Forest Service.

United States Forest Service - California Region and Lake Tahoe Basin Management Unit (1978). Land management plan, part I, USDA Forest Service, California Region, San Francisco, CA.

United States Forest Service - California Region and Lake Tahoe Basin Management Unit (1979). Lake Tahoe Basin Management Unit, California and Nevada : 1979. San Francisco, CA, U.S. Forest Service.

United States Forest Service - Intermountain Region and United States Forest Service - California Region (1962). Multiple use management plan for National Forest lands : Lake Tahoe Basin. San Francisco, CA, U.S. Forest Service, Region 5.

United States Forest Service - Intermountain Region and United States Forest Service - California Region (1969). Multiple use management plan for national forest lands in the Lake Tahoe Basin, Forest Service, Region 4 and 5, U.S. Dept. of Agriculture, San Francisco, CA.

United States Forest Service - Lake Tahoe Basin Management Unit (1976). Environmental analysis report : proposed off-road recreational vehicle plan, United States Forest Service - Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

United States Forest Service - Lake Tahoe Basin Management Unit (1988). Land and resource management plan, Lake Tahoe Basin Management Unit, U.S. Dept. of Agriculture, Forest Service, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

United States Forest Service - Lake Tahoe Basin Planning Team and Tahoe Regional Planning Agency (1972). Lake Tahoe basin : planning for environmental quality, United States Forest Service - Lake Tahoe Basin Planning Team, South Lake Tahoe, CA.

United States Forest Service - Pacific Southwest, R. (1990). Environmental impact statement for the Tahoe National Forest land and resource management plan, 1990, USDA Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region (1978). Land management plan, Lake Tahoe Basin management unit, U.S.D.A. Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region and Geometronics Service Center (1979). Lake Tahoe Basin Management Unit, California and Nevada. San Francisco, CA, United States Forest Service - Pacific Southwest Region.

United States Forest Service - Pacific Southwest Region (1980). Summary of the final environmental impact statement : Lake Tahoe Basin Management Unit : land management plan, part 2, USDA Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region (1980). Final environmental impact statement : Lake Tahoe Basin Management Unit : land management plan, part 2, USDA Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region (1980). Final environmental impact statement : Lake Tahoe Basin Management Unit : land management plan, part 2, USDA Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region (1985). Proposed land and resource management plan : Lake Tahoe Basin Management Unit, USDA, Forest Service, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

United States Forest Service - Pacific Southwest Region (1985). Draft environmental impact statement : land and resource management plan : Lake Tahoe Basin Management Unit, USDA, Forest Service, Pacific Southwest Region, San Francisco, CA: 461 p. in various pagings.

United States Forest Service - Pacific Southwest Region (1988). Lake Tahoe Basin management unit. South Lake Tahoe, CA, U.S. Dept. of Agriculture, Forest Service.

United States Forest Service - Pacific Southwest Region (1988). Record of decision, final environmental impact statement, land and resource management plan, Lake Tahoe Basin Management Unit, U.S. Dept. of Agriculture, Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region (1988). Land and resource management plan, Lake Tahoe Basin Management Unit, USDA Forest Service, Lake Tahoe Basin Management Unit, South Lake Tahoe, CA.

United States Forest Service - Pacific Southwest Region (1988). Final environmental impact statement, land and resource management plan, Lake Tahoe Basin Management Unit, United States Forest Service - Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region (1988). Overview of the forest plan, U.S. Dept. of Agriculture, Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region (1990). Record of decision : USDA Forest Service, final environmental impact statement : Tahoe National Forest, land and resource management plan. San Francisco, CA, Pacific Southwest Region, USDA Forest Service.

United States Forest Service - Pacific Southwest Region and Tahoe Regional Planning Agency (1994). East shore project : summary : Lake Tahoe basin management unit, United States Forest Service - Pacific Southwest Region, San Francisco, CA: 14.

United States Forest Service - Pacific Southwest Region and Lake Tahoe Basin Management Unit (1978). Final environmental impact statement : land management plan, USDA Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region and Lake Tahoe Basin Management Unit and Geometronics Service Center (1979). Lake Tahoe Basin Management Unit, California and Nevada : 1979. San Francisco, CA, United States Forest Service - Pacific Southwest Region.

United States Forest Service - Pacific Southwest Region and Lake Tahoe Basin Management Unit (1988). Lake Tahoe Basin management unit, U.S. Dept. of Agriculture, Forest Service, Pacific Southwest Region, San Francisco, CA.

United States Forest Service - Pacific Southwest Region and Lake Tahoe Basin Management Unit and Geometronics Service Center (1992). Lake Tahoe Basin Management Unit, California and Nevada : 1992. San Francisco, CA, United States Forest Service - Pacific Southwest Region.

United States Geological Survey (1901). Lake Tahoe and vicinity : California-Nevada, U.S. Geological Survey.

United States Geological Survey, N. B. o. M. a. Geology, et al. (1973). South Lake Tahoe folio, slope map. Reno, NV, Nevada Bureau of Mines and Geology.

United States Lake Tahoe Basin Management Unit and United States Forest Service Pacific Southwest Region (1994). Final environmental impact statement : Tallac historic site master plan., United States Forest Service Pacific Southwest Region, San Francisco, CA.

United States National Ocean Service and United States Federal Aviation Administration (1989). Lake Tahoe Airport, South Lake Tahoe, California : digitized from OC 5416, surveyed March 1989, 7th edition, United States National Ocean Service, Corbin, VA.

United States National Ocean Service (1992). United States, California--Nevada, Lake Tahoe. Washington, D.C., National Ocean Service.

United States National Park Service (1940). Map of the Comstock area. Berkeley, CA, United States National Park Service.

United States Soil Conservation Service (1970). Snow load zones, Lake Tahoe Basin : Alpine, El Dorado & Placer counties, California; Carson City, Douglas & Washoe counties, Nevada. Portland, OR, United States Soil Conservation Service.

United States. Forest Service and Tahoe Regional Planning Agency (1975). Soils of the Lake Tahoe region : a guide for planning, Tahoe Regional Planning Agency, South Lake Tahoe, CA.

Van Denburgh, A. S., R. D. Lamke, et al. (1973). A Brief Water-Resources Appraisal Of the Truckee River Basin, Western Nevada, U.S. Geological Survey, Carson City, NV.

The study area for this water-resources appraisal in nevada lies at the western edge of the great basin and encompasses 12 hydrographic areas but excludes the lake tahoe basin. eleven of the areas are part of the truckee river drainage basin, and the 12th, the fernley area, borders the basin to the east. altitudes in the study area range from 10,778 feet atop mt. rose to 3,460 feet at the deepest point in pyramid lake (depth, 335 feet). precipitation averages 5 to 10 inches per year at lower altitudes, and more than 40 inches in the higher mountain areas. within the truckee river basin in 1969, 43,000 acre-feet of water was withdrawn for domestic, public-supply, and industrial use. about 70% of the total is obtained from the truckee river and hunter creek. the remainder, about 12,000 acre-feet per year, is pumped from wells. the greatest groundwater withdrawal is made to supply the reno-sparks municipal system. groundwater ranges from dilute (specific conductance less than about 600 micromhos, dominated by calcium, sodium, and bicarbonate) in and near recharge areas and near streams, to saline (more than 5,000 micromhos, dominated by sodium and chloride) in the lowest, downgradient areas. the quality of surface waters deteriorates in a downstream direction, culminating in the saline waters of pyramid lake (about 5,000 mg per liter of dissolved solids) and fernley sink (more than 50,000 mg per liter). (woodard-usgs)

Van Etten, C. (1985). Prewar wood : speedboats of Lake Tahoe, 1910-1941. Tahoe City, CA, Sierra Maritime Pub.

Van Etten, C. (1987). Tahoe City yesterdays. Tahoe City, CA, Sierra Maritime Publications.

Van Seters, P. (1989). Magnificent Places: Public Efforts to Protect Natural Resources, University Of California, Berkeley.

This dissertation is a socio-legal comparative case study of three government agencies dealing with matters of land use and environmental protection: the San Francisco Bay Conservation and Development Commission (BCDC), the Tahoe Regional Planning Agency (TRPA), and the California Coastal Zone Conservation Commission (CCZCC), later renamed California Coastal Commission (CCC). BCDC, TRPA and CC(ZC)C represent a new breed of administrative organizations that brought about what is commonly referred to as the "quiet revolution in land use control." The innovative quality of these new agencies appears most prominently in the following characteristics: (1) their affirmative responsibility for problems of environmental management heretofore outside the scope of government; (2) the welding of planning to regulatory authority; and (3) a "regional" jurisdiction that cuts across the traditional boundaries of local governments. While the Bay Commission, the Tahoe Agency and the Coastal Commission share important attributes of legislative mandate and institutional design, they display equally important differences. These differences are explored and assessed in subsequent chapters of this study: the ways in which official mandates were elaborated into institutional missions; the variant interplay of planning and regulation; the patterns of administrative organization and culture; the modalities of public participation. Thus the study identifies variations of structure and context that account for the variable accomplishments of these new land use agencies. The underlying analytic theme of this dissertation is to point out and explicate a characteristic tension between "responsiveness" and "accountability," between "openness" and "integrity," in contemporary law, policy and administration. Administrative agencies have emerged as today's most representative legal institutions. In recent thinking about administrative law and public administration, attention has shifted from the containment of "administrative discretion" to the promotion of "institutional competence." Comparison of the historical records of BCDC, TRPA and CC(ZC)C testifies that this latter is no panacea and highlights the dilemmas involved in designing institutions that are both competent and fair. Order No: AAC 9029078 ProQuest - Dissertation Abstracts

Van Tassel, B. H. (1987). Wood chips to games chips : casinos and people at North Lake Tahoe. Sacramento, CA, Spilman Printing Co.

Varnhagen, E., E. R. Byron, et al. (1987). Epischura density as a factor controlling the establishment of Bosmina populations in Lake Tahoe. Congress In New Zealand, Hamilton, New Zealand.

The timing of the decline of Epischura in the late summer and autumn months is probably the most important factor determining whether Bosmina will occur in any given year. If Epischura populations decline in August or September, Bosmina are free to grow throughout September and October and can achieve high densities depending on food availability. If Epischura populations persist into October or November before declining in abundance, Bosmina will not be able to colonize the lake because of inherent resting egg production and declining ambient temperatures. The impact of Mysis predation on Bosmina populations has apparently been to shift Bosmina vertical distribution higher in the water column. Bosmina population abundance is now controlled by Epischura abundance to a large extent. In short, Bosmina in Lake Tahoe do not exhibit high enough birth rates to overcome the impact of invertebrate predation and their ability to colonize the lake is essentially controlled by the population behavior of their predators.

Vernon, E. J. (1949). Tahoe trails and Sierra Mountain memories, E.J. Vernon.

Vincent, W. F. (1977). Ecophysiological Studies On the Aphotic Phytoplankton Of Lake Tahoe, California - Nevada, University Of California, Davis.

Vincent, W. F. (1978). Survival of Aphotic Phytoplankton in Lake Tahoe Throughout Prolonged Stratification. Congress In Denmark, Copenhagen, Denmark.

The chlorophyll content of the 350-450 m stratum of Lake Tahoe's aphotic zone remained statistically unchanged from Dec. 1975 to Dec. 1976, thereby demonstrating that exchange between the deep aphotic zone and overlying waters was minimal even throughout the period of surface mixing in early 1976. Algae collected from within this zone began photosynthesizing immediately upon re-exposure to euphotic light levels and photosynthetic rates were not increased with up to 116 hours further preincubation in the light. To supplement chlorophyll estimates of "light reaction potential" the enzyme catalysing the rate determining step of the dark reaction, ribulose 1.5-diphosphate carboxylase (RuDPCase) was assayed down the water column. RuDPCase levels per unit microbial biomass for deep aphotic populations were not statistically different from levels in the euphotic community. Settling velocities measured over a wide range of nutritional conditions for six aphotic algae isolated into uni-algal culture were too slow to account for a recent euphotic origin of these cells by passive sedimentation.

Vincent, W. F. and C. R. Goldman (1980). Evidence for algal heterotrophy in lake Tahoe, California-Nevada. Limnol. Oceanogr. 25(1): 89-99.

Significant differences in the uptake of SUP-14 organic compounds between light and dark bottle incubations of water were recorded from Lake Tahoe. The response to light did not occur in situ below the max depth of inorganic C photoassimilation and was completely inhibited by a photosynthetic inhibitor. Dark acetate uptake in the deep euphotic zone was strongly inhibited by a eucaryotic inhibitor. Microautoradiographic analysis showed that 2 species of green algae (Monoraphidium contortum- and Friedmannia-) in Tahoe were capable of acetate transport at labeled substrate additions within previously determined ambient limits; in axenic culture these 2 species grew heterotrophically on acetate. Activities of key enzymes of the major inducible pathway for acetate assimilation were high per unit ATP in the region of the water column where acetate uptake was light stimulated. These data strongly support the hypothesis of heterotrophically active phytoplankton populations at the bottom of the euphotic zone.

Vincent, W. F. (1982). Autecology of an Ultraplanktonic Shade Alga in Lake Tahoe. J. Phycol. 18(2): 226-232.

The ultraplanktonic green alga Monoraphidium contortum Korm. in Lake Tahoe (California-Nevada) demonstrated several ecological and physiological attributes of a genetically adapted shade species. M. contortum achieved maximum biomass during deep mixing in winter when light availability was at a minimum. During stratification it was found in maximum abundance in the deep euphotic region, 100-150 m. This species was also distributed through the deep aphotic zone where, despite prolonged darkness, it remained capable of immediate photosynthesis when re-exposed to light levels in the euphotic zone. The spirally twisted cells were grazed by two calanoid copepods in Lake Tahoe as readily as much larger-celled phytoplankton species of less complex morphology. Slow growth rates in combination with high susceptibility to copepod grazing may effectively exclude M. contortum from the upper 75 m, where it was rarely recorded. In culture it showed a marked incapacity to adjust to "sun" conditions but was well adapted to low light regimes. Under a wide range of irradiances, photochemical capacity, photosynthetic capacity and growth rates were low, but cellular pigment content remained high. Genetically distinct sun and shade populations of phytoplankton may play a determining role in major shifts of community structure over depth and time in Lake Tahoe.

Vincent, W. F. (1990). Dynamic Coupling Between Photosynthesis and Light in the Phytoplankton Environment. Internationale Vereinigung fuer Theoretische und Angewandte Limnologie. Verhandlungen IVTLAP 24(1): 25-37.

Substantial variations in photosynthesis from one year to another are often superimposed upon any long term trends such as eutrophication. This year-to-year variability can be initiated by meteorological factors, especially at critical times in the successional or mixing cycle. In Lake Tahoe (California-Nevada) a strong cross-correlation exists between annual photosynthesis and the maximum depth of mixing. The critical period of less than one month in Lake Tahoe is short relative to broader scale, synoptic weather patterns, such as those associated with the El Nino/Southern Oscillation cycle. Much of the photo-adjustment of phytoplankton takes place at the level of energy capture, and also during the conversion of solar to chemical energy. Four classes of proteins, each interconnected to the others, include light harvesting pigment proteins, reaction center proteins, electron transfer proteins, and ATP-generating proteins. The efficiency of light harvesting by these pigment protein complexes dictates the areal absorption coefficient of the cell, usually normalized to chlorophyll a and referred to as kc. The increase in the carotenoid content of the light-harvesting complex may be especially important in brightly lit environment. The biosynthetic processes associated with sun-shade adaptation allow the phytoplankton community to adjust to mean irradiances over a time scale of hours to days, but for an algal cell circulating through the mixed layer of a lake, or exposed to changing cloud conditions, a more urgent photoadaptive response is required. High performance liquid chromatography is playing an increasing role for the tracking of shifts in the light-harvesting pigments in natural waters. Several models have been developed to describe the processes of photosynthesis and photoadaptation but none of these models have incorporated the adjustments, adaptations, and damage/repair responses which characterize phytoplankton photosynthesis. (Brunone-PTT)

Voluntary Action Center of South Lake Tahoe (1978). Programs and projects, March 1978. South Lake Tahoe, CA, Voluntary Action Center of South Lake Tahoe.

von Schmidt, A. W. and Lake Tahoe and San Francisco Water Works (1871). Report to the Lake Tahoe and San Francisco Water Works Company, on its sources of supply, proposed line of works, estimated cost and income, Alta California Printing House, San Francisco, CA: 21 p.

Vondracek, B. C. (1981). The Energetics Of the Tahoe Sucker, Catostomus Tahoensis, In Cyclic and Constant Temperatures, University Of California, Davis.

Recent hypotheses suggest that aquatic organisms will exhibit faster growth rates in diel temperature cycles as compared with organisms that remain at constant temperatures. Attendant assumptions are lower metabolic rates and increased assimilation efficiency in cyclic as opposed to constant temperatures. The growth and metabolic rate of the Tahoe sucker, Catostomus tahoensis, were evaluated in diel temperature cycles which approximate natural temperature regimes occurring between late spring and early autumn. Three experiments were conducted in cyclic temperatures and constant temperatures equivalent to the arithmetic mean of the temperature cycles. The Tahoe sucker grew faster in a reservoir than in two tributary streams. Growth rates were evaluated both by comparison of back-calculated lengths using pectoral fin rays and by comparison of standard lengths at capture of age V suckers. Four possible factors were hypothesized to explain the observed growth differential: (1) genetic differences, (2) extra energy costs of swimming in flowing systems, (3) food availability, and (4) temperature regimes. Stampede Reservoir was formed in 1969 and the parental stock of suckers was originally present in Sagehen Creek and the Little Truckee River suggesting genetic differences are not a factor. The Tahoe sucker selects areas of low flow rate obviating significant energy expenditures to maintain station. Digestive tract fullness and energy content of the diets were not significantly different in the streams of the reservoir, which indicated food availability was not a factor influencing the growth differential. Stream temperatures fluctuated 12 C daily, whereas reservoir temperatures remained nearly constant daily and varied little throughout July and August. Mean temperatures w here the suckers reside in both streams and reservoir were nearly identical during the summer sampling period. Growth season length or increased maintenance metabolic costs for stream residents are likely temperature-related phenomena explaining observed growth rate differentials. Resting routine metabolic rates of the Tahoe sucker were measured using static, plexiglass respirometers in cycling and constant temperatures over the thermal range of 8-20 C. Q(,10) values approximating three for both cyclic and constant temperature regimes indicate that the Tahoe sucker in a cyclic temperature regime are significantly ($P < 0.05$) higher than rates of suckers acclimated to a constant temperature equivalent to the arithmetic mean of the cycle. These higher energetic costs for routine metabolism may explain reduced Tahoe sucker growth rates in streams compared with reservoirs. Growth rates, gross growth efficiencies and maintenance rations of the Tahoe sucker were determined in cyclic and constant temperatures over a thermal range of 4-23 C. Growth rates and gross growth efficencies were determined in three temperature pairs (low, 8 C constant, 4-12 C cycle; intermediate, 13 C constant, 8-18 C cycle; and high, 18 C constant, 13-23 C cycle) and at three ration levels (starvation, restricted and repletion). Growth rates and gross growth efficiencies were not significantly different at any temperature pair-ration condition, except at low temperatures and starvation ration. Maintenance rations increased from approximately 1% initial weight weight/d at low temperatures 1.7% at high temperatures and 2.0 % at intermediate temperatures. Brought together, the results of the three experiments question the universality of previous assumptions regarding growth and metabolism of fishes exposed to sinusoidal temperature fluctuations. Order No: AAC 8521654 ProQuest - Dissertation Abstracts

Vondracek, B., J. J. Cech, Jr., et al. (1982). Effect of cycling and constant temperatures on the respiratory metabolism of the Tahoe sucker, Catostomus tahoensis (Pisces: Catostomidae). Comp Biochem Physiol A Comp Physiol 73(1): 11-14.

Vondracek, B., L. R. Brown, et al. (1982). Comparison of Age, Growth, and Feeding of the Tahoe Sucker From Sierra Nevada Streams and a Reservoir. Calif. Fish Game 68(1): 36-46.

The Tahoe sucker, Catostomus tahoensis , grew faster in a reservoir than in two tributary streams. Growth rates were evaluated both by comparison of back-calculated lengths using pectoral fin rays and by comparison of standard lengths at capture of age V suckers. Digestive tract fullness and energy content of the diets were not significanlty different for fish in the streams of the reservior, which indicated food availability was not a factor influencing the growth differential. Growing season length or increased maintenance metabolic costs forstream residents are likely temperature-related phenomena explaining observed growth rate differences.

Vondracek, B., J. J. Cech, Jr., et al. (1989). Growth, growth efficiency, and assimilation efficiency of the Tahoe sucker in cyclic and constant temperature. Environ. Biol. Fish. 24(2): 151-156.

Tahoe sucker, Catostomus tahoensis , were fed at three ration levels (starvation, 50% of repletion, and repletion) at three constant and cyclic temperature regimes to examine growth rate and gross growth efficiencies. Growth rates increased with increasing temperature and ration level. Growth rates were not different between cyclic temperatures and the constant temperature equivalent to the mean of the cycle. Maintenance rations increased from 0.9% of the initial wet weight per day at low temperatures to 2.0 and 1.7% at intermediate and high temperatures, respectively. Tahoe sucker growth rates and assimilation efficiencies may not be enhanced in small streams because of this species' inability to mediate temperature cycles through behaviour thermoregulation.

Wackenreuder, V. and Geological Survey of California (1870). Sierra Nevada summit line north and south of Lake Tahoe.

Walters Engineering (1973). Lake Tahoe water, wastewater & drainage HUD-701 planning study, Walters Engineering, Reno, NV: 1 v. (unpaged).

Ward, J. F., Lockheed Engineering, et al. (1981). Photographic technology development project : timber typing in the Tahoe Basin using high altitude panoramic photography : final report, USDA, Houston, TX.

Warriner, J. and R. Warriner (1958). Lake Tahoe; an illustrated guide and history. San Francisco, CA, Fearon Publishers.

Washburn, C. A. (1972). Clean Water and Power. Environment 14(7): 40-44.

Because of the well-known environmental consequences of electrical production and distribution, a question arises as to whether the pollution caused by the power requirements of water pollution control programs will approach or outweight the benefits gained. a power increase of 2.9% would suffice to furnish secondary and tertiary treatment to every remaining untreated effluent in the united states. even producing the pristinely pure effluent of the lake tahoe plant represents only a 3.3 percent addition over tertiary power needs. this compares to a past overall power growth rate of 7 percent per year. power growth demands are not attributable to waste water treatment needs, nor can secondary pollution from power demands be used as an excuse for halting pollution control efforts. (anderson-texas)

Watanabe, Y. and C. R. Goldman (1983). Heterotrophic bacterial community in oligotrophic Lake Tahoe. Congress of the International Assocation of Limnology, Lyon, France.

Distribution and some properties of heterotrophic bacteria were studi ed in ultra-oligotrophic Lake Tahoe, Calfifornia-Nevada, U.S.A. The b acterial density was low in pelagic waters but increased in the litto ral zone. Size fractionation of suspended particles in lake water sho wed that 68% of viable bacteria in the pelagic water attached to detr ital particles larger than 3 mu m, whereas 20% in the polluted littoral water. In aufwuchs on bottom rocks in littoral zone, a high bacteria l density (10 super(6) cfu cm super(-2) in viable counts, 10 super(8) cells cm super(-2) in direct counts) developed in relation to attached algae. Enrichment experiments revealed that the growth of bacterial population in both plankt onic and attached was limited not only by organic carbon but also nit rogen and phosporus in lake water. Daylight penetrating into lake wat er is one factor suppressing the bacterial growth in upper photic zon e in such an oligotrophic situation.

Waymire, J. A. (1907). Diverting water from Lake Tahoe for use in California. San Francisco, CA, Argus Press.

Waymire, J. A. (1908). Distribution of Lake Tahoe waters. San Francisco, CA, [publisher unknown].

Waymire, J. A. (1908). Lake Tahoe and Truckee River water supply : distribution of interstate waters, Jordan Printing. Co.

Waymire, J. A. (1908). Water and power supply from Lake Tahoe and American River offered to Oakland and other cities. Oakland, CA, Oakland Enquirer.

Waymire, J. A., California Water Company, et al. (1909). In the matter of the title in and to the waters of the Truckee river and to the use of Lake Tahoe as a reservoir : brief on behalf of the California Water Company, successor in interest to the Lake Tahoe and San Francisco Water Works. San Francisco, CA, [publisher unknown].

Waymire, J. A. (1920). Water supply from Lake Tahoe and the North Fork of American River for power and domestic use in cities in California. San Francisco, CA.

Weekend Outdoor Productions (1972). Lake Tahoe recreation area. Oakland, CA, Weekend Outdoor Productions.

Wells, A. J. (1906). Lake Tahoe and the High Sierra. San Francisco, CA, Southern Pacific Co.

Werner, S. B., C. E. Weidmer, et al. (1984). Primary plague pneumonia contracted from a domestic cat at South Lake Tahoe, Calif. J. Am. Med. Assoc. 251(7): 929-931.

Primary plague pneumonia occurred in a 47-year-old South Lake Tahoe woman shortly after face-to-face exposure to her plague pneumonia-infected cat. Both died. Field investigation revealed a recent plague epizootic in squirrels and chipmunks around the patient’s home. Control measures included active surveillance and chemoprophylaxis of 197 contacts to the victim, a community alert on methods of self- and pet protection, and application of insecticide to reduce rodent flea populations. No secondary cases occurred.

West, A. W. and K. M. Mackenthun (1966). Report on Pollution in the Lake Tahoe Basin, California-Nevada, Federal Water Pollution Control Administration, Cincinnati, OH.

Lake Tahoe is threatened by nitrogen and phosphorus pollutants from sewage discharged within the basin. The phosphorus content of Lake Tahoe water has reached a critical level. Objectionable algal growths are present in near-shore areas where phosphorus concentrations are highest. A substantional increase in nitrogen, common in human wastes, could create obnoxious algae throughout the lake, destroy its clarity and cause a distasteful sight and smell. Lake Tahoe is threatened by silt erosion from lands where the natural vegetative cover is destroyed and soil is disturbed by land clearing. Silt, transported by runoff during the rainy season, reduces water clarity and beauty; destroys aquatic life and adversely changes composition of organisms that may be present. The following general improvements should be made; (1) establish additional public utility districts, and extend public sewer service to collect all sewage from the drainage area; (2) provide minimum secondary treatment for all wastes collected; (3) export all sewage and garbage out of the Lake Tahoe basin; and (4) minimize the transport of silt into Lake Tahoe by using effective soil conservation and erosion control for lands within the basin.

West (1971). California-Nevada Interstate Compact. West Cal Water Code Ann secs 5975 thru 5976.

California and Nevada have entered into a compact for the more efficient determination of water rights between the states. A commission consisting of five representatives from each state as well as one federal representative has been established to enforce the Compact's provisions. Any citizen who feels that the Compact has been violated is permitted to report to the commission. The commission will enforce the Compact's provision in the appropriate court of the state in which a violation has occurred. The relative rights of both California and Nevada regarding the use of water from the Lake Tahoe Basin, the Truckee River Basin, the Carson River Basin and the Walker River Basin are set out in detail in the compact. Each state is allowed to make any use of groundwater and springs provided such use does not interfere with the natural flow of water in the other state. The states are free to change the use of water assigned to them provided such change does not adversely affect the allocation of water to the other state. The use of all waters for the preservation, protection, and enhancement of fish, wildlife, and recreation is explicitly recognized. Either state which imports water is guaranteed the exclusive use of that water. (Moorhouse-Florida)

Western Federal Regional Council (1978). Federal policy for the Lake Tahoe Basin, U.S. G.P.O., Washington, D.C.

Western Federal Regional Council (1979). Lake Tahoe environmental assesssment : executive summary, Western Federal Regional Council.

Western Federal Regional Council - Interagency Task Force (1979). Lake Tahoe environmental assessment, Western Federal Regional Council, Interagency Task Force.

Western Geographics Co. (1968). Street map of Lake Tahoe communities, California and Nevada. Tahoe City, CA, Greater North Lake Tahoe Chamber of Commerce and Covention Bureau.

Western Map Company (1975). City indexed maps of Lake Tahoe and vicinity. Glendale, CA, Western Map Company.

Westphal, J. A., R. L. Bateman, et al. (1972). Water quality simulation of Tahoe-Truckee system, Nevada-California, Center for Water Resources Research, Desert Research Institute, University of Nevada, Reno, NV.

Westphal, J. A. (1973). Digital Simulation Of Inorganic Water Quality Of Tahoe-Truckee System, Nevada-California, University Of Nevada, Reno.

Westphal, J. A., J. V. A. Sharp, et al. (1976). Water Quality Simulation of Tahoe-Truckee System, Nevada-California-Volume I, University of Nevada, Reno. Center for Water Resources Research.

A model was developed to aid inorganic water quality control in the Tahoe-Truckee water system of Nevada and California. In this system impoundments, diversions for and returns from industrial, agricultural, and municipal uses, and groundwater returns influence inorganic quality and surface water flows. Mass-flux-balance is the basis of the model. Assumptions used relative to the model include: a conservative nature for inorganic constitutents, instantaneous, complete mixing, and the accurate recapitulation of flows at an unused gaging station. The model is based on data collected over three years at 40 sites. Calcium, sodium, potassium, chloride, sulfate bicarbonate, silica, magnesium, and total dissolved solids (less silica) were modeled. The model simulates concentrations at selected points and quality of dispersed flows. (Collins-FIRL)

Westphal, J. A., J. V. A. Sharp, et al. (1976). Water Quality Simulation of Tahoe-Truckee System, Nevada-California - Volume II - Appendices, University of Nevada, Reno. Center for Water Resources Research.

Documentation for a digital inorganic water quality simulation model of the Tahoe-Truckee System which consists of the mainstem and tributaries of the Truckee River between Tahoe City, California and Nixon, Nevada is presented in the form of appendices. The model is based on the principle of mass-flux balance and presumes that inorganic constituents are conservative, complete mixing occurs instantaneously, and that flows are recapitulated accurately at the defunct gaging station near Truckee, California. The model was developed from 3 yr of water quality data collected monthly at about 40 sites along the mainstem and tributaries. The appendices include: predictive equations, a computer program for the model, cumulative frequency distribution curves, a derivation of complete mixing equations, and simulation model output for bicarbonate, chloride, sulfate, sodium, potassium, calcium, magnesium, silica, and total dissolved solids. (Kreager-FIRL)

Wheeler, G. M., Grunsky Family, et al. (1881). Topographical map of Lake Tahoe Region : Sierra Nevada, California and Nevada. Vienna, Imp. Royal Geog. Institut.

Wheeler, S. S. and W. W. Bliss (1992). Tahoe heritage : the Bliss family of Glenbrook, Nevada. Reno, NV, University of Nevada Press.

White, G. C. (1974). Disinfection: the Last Line Of Defense For Potable Water. Water And Sewage Works 121(7): 66-67.

The community water system survey revealed that 77 percent of water treatment plant operators are inadequately trained in elementary water microbiology, with 46 percent deficient in chemistry relating to the operation of the facility. a review of the important aspects of chlorination chemistry was presented. in the free residual process, free chlorine displays the most powerful germicidal ability of all chlorine compounds, with the exception of chlorine dioxide. this process should be operated so that the hocl content of the final residual is 85 to 90 percent of the total residual. ammonia nitrogen and organic nitrogen cause the most interference with the process. ammonia nitrogen may be removed by chlorine easily, requiring approximately 10 parts of chlorine for each part of ammonia. organic nitrogen compounds can produce a system of unstable residuals, with reactions lasting for days before completion, often resulting in n-chloro compounds with taste and odor problems in the distribution system. the coliform concentration is a salient factor in the evaluation of raw water quality at lake tahoe, california, a plant produces effluent with a coliform concentration less than 2.3/100 ml. this potable standard is achieved with chlorine doses of 2 to 3 mg/liter in the presence of 2 to 15 mg/liter of ammonia nitrogen. (leibowitz-firl)

White, C. A., A. L. Franks, et al. (1978). Demonstration of erosion and sediment control technology : Lake Tahoe region of California, Municipal Environmental Research Laboratory, Office of Research and Development, Springfield, VA.

Willard, W. B. J. (1972). Municipal Wastewater Reclamation. The Military Engineer 64(418): 101-104.

Examples of water reuse are given. at santee, california, waste water has been used for recreational purposes. five bodies of water composed of reclaimed sewage were constructed in 1959. to delay eutrophication of lake tahoe new methods for waste water reclamation have been devised. the basic concept consists of collection of all waste water from individual and community systems within the tahoe basin, treatment to meet bacteriological standards for drinking water, and exportation for irrigation and recreation. it is a great economic saving to use reclaimed water in industry, but the conversion of waste water into high quality drinking water offers the greatest challenge. groundwater recharge using municipal waste water is another means of water reuse. waste water can be converted to potable water through the use of microorganisms. direct cycle water reuse for municipal water supplies could come into existence by the end of this century, but only if the economics of the situation favor its use over some other method. under the advanced water treatment research program of the federal water quality administration (fwqa), processes have been developed and are available for the production of potable water, but some degree of overdesign must be incorporated until further full-scale testing and improvements in design, materials, and equipment are completed. it is believed that treated waste water will gain widespread acceptance as a true water source, and that the quality of the effluent will not be measured in the future by percent reduction, but will be based on more practical absolute values. (strachan-chicago)

Williams, N. J. and C. R. Goldman (1975). Succession Rates in Lake Phytoplankton Communities. Verhandlungen Internationale Vereinigung Limnologie 19: 808-811.

Discussion is centered on progressive changes in relative species composition of phytoplankton in five lakes which represent extremes and medians of production. Included were: (1) Lake Tahoe, an ultra-oligotrophic, subalpine warm monomictic lake; (2) Castle Lake, California, a dimictic, mesotrophic subalpine lake; (3) Clear Lake, California, a polymictic, lower-altitude productive aquatic environment; (4) Lake Victoria, Africa, representing equatorial regions; and (5) an arctic pond to represent conditions typical of polar latitudes. Comparison of succession rates for the five lakes demonstrated that the non-tropical lakes show significant seasonal variation in succession. Additionally, maximum succession rates occur after community independent environmental perturbations which are usually but not necessarily correlated with periods of high primary productivity. Finally, it was found that in the absence of disturbance succession rates decline and remain low, partly because of community dependent processes. Equations are given in the text for measuring rate of succession by calculating the change in the relative contribution of individual species to total biomass diversity. Notation is given for the fraction of total diversity attributable to a single species, and a succession rate index that measures the speed at which the community moves through diversity space where the dimensions are the proportion of total diversity contributed by a particular species. (Harris-Wisconsin)

Williams, N. J. (1978). Annual Variation of Photosynthetic Parameters in Lake Tahoe. 20th Congress, Internationale Vereinigung fur Theoretische und Angewandte Limnologie, Copenhagen, Denmark.

The Steele (1962) and Vollenweider (1965) primary production versus light equations were fit to an annual cycle of primary production in Lake Tahoe. The Vollenweider equation was reparameterized in terms of the two Steele parameters, optimum light intensity and maximum production per chlorophyll, plus an additional parameter, the initial slope of the specific production versus light curve. Both equations explained about 90% of the total annual variation in specific production. The parameters of these equations showed systematic and significant annual variation. This variation was correlated with environmental conditions. Optimum light intensity appeared to be controlled by average light intensity in the mixed layer, the initial slope by nitrate concentration, and maximum specific production by nitrate and temperature. By relating the parameters to the environmental conditions it was possible to account for 44% of the observed variation in specific production with the Vollenweider equation and 67% with the Steele equation.

Wilsey & Ham and Nevada-California Lake Tahoe Association (1958). Lake Tahoe regional area : preliminary study for a general plan. Millbrae, CA, Wilsey & Ham.

Wilsey Ham & Blair and Lake Tahoe Regional Planning Commission of Nevada and California (1962). Preliminary regional plan : Lake Tahoe 1980 regional plan program. San Francisco, CA, Wilsey, Ham & Blair.

Winnett, T. (1987). The Tahoe-Yosemite trail : a comprehensive guide to the 180 miles of trail between Meeks Bay at Lake Tahoe and Yosemite Park's Tuolumne Meadows. Berkeley, CA, Wilderness Press.

Wise, J. and United States Environmental Protection Agency (1975). The Lake Tahoe study : as requested by the 92nd Congress in Section 114 of the Federal water pollution control act amendments of 1972, U.S. Environmental Protection Agency, Washington, D.C.

Wolfe, J. E. (1968). Earthquake History Near Lake Tahoe. Geologic Studies in the Lake Tahoe Area, California and Nevada. J. R. Evans and R. A. Matthews. Sacramento, CA, Geological Society of Sacramento: 27-36.

Woo, S. and N. Berg (1986). Factors Influencing the Quality of Snow Precipitation and Snow Throughfall at a Sierra Nevada Site. Symposium on Cold Regions Hydrology, University of Alaska-Fairbanks, Fairbanks, AK, American Water Resources Association, Bethesda, MD.

Regression analysis showed precipitation type, (rain, snow, mixed rain and snow, hail/graupel) and latitudinal storm path to be important factors influencing both precipitation, conductivity and nitrate solute concentrations at a subalpine site near Lake Tahoe, California. Weaker relationships existed between both precipitation type and precipitation pH and sulfate solute concentration. Storm duration, interstorm period, and precipitation amount and intensity were relatively unimportant explanatory variables. Vegetative influence on snow throughfall under forest canopy was minimal, compared to unaffected precipitation. Solute concentrations of H, SO4, Cl, and Ca in snow drip from two major conifers, lodgepole fir and red fir, were generally greater than precipitation in an open site. Contrary to studies in rain-dominated environments, snow drip chemistries between fir and pine were statistically different only for CA.

Wood, D. F. and San Francisco State University (1977). Water, sewerage and water-related land use controls in the Tahoe-Truckee area : a study in overlapping programs, San Francisco State University, San Francisco, CA.

Wrye, K. J. (1989). Perceived and Preferred Mission and Goals As Held By Constituent Groups Of the Lake Tahoe Unified School District (California, Nevada), University Of San Francisco.

The purpose of this study was to measure the perceptions and preferences of the mission and goals of the Lake Tahoe Unified School District held by teachers, school site administrators, district administrators, and members of the school board. Mission and goal priorities and levels of agreement and disagreement were sought among and between the four constituent groups. The review of literature relevant to this study focused on theories of organizations, social systems model, organizational mission and goals, and school mission and goals. Out of the literature review come the development of the School Mission and Goals Survey used to assess mission and goal perceptions and preferences. The questionnaire consisted of eighty items and utilized Likert-type scales to measure perception of actual and preferred mission and goal statements. Respondents included 167 teachers, 11 school site administrators, 5 district administrators, and 5 board members, (an overall response rate of 87 percent). This study clarifies the prevailing knowledge concerning the mission and goals of the Lake Tahoe Unified School District, and provides insight into some of the organizational problems associated with mission and goal clarification. On perceptions and preferences of the mission and goals by the District's constituent groups, all groups scored their preferences higher in importance than their actual perceptions; all constituent groups were dissatisfied with the District's emphasis of importance on most of the eighty mission and goal items; all groups showed dissatisfaction with regard to the District's emphasis on support goals; all groups disagreed most often with the board members concerning mission and goal rankings and agreed most often with the teachers; and although there were some important agreements on rankings, there was not a clear enough pattern of agreement to conclude a consensus on the rankings. Constituent group disagreement on mission and goal rankings, and findings that their preferences were higher than their perceptions implies that district schools should do it all and do it better. Lackof constituent group agreement on district mission and goals may imply a disproportionate emphasis on output goals over organizational support goals creating a dysfunctional organization.

Xiang, W.-N. (1989). Systems Modeling For Environmental Planning In the Lake Tahoe Basin, California-Nevada, University Of California, Berkeley.

Environmental planning in the Lake Tahoe basin is difficult. The environmental problems are complex, data and human knowledge are uncertain, the planning processes are multiobjective, multiparticipant, multilevel, and multicycle in nature. To cope with these difficulties, a holistic framework for environmental planning at a regional or basin level is desirable. As an effort to construct a systematic framework, three objectives are identified and pursued in this study. Pursuit of an improved regional environmental planning system through a coordination of its two component systems. The dissertation demonstrates how the two environmental planning systems at a regional level of a planning hierarchy for water quality and air quality protection, which are different from each other in purposes, assumptions, methods, and outputs, can be coordinated such that they are compatible with one another as well as consistent with the planning requirements from the higher level. It also demonstrates that not only the two systems themselves, but also the entire regional environmental planning system, in which the two are parts, can be improved from such a coordination. Establishment and application of a basinwide mitigation system. In the coordination process, a basinwide mitigation scheme is developed and applied. The dissertation demonstrates how a basinwide mitigation system can be used through a multiobjective linear programming model as a lever to balance the tradeoff between land use development and regulation. Development and application of a basinwide geographically oriented research support information system. The dissertation demonstrates what a basinwide geographically oriented planning information system should look like, how the system that is originally developed at a regional level is connected with others at community or site-specific levels, and how it supports the planning activities at the regional level. The study results not only provide helpful insights and experience for the professionals in the Lake Tahoe basin, but also benefit the development of a more effective and efficient methodology for regional environmental planning.

Zanitsch, R. H. and J. M. Morand (1970). Tertiary Treatment Of Combined Waste Water. Water And Wastes Engineering 7(9): 58-60.

The feasibility of removing refractory organic material and dyes from an activated sludge effluent using granular activated carbon was studied. a colorless effluent containing an average of 3 mg/l biochemical oxygen demand and 3 mg/l suspended solids was produced in the 61-day trial. tertiary treatment with granular activated carbon has been demonstrated in a pilot scale at pomona, california; a full-scale advanced waste treatment plant is in operation at lake tahoe, california. the source of waste water for each of these plants is basically of domestic origin, free of industrial contamination. at the mill creek sewage treatment plant in cincinnati, the influent is a combined industrial-domestic waste containing organic dyes, one of which is fluorescein. the green fluorescein color is soluble and, therefore, is not removed by primary treatment. in a preliminary test, an adsorption isotherm study was conducted on a grab sample; the isotherms demonstrated that the soluble organic carbon level of secondary effluent could be significantly reduced by adsorption on activated carbon. the carbon columns were used as both a filter and an adsorber. the fluorescein dye color bodies were effectively removed by adsorption on the granular carbon. (jones-wisconsin)

Zauner, P. (1982). Lake Tahoe. Tahoe Paradise, CA, Zanel Publications.

Zell, S. C. and S. K. Sorenson (1993). Cyst Acquisition Rate For Giardia-Lamblia In Backcountry Travelers to Desolation Wilderness, Lake Tahoe. Journal Of Wilderness Medicine 4(2): 147-154.

Zettel, R. M. and Tahoe Regional Planning Agency (1972). A transportation planning process for the Lake Tahoe Region : a prospectus. Berkeley, CA, R.M. Zettel.

Ziegler, D. S. (1985). Economics of nonpoint source pollution control: Lake Tahoe, California/Nevada. Perspectives On Nonpoint Source Pollution, Kansas City, Missouri.

Controlling water pollution from nonpoint sources had been a major concern at Lake Tahoe for over a decade. Recent amendments to the Tahoe Regional Planning Agency's Regional Plan require 5 different nonpoint source control programs to reduce pollutant loads to the Lake. The Agency's nonpoint source control policies may have a positive long-term impact on the region's economy and impacts of various types on local government, utility districts, and individual property owners. Lake Tahoe is a natural resource of exceptional quality; nonpoint source pollution control measures are necessary to protect its famous water quality. Economic impacts on local government and individual property owners should be minor, assumming that they share the burden of capital improvements. Utility districts that finance their operations with connection fees will be affected to some degree by growth management policies.

Zielinski, W. J., W. D. Spencer, et al. (1983). Relationship between food habits and activity patterns of pine martens. J. Mammal. 64(3): 387-396.

Pine martens (Martes americana) consume a variety of food types annually but seasonal foraging is restricted to a subset of available prey. Winter foods include chickarees (Tamiasciurus douglasii), voles (Microtus spp.), snowshoe hares (Lepus americanus), and flying squirrels (Glaucomys sabrinus) whereas ground-dwelling sciurids (Spermophilus spp. and Eutamias spp.) comprise the bulk of the diet during the remainder of the year. Activity also is variable by season, with martens foraging at night during winter and by day during summer. Seasonal marten activity does not appear associated with optimal ambient temperature but instead appears synchronized with the activity of prey.

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