

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of the Petitions)
of Laurence H. Frommhagen for)
Review of Order No. 79-35 of the)
Los Angeles Regional Water Quality)
Control Board, Wastewater Reclama-)
tion Requirements for Las Virgenes)
Municipal Water District. Our)
Files Nos. A-223 & A-223(a).)
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Order No. WQ 79- 32

BY THE BOARD:

On February 26, 1979, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) adopted Order No. 79-35, wastewater reclamation requirements for Las Virgenes Municipal Water District. On March 26, 1979, the State Board received a petition for review of Order No. 79-35 from Laurence H. Frommhagen. On June 5, 1979, the petitioner was notified that the petition was complete. A supplemental petition was received on July 20, 1979. Petitioner requested that the petitions be consolidated for review.

BACKGROUND

The District owns and operates the Tapia Water Reclamation Plant which currently consists of secondary treatment facilities. The District is in the process of upgrading the plant to tertiary treatment consisting of filtration and appropriate pretreatment or its equivalent. The District proposes to distribute non-potable water from this plant for greenbelt and residential landscape irrigation, front yards and contiguous rear slope areas only, to two new housing developments. Eventually, the District plans to distribute reclaimed water throughout its service area.

The District has proposed a number of safeguard measures to prevent problems in using the reclaimed water. They plan to protect the potable water system by operating the non-potable system at a lower pressure, and by surveillance to prevent cross-connections between the two systems. The District plans to notify the public and make each householder aware of the system and penalties for misuse. District controlled timers will be installed so that reclaimed water will be available only in late evening and early morning. The non-potable system will be marked to distinguish it from the potable system. The District will control the operation of the non-potable irrigation system through a permit system.

The State Department of Health Services has not adopted reclamation criteria specifically for landscape irrigation in residential tracts. They have adopted reclamation criteria for parks and playgrounds when public exposure is present. In Order No. 79-35, the Board established requirements which are intended to conform with reclamation criteria designated for landscape irrigation in areas where the public has a level of access and exposure similar to parks, playgrounds, and schoolyards.

CONTENTIONS AND FINDINGS

Contention: Petitioner contends that the filtration system to be installed in the plant should be pre-qualified to produce an effluent containing no natural viruses in 500 gallons.

Finding: Requirement B.2. of Order No. 79-35 requires that water delivered to the non-potable system "shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtrated wastewater or a wastewater treated by a sequence of unit processes that will assure an equivalent degree of treatment and reliability."

The petitioner cited examples of wastewater treatment facilities, such as one in St. Petersburg, Florida, which produce an effluent which may contain no detectable viruses in 500 gallons. A close look at the examples cited by the petitioner shows that those treatment systems are basically the same as the treatment chain recommended by the Department of Health Services - good secondary treatment followed by coagulation, sedimentation, filtration, and disinfection. If the treatment systems are basically the same, then one would expect comparable removal levels from equivalent systems. The studies done at Pomona, which have also been cited by the petitioner, have verified this fact that several different filter systems meet the desired requirements. The Department of Health Services, in their response of May 9, 1979, to the petition, indicates that the treatment chain used in the petitioner's examples and which are prescribed by Title 22 of the California Administrative Code produce a reclaimed wastewater that provides a high level of health protection from viral pathogens.

State of the art in testing for all types of viruses is not sufficiently sophisticated to give us complete assurance that there would absolutely be no viruses present. Therefore, a test for certain viruses on a pilot system still does not fully assure us of the lack of virus. With or without the test, the treatment chain specified in the waste discharge requirements and reliable operation of those facilities will provide all the reasonable assurance necessary to protect the public health. Further refinement in sampling and testing techniques are needed before a realistic maximum concentration limit can be established. We thus find this contention to be without merit.

Contention: Petitioner contends that the filtration system at the District treatment plant should be required to produce an effluent with turbidity lower than the secondary effluent.

Finding: Requirement B.2. of Order No. 79-35 requires that the plant must discharge filtered wastewater with a turbidity that does not exceed an average operating turbidity of 2 turbidity units (TU). The record indicates that the existing treatment facility already produces effluent with a turbidity that does not exceed 2 TU.

After a review of the record, it appears that the proposed tertiary system should likewise produce a turbidity of less than 2 TU. We find that an average operating turbidity of 2 TU provides reasonable assurance that the reclaimed water has been treated in a satisfactory manner for the use of yard and landscape irrigation. Further, the Department of Health Services, based upon a 2 TU limit in the reclamation criteria, has found that this limit insures that effective disinfection can take place with destruction of viral and bacterial pathogens.

Contention: Petitioner contends that the tertiary effluent should be odor free.

Finding: Requirement B.8. of Order No. 79-35 provides that "Neither the use nor handling of the reclaimed water shall cause pollution or nuisance." This requirement should provide adequate authority for the Regional Board to take appropriate action if the project causes an undue amount of objectionable odors. Furthermore, the reclaimed water produced by a tertiary treatment system such as the one that is proposed by the District should produce no unreasonable odors. We find this requirement

to be appropriate to meet the concerns raised by petitioner regarding odor.

Contention: Petitioner contends that a chlorine residual should be maintained in the reservoir serving the irrigation system and that the effluent should be rechlorinated prior to discharge into the irrigation lines.

Finding: Requirement B.2. provides a disinfection standard as follows:

"Water delivered to the non-potable system shall be at all times an adequately disinfected, oxidized, coagulated, clarified, filtered wastewater or a wastewater treated by a sequence of unit processes that will assure an equivalent degree of treatment and reliability.1/ The wastewater shall be considered adequately disinfected if the median number of coliform organisms in the effluent does not exceed 2.2 per 100 milliliters as determined from the bacteriological results of the last 7 days for which analyses have been completed, and the number of coliform organisms does not exceed 23 per 100 milliliters in any sample.

Disinfected Wastewater. Disinfected wastewater means wastewater in which the pathogenic organisms have been destroyed by chemical, physical or biological means."

An extra degree of safety to prevent bacterial regrowth would be provided if a chlorine residual was maintained in the reclaimed water distribution system. However, we find that this matter is operational in nature and that compliance with the disinfection standard set forth above, which is based upon the reclamation criteria, should effectively result in destruction of viral and bacterial pathogens. Notwithstanding this finding, we urge the District to seriously consider this added safety measure in the design and operation of the facility.

Contention: Petitioner contends that discharge to the reservoir should immediately cease upon breakdown in the treatment system.

Finding: Requirement B.3. of Order No. 79-35 provides that reclaimed water that does not comply with requirements "shall not be introduced into the dual water system." While this may not prevent delivery of effluent to the reservoir, it certainly prohibits delivery of effluent to the irrigation system upon treatment plant breakdown.

In accordance with the requirement, the District has indicated that the system will have automatic controls to cut off delivery of sub-standard water to the reclaimed water delivery systems. After construction of the entire reclamation system has been completed, the Regional Board should, as part of its inspection, check that the District's automatic control system is adequate to prevent delivery of sub-standard water. In sum, the Board finds that this contention is adequately handled by the waste discharge requirements and the proposed operation by the District to insure reliability.

Contention: Petitioner contends that the mutagenic activity of the effluent should be established before irrigation is commenced.

Finding: The petitioner mentions the Ames Procedure as a means of determining mutagenicity in organic compounds. The Ames Procedure is a prescreening bioassay test which uses certain bacteria in a culture that will grow if the test material is mutagenic (capable of altering genes). This growth is seen as a ring of colonies around the area of deposited material. The

Ames test is sensitive in detecting mutagens and is generally considered, through not universally, to be effective in detecting carcinogens because there is a strong correlation between mutagenicity in bacteria and the potential for causing cancer in animals.

The staff believes that inexpensive, versatile tests such as the Ames Test do have the potential for wide application, and, in the future, greater emphasis will be put on their usage. However, to put things in perspective, such tests are not done on public drinking water supplies where the danger from carcinogenic substances is far greater from daily ingestion compared to occasional aerosols from spray irrigation. The Department of Health Services supports the view that since the reclaimed wastewater is to be used only for landscape irrigation, testing for mutagenic activity is not needed at this time.

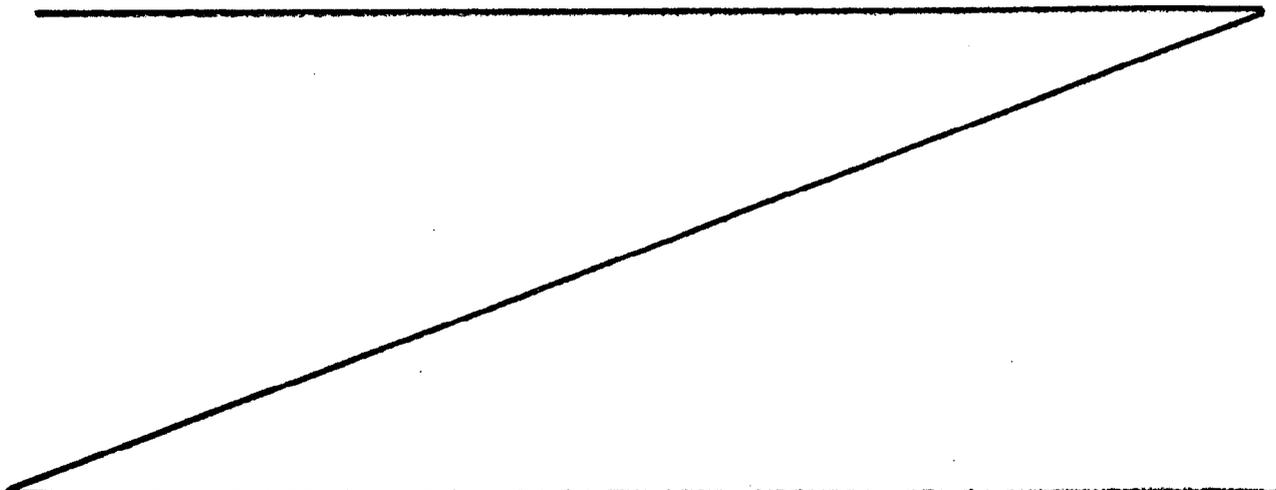
It is very probable that the Ames Test would render positive results for mutagenic substances. This result is logical because the reclaimed water will contain trace organics which when chlorinated for disinfection purposes produce a variety of chlorinated organics which are commonly mutagenic or carcinogenic in nature. Thus, a potential conflict exists here with chlorinating for disinfection purposes and the possibility that the chlorine may combine with some trace organics and produce compounds that may be carcinogenic. Health authorities have historically placed greater emphasis on the need to minimize the risk from pathogenic organisms and have not been generally concerned with the presence of chlorinated organics unless the water is to be consumed.

The Board finds that requiring the District to perform the Ames Test at this time would be of little benefit. The waste discharge requirements meet the reclamation criteria and should serve to adequately protect the interests of the reclaimed water users. The Ames Test is a fairly recent development and more study is needed to adequately assess the general applicability of this test.

CONCLUSION

Order No. 79-35 provides adequate protection of the public health for the beneficial uses of the reclaimed water. Some benefits could result in rechlorination prior to discharge to the distribution system and the District should consider this in the design and operation of the system.

At this time we would also wish to note that it is policy of the State Board to encourage reclamation where it is reasonably feasible. We do so only when we are assured public health is adequately protected as we feel will occur if the requirements of Order No. 79-35 are met.



ORDER

IT IS HEREBY ORDERED that Order No. 79-35 adopted by the Regional Water Quality Control Board, Los Angeles Region, is appropriate and proper and the petitions are hereby dismissed.

Dated: SEP 20 1979

/s/ ABSTAINED
Carla M. Bard, Chairwoman

/s/ William J. Miller
William J. Miller, Vice Chairman

/s/ W. Don Maughan
W. Don Maughan, Member

ABSENT
L. L. Mitchell, Member

11-11-11

