

Foxes in charge of the chicken coop

By Ray Chesson

Morris Rasmussen is a friendly man of stocky build, an outdoorsman, a man who likes to fish. You probably don't know him, he isn't from Nevada. But he visits Nevada, comes here to fish during the winter. This is one of a growing number of outdoorsmen who are concerned about the pollution of streams and lakes throughout the nation.

On the afternoon of February 1st, at Willow Beach, a popular fishing spot nineteen miles below Hoover Dam on the Arizona side of the Colorado River, Rasmussen spoke of a pollution problem in the Jackson Hole country in Wyoming.

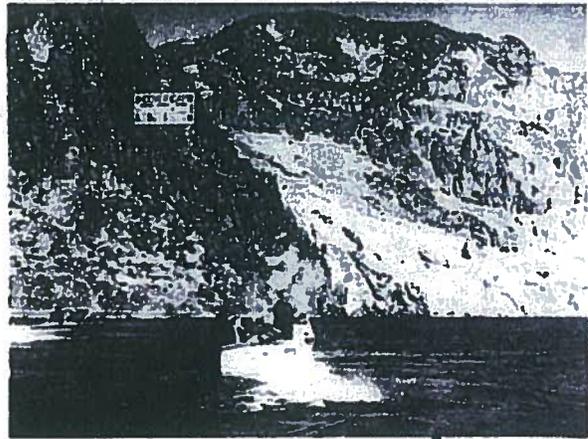
"Flat Creek," he said, "was a good stream for cutthroat trout. We used to take good cutthroats all the way down to the Snake River. Ten years ago a sewage disposal plant was built five miles upstream from the Snake, a modern plant. We still catch cutthroats above the disposal plant, but not in Flat Creek below the plant."

Rasmussen doesn't know what makes the five mile stretch below the disposal plant a dead stream, whether it is thermal pollution or perhaps a lowering of the dissolved oxygen content of the water due to improperly treated wastes from the disposal plant. He only knows that something is wrong, because the trout used to live there. And they don't live there anymore.

Here in the Las Vegas area we may now be



Warm springs are interesting phenomena along river where Boyle Engineering proposes the dumping of effluent.



Senator Bible tries his luck at the approximate site of the proposed power plant, electricity to be generated by Vegas Valley sewage effluent.

faced with a similar problem, the pollution, or rather the increased pollution, of the Colorado River below Hoover Dam. We refer to the proposed disposal of effluent from Las Vegas and its neighboring communities into the river at a point (quoting a Mr. Ditsworth of Boyle Engineering) "approximately three-quarters of a mile below the dam."

Boyle Engineering, Las Vegas, was hired at a cost of \$130,000 to formulate plans for water quality control, the chief object being, it appears, to halt as far as possible the alarming advance of pollution in Lake Mead, from which much of Las Vegas Valley's water is drawn.

Of four plans ultimately submitted by Boyle the following was recommended as most desirable from an economic viewpoint: The elimination of the pollution of Lake Mead by collecting the waste waters, treating them and conveying them by gravity through an outfall system to a point in the Colorado River downstream from Hoover Dam, part of the cost of this project to be covered by the sale of electricity from a small power plant to be built beside the river, its turbines operated by the gravity fall of Las Vegas Valley's sewage water.

To quote one local federal official, this is simply "dumping the honey bucket in another back yard."

Strangely enough, this plan has caught the fancy of a number of people. The stress has been

on the "cleaning up" of Lake Mead. Let's examine the possible effect of the above proposal on Lake Mohave, a much smaller body of water and thus subject to a much faster rate of contamination.

First let's consider thermal pollution, the changing of the temperature of the river below the suggested power plant. Let's look into the future.

Again quoting Mr. Ditsworth, his estimate of waste water that would be dumped into the river when the Las Vegas Valley's population reaches a figure of 1,000,000. "Around 200,000 acre feet of effluent a year. Temperature change in the river? Not a heck of a lot."

The Colorado immediately below Hoover Dam is a trout stream. It does not require "a heck of a lot" of temperature change to adversely affect such a stream.

At present the temperature of the river below the dam is 55 degrees, hardly varying one degree winter or summer. A raise of only two or three degrees, the maximum raise occurring during periods of low flow, perhaps Saturdays and Sundays, only two days a week, would have a definite and harmful effect on the stream. The food chain in the river would be disturbed by both the nature of the effluent and thermal pollution. The Federal Fish Hatchery at Willow Beach would be affected.

Water used in the hatchery is drawn directly from the river. A raise in the temperature, plus pollutants absorbing dissolved oxygen, would result in lowered trout production, fewer fish could be held in a raceway, the disease factor would increase. Consider the following statement issued by Supl. Oliver Hawkins and Assist. Supl. George Mapes:

"Any increase in nitrogen, phosphates or temperature will possibly have the effect of reducing the production capabilities of the Willow Beach National Fish Hatchery."

Of thermal pollution, Dr. Otto Ravenholt, Clark County Health District, who is a member of the Inter-Agency Water Pollution Control Task Force appointed by Governor Laxalt to study pollution says, "I don't think this has been detailed as yet."

The fact is simply this: there has been no study of possible thermal pollution. At what temperature will the effluent leave the treatment plant? Mr. Ditsworth makes a guess of "around 70 degrees."

But Mr. Nelson Williams, former instructor of biology, U.N.L.V. found a temperature of 80 degrees in June while conducting an algae study.

"In approximately thirty years," Mr. Ditsworth told the Nevadan "the effluent flow will amount to about two percent of the flow of the river."

Who actually knows what the flow of the

119 river will be thirty years from now? Who actually knows what the flow of effluent will be? On Nov. 9, the date of lowest flow for 1969, Hoover Dam released 5375 acre feet of water. Accepting Mr. Ditsworth's figure of an eventual 200,000 acre feet of effluent per year, we arrive at a figure of approximately 548 acre feet of effluent per day, or slightly less than 10 percent of the flow of the river at such a time, a far cry from 2 percent.

However the problem would not be this great since 548 acre feet a day is an average, and the volume of effluent would be smaller in winter than in summer. But again, no study has been made, no one knows what will actually happen to the Colorado below Hoover Dam in the matter of thermal pollution. Nor does anyone know what will actually happen to the river through other forms of pollution.

Even at its present state of comparatively low pollution, water samples taken in the vicinity of the Willow Beach hatchery have disclosed the presence of coliform, a bacteria causing dysentery. Phosphates and nitrogen are already present in the river to the extent of posing a problem in the hatchery. In the event that Las Vegas Valley effluent is emptied directly into the river the phosphates and nitrogen problem will be greatly multiplied, particularly through increased algae, a low order of aquatic plant that consumes dissolved oxygen. The upper end of Las Vegas bay is a good example of what can happen to a body of water with an undesirably high content of algae. The water becomes opaque and stagnant. In extreme cases, and this has happened in various parts of the country, the body of water affected becomes "dead". The oxygen becomes depleted and few if any life forms can exist.

Mr. Ditsworth says the phosphate and nitrogen content of the effluent would have hardly any effect on the river "because of the fast current." "Fast current" will not eliminate the phosphate and nitrogen, but will merely move the contaminating agents downstream to a collection point where the warmer water of Lake Mohave backs up against the cold current of the river. Even now a rampant algae bloom takes place yearly several miles above Eldorado Canyon.

The elimination of phosphates and nitrogen has been given consideration. Dr. Ravenholt says that, through a third stage treatment of effluent, "chemical removal of phosphorous and nitrogen could take out 95 percent of what is in the water."

At present the Las Vegas Wash returns an average of approximately 21,000 acre feet of effluent per year to Lake Mead, improperly treated water high in phosphates and nitrogen, as well as other pollutants including chloride and coliform. Even with the proposed tertiary, or third stage treatment, removing 95 percent of phosphates and nitrogen, the eventual increase in effluent volume, 21,000 to 200,000 acre feet per year, might easily result in more pollution rather than less.

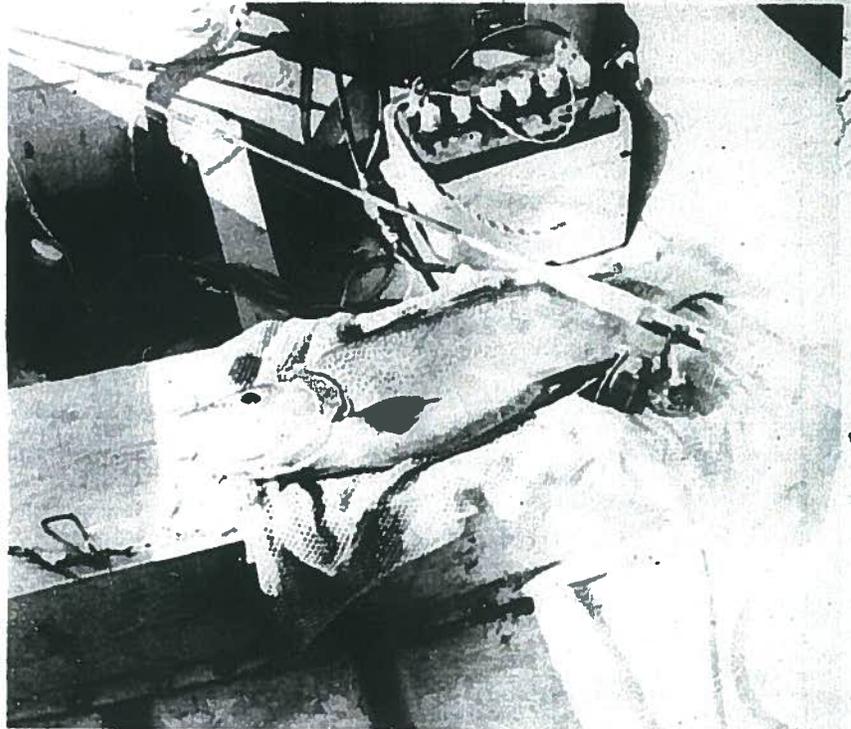
Another point has been raised by Dale Lockard, Nevada Fish and Game: There would hardly be a uniform flow of pollutants into the river. A calculation of average daily flow means little. A sudden and heavy discharge of pollutants, coming perhaps in the evening when river flow might drop, could occur even though the actual volume of effluent water remained the same. Such a release would heavily contaminate river water passing the area of discharge at the time. This stretch of concentrated pollution would move downstream at roughly seven miles per hour. It would have a great impact on the river.

We have been speaking of the milder forms of pollution. Let's think of what might happen if undesirable wastes from the Henderson chemical companies happen to get, even by accident, included in the effluent that enters the river. There is good reason to consider this.

Dr. Ravenholt says that Henderson effluent would be largely picked up (this in reference to the chemical plants) but the wastes "would have to be constantly monitored."

Mr. Orr, manager of the Stauffer Chemical Company's plants in Henderson, gives as products manufactured in that plant, "organic phosphates and intermediates for D.D.T."

Mr. Henry Curtis, manager of the American Potash and Chemical Corporation's plant in Hen-



The Colorado below Hoover Dam is a trout hatchery, but no thought was given in the \$130,000 engineering study to the effects of thermal pollution on the river and its fish hatchery.

erson says that his plant no longer manufactures herbicides, but does presently produce defoliates.

Any of these products, inadvertently introduced into the Colorado River below Hoover Dam through the effluent disposal plan recommended by Boyle Engineering, would have a disastrous effect on the only really important trout stream anywhere near this area. Can we trust a "constantly monitored" approach? One mistake can be too important.

In the commendable drive to "save Lake Mead" it seems that we have forgotten the value, the importance, of the river below Hoover Dam, and of Lake Mohave. At least some of us have. But not all of us.

Supt. Roger Allin, Lake Mead National Recreation Area, says, "National Park Service has a strong interest in the solution to this problem, and is on record to the users, present and future, of the Lake Mead Recreation Area, that it will not condone any solution to the Las Vegas Wash pollution problem which would cause degradation of other waters within the Recreation Area. Unless we can get a statement as to the quality of the water (effluent), regardless of the type of treatment, we will be unable to support the proposal."

The Bureau of Reclamation will have a powerful voice in what happens to the Colorado River both above and below Hoover Dam. Mr. A. B. West, Regional Director, Region 3, Bureau of Reclamation, says, "We would have to look very carefully at the chemical content of the end product. We would be opposed to any effluent going into the river that would degrade the water, damage the river and fishery at Willow Beach."

Mr. John Donaldson, Supervisor of Region 3, Nevada Dept. of Fish and Game, says, "We are opposed, on the basis of any possible changes of water temperature or quality, to effluent going into Lake Mohave. I would further state that this proposal (the piping of effluent into the Colorado River below Hoover Dam) will very shortly come to the attention of the Arizona Game and Fish Dept. This will be an item of discussion at a Colorado River Wildlife meeting to be held in Las Vegas in April."

Returning to Supt. Allin: "Every time we change the ecological conditions of a watercourse we run a serious risk of upsetting biological balances." In addition to being superintendent of

the National Park Service Lake Mead Recreation Area, Allin is a biologist.

So now in the end we come to the man who will, with his two partners, suffer immediately and economically if Las Vegas effluent, harmful to the river, is discharged below the dam. The man is "Butch" Webb, of Willow Beach.

Says Mr. Webb: "We are not entirely familiar with all the proposals that are being made concerning the disposition of the Vegas sewage. The proposal of which I have heard most is the construction of a small power plant below Hoover Dam and the generating of power with the Vegas sewage. I have faith that our government will not participate in the disposition of sewage in the Colorado River, that will ruin the finest trout waters in the Southwest."

Mr. Webb has faith in the government. The government is made up of elected or appointed individuals who stretch out their tentacles to sample the air, to determine public opinion. In many quarters it's hoped that public opinion will help to defeat the Boyle plan to dump Las Vegas Valley sewage into the river below Hoover Dam in order to save Lake Mead from pollution. There is no need for either Mead or Lake Mohave to be polluted. We only have to recognize the fact that we must pay the cost of purifying our effluent, whatever that cost may be, instead of hastily pouring it back into the Colorado in order to get credit for our disposal, credit that will enable us to pump a like amount of water from Lake Mead.

Whether or not we solve this problem in a manner that will set a precedent for communities up river, and other communities in the nation, depends somewhat on the task force appointed by Governor Laxalt.

This force is composed of Clark County, the Colorado River Commission (of Nevada), the Clark County Sanitation District, the city of Las Vegas, the city of Henderson, Boulder City, city of North Las Vegas, Las Vegas Valley Water District, Basic Management, Nevada Power Company, and Clark County Health District.

You will notice that many bodies appointed to this task force are guilty of creating the pollution problems they are now asked to curb.

It is much like putting the foxes in charge of the chicken coop.