



Sewage, with its rich minerals, can be used to create green belts, parks and a wildlife refuge in the desert, and grow animal feed.

# Las Vegas Valley sewage

Las Vegas Valley sewage has been studied as a pollution abatement problem, and various proposals have been made for the disposal of this water and its nitrates and phosphates. In a desert environment none of these are problems; all are valuable assets. Our sewage can be used to enhance the beauty of our valley.

Instead of allowing our sewage to pollute Lake Mead, as is being done, or to pollute Lake Mohave, as proposed in the Boyle-CH2M report, we could use our sewage to grow thousands of palm trees and many acres of lush green grass. Is there anything Las Vegas Valley needs more than shade and greenery?

Before any use of sewage can be made for any purpose, secondary treatment must be sufficient to remove all odors. If you can smell the treated sewage, then the plant or its management is inadequate.

If this basic requirement that the treated sewage be free of objectionable odor is met—then we can make good use of our sewage for irrigating pastures, golf courses, parks, greenbelts, and for landscaping highways and streets.

In our climate the irrigation season for perennial grasses is year-long, although the need for irrigation is greater in the warmer months. There are two methods of meeting this uneven demand other than by storing the sewage in a large reservoir until needed: (1) Surplus sewage can be discharged into wells for replenishment of our groundwater supply, or (2) surplus sewage can be used for extending and improving the marsh habitat in Las Vegas Wash. With adequate protection through law enforcement, the Wash could become an outstanding bird sanctuary.

Using our sewage to make our valley green to improve wildfowl habitat, or to replenish our

groundwater doesn't require a multi-million dollar plant for tertiary treatment.

The Boyle-CH2M recommendation No. 6 is: "that consultants be retained to begin preparation of contract documents for construction of required facilities (a tertiary treatment plant) as soon as practicable."

I do not believe that professional engineers would let a big, fat consulting fee color their judgment, but I do believe that the above methods for using our sewage without tertiary treatment were not considered fairly in the report.

The Boyle-CH2M report recognizes the advantages of using filtered sewage to recharge the groundwater. However, the report states: "not enough is known about the characteristics of the groundwater basin underlying the Las Vegas Valley to state positively that this alternative is acceptable."

So these consultants recommend building a multi-million dollar plant for tertiary treatment

**By Vernon Bostick**

"as soon as practicable" and studying the geology of the basin for the next ten years. If disposing of sewage underground is feasible, then the tertiary treatment plant would not be needed.

At a public meeting Dr. William G. Fiero of the Desert Research Institute challenged this section of the report. He stated that our groundwater basin has been studied thoroughly

and that its characteristics are very well known. Dr. Fiero strongly recommended using our sewage to recharge the groundwater and explained why this would not contaminate our groundwater supply.

If Dr. Fiero is right and it is feasible to recharge our groundwater supply by well injection, this is certainly the highest use for our sewage. However, other communities—Denver, for instance—have had unhappy experiences with disposing waste water underground. Therefore, I believe we should proceed slowly with just a few wells to begin with.

Using sewage to improve the wet meadows in Vegas Wash for waterfowl and other birdlife was treated unfairly in the report. This means of using sewage was combined and confused with a discussion of large recreation lakes for "body contact sports" in such a way that their objections to the lakes (which are valid) seemed to apply to both uses.

The report states, and Mr. Clayton stated in a public meeting, that 20,000 acres would be required to handle our sewage by evaporating it from ponds. But neither in the report nor in his discussion of his report did Mr. Clayton make it clear that he wasn't talking about now but sometime in the twenty-first century when they assume our valley will be jam-packed with a million inhabitants. Let's talk about now.

Mr. James H. Parrott, Manager, Clark County Sanitation District, stated in a talk at a UNLV sponsored symposium on pollution that our current production of sewage is forty million gallons per day which is 45,000 acre-feet per year.

The Las Vegas climate can evaporate 120 inches of water in a year. This is ten acre-feet of water for every surface acre in ponds. If all of the sewage—not just the winter time surplus—is

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suggested—but if all of the sewage were disposed of by evaporating it in ponds in Las Vegas Wash, it would require only 4,500 acres not 20,000 acres as stated by Mr. Clayton.

Mr. Clayton also said that these ponds would have to be lined with concrete. I do not recommend that we waste sewage by evaporating it under such unnatural conditions. I recommend that we use surplus sewage to keep the natural wet meadows that give Las Vegas its ~~flavor~~ meaning lush and green, and to provide a haven for waterfowl and other birds.

This could be accomplished with the same money and equipment that is now being used to drain these meadows. Mr. Parrott keeps a drag-line busy opening channels so as to hurry the transport of sewage to Lake Mead with a minimum loss of pollutants—nitrates, phosphates and coliform bacteria. If this dragline were used to construct low dikes for spreading the sewage out over the marsh instead of to dig ditches for concentrating the sewage—all of these pollutants would be retained in Vegas Wash.

Marsh vegetation would take up all of the nitrates and much of the phosphates. Only the first few ponds in the series would have an algae bloom. The lower ponds would be filled by seepage from the upper ponds. Coliform bacteria and all other microorganisms would be filtered out, and the remaining phosphates would become fixed.

Research at Penn State has shown that all of the bacteria and phosphates are removed when sewage percolates through three to four feet of soil. ~~From the pond to the soil.~~

If as seepage shows up in the Wash it were dammed and spread over the marsh to evaporate, ~~then, wouldn't it be better to carry channels and other cuts into Lake Mead which is the reason given in the Boyle-CH2M report why "the lakes themselves would have to be well sealed."~~

People living near Vegas Wash might fear that making the marsh better for birds might make their mosquito problem worse. This is not necessarily so. The ponds would be filled only in the winter when mosquitoes are no problem. These ponds would be dry during the summer months and would be used to grow grasses such as duck millet. The mosquito problem might be even less than at present. Moreover, there is an easy and natural solution.

Mosquitoes do not fly long distances; they are carried from the marsh to the city by wind. Palm trees planted on the water-spreading dikes would shelter mosquitoes from the wind and prevent their being blown into inhabited areas.

In discussing his company's report, Mr. Clayton indicated that they were unable to find enough land to use all of the sewage for irrigation in Las Vegas Valley. Let's make it clear we are talking about now and not some time in the next century when it is predicted that five times as many people will be living here as there are now.

Present production of sewage, according to Mr. Parrott, amounts to 45,000 acre-feet a year. If this amount of water was applied to row crops at just the right times with no waste and with no loss from evaporation while being held in storage, it would be sufficient to irrigate about 10,000 acres. However, such efficient use of our sewage is neither feasible nor desirable.



Vegas Wash at Pabco Road. Proper management would make a silk purse out of this sow's ear which now pollutes Lake Mead.

The objections raised in the Boyle-CH2M report to irrigation as a means of sewage disposal are valid for row-crop farming. They are not valid if we limit sewage irrigation to grassland ~~and pasture~~ as a means of sewage disposal. ~~It has been~~ thoroughly studied at Penn State and their researchers recommend it above all others even in a climate that doesn't require irrigation. (Environment March, 1970).

The amount of grassland that can be irrigated is limited to the amount that can be adequately watered during the hottest months. We therefore have sufficient sewage to irrigate about 5,000 acres.

About half of this acreage is already in parks and golf courses. There is no problem at all in finding land on which the rest of the available sewage could be applied beneficially.

The horse population of Las Vegas Valley has been variously estimated at from 10,000 to 30,000. Most of these are kept in stables on dry feed at a cost of thirty dollars and more per month. Horsemen fortunate enough to rent pasture get by for twenty dollars a month.

Irrigated pasture will support about one horse per acre per year. It can be easily seen that the demand for horse pasture in this valley exceeds the amount of pasture that can be irrigated by the sewage available.

The Boyle-CH2M report discards irrigation in the valley as a solution to the sewage disposal problem for two reasons: (1) the problem of storing the sewage when it isn't needed for irrigation; (2) "costs were out of line with other possible alternatives investigated in more detail."

I have already shown that a storage reservoir is not essential for grassland irrigation. Let's see how in-valley irrigation costs are "out of line" with other sewage disposal methods.

In discussing costs at the 1968 symposium on pollution, Mr. Clayton stressed the high cost for pumping sewage to golf courses within our valley, but didn't mention the much higher costs for ~~in-valley irrigation~~ though a huge reservoir is not necessary for grassland irrigation in our valley, it would be needed for exporting sewage to El Dorado Valley for intensive agriculture.

Using sewage to recede groundwater requires adding a filtering system and drilling numerous wells. These cost a lot of money. Pumping costs would be about the same as for valley irrigation.

The Boyle-CH2M report considers that existing ~~water~~ counts against the quality of water needed for irrigation—my nose tells me there are times when the county plant is not turning out an acceptable product. The sewage disposal plan favored in the report and claimed to be the least expensive requires construction of an 18.6-million-dollar plant for tertiary treatment.

It would seem that we could lay pipelines to 13 golf courses, several ~~parcels~~ and a main line up the valley for pasture irrigation for much less than the cost of a tertiary treatment plant.

I believe that the costs of disposing of sewage by using it to keep our valley green are not "out of line" by being far less than the costs of any of the "other possible alternatives investigated in more detail." The report gives no cost figures for in-valley irrigation so we can compare them with the other alternatives. The report merely states they are "out of line".

However, the decision as to the best means of disposing of our sewage can not be made on costs alone. The cheapest way out is to continue to pollute Lake Mead.

Many objections can and have been raised to all of the proposals for solving our sewage disposal problem. As I will show in a future article none of the alternatives to in-valley irrigation is acceptable.