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DEPARTMENT OF HEALTH SERVICES

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April 8, 1999

Mr. Kenneth Landau, Supervising Engineer
California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3003

Subject: Request for Guidance Regarding Wastewater Treatment Levels for Potential
Recreational and Reclamation Use

Dear Mr. Landau:

This is in response to your memo dated 24 February 1999, asking if the level of disinfection that the Board normally imposes for discharges (23 MPN total coliform 30 day median) is adequate to prevent transmission of pathogens directly to field workers or to the public via harvested food when relatively undiluted wastewater may be pumped (diverted) from agricultural drains and creeks and used for unrestricted irrigation of crops.

The Department has the following recommendations regarding the discharge of treated municipal wastewater to agriculture drains or streams where the water may be used or diverted for a beneficial use. The recommendation may be modified in response to conditions of a specific discharge site.

1. In cases where relatively undiluted wastewater discharges are permitted to agricultural drains and creeks that have been identified by the Regional Water Quality Control Board to have beneficial uses of body contact recreation or irrigation of vegetable and fruit crops where the vegetables or fruit may come in contact with the treated wastewater, the Department recommends that the wastewater be adequately oxidized, coagulated, filtered and disinfected. The wastewater should be considered to be adequately disinfected if:
 - a. The chlorine disinfection process provides a CT (residual chlorine concentration times modal contact time) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; and

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- b. The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No single sample should exceed an MPN of 240 total coliform bacteria per 100 milliliters.
2. In cases where relatively undiluted wastewater discharges are permitted to agricultural drains and creeks that have been identified to have beneficial uses of irrigation of vegetable or fruit crops where the vegetables or fruit does not come in contact with the treated wastewater, the Department recommends that the wastewater be adequately oxidized and disinfected. The wastewater shall be considered to be adequately disinfected if the median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.
3. In cases where wastewater is discharged to agricultural drains and creeks that have been identified to have beneficial uses of irrigation of vegetable and fruit crops or body contact recreation and the wastewater receives dilution of >20:1, the Department recommends that the wastewater be adequately oxidized and disinfected. The wastewater should be considered to be adequately disinfected if the disinfected effluent does not exceed an MPN of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

If you have any questions regarding this letter, please contact Bob Hulquist at (916) 445-5944.0

Sincerely yours,



David P. Spath, Ph.D., P.E., Chief
Division of Drinking Water and
Environmental Management

DEPARTMENT OF HEALTH SERVICES
 DRINKING WATER FIELD OPERATIONS BRANCH
 31 EAST CHANNEL STREET, ROOM 270
 STOCKTON, CA 95202



May 12, 2000

Mr. Gary M. Carlton, Executive Officer
 Central Valley Regional Water Quality Control Board
 3443 Rautier Road, Suite A
 Sacramento, CA 95827-3003

TENTATIVE WASTE DISCHARGE REQUIREMENTS, CITY OF JACKSON

Thank you for the opportunity to comment on Tentative Order No. NPDES NO. CA007391. The Department has serious concerns related to the impact of this discharge on downstream uses of the water in Jackson Creek.

The Department considers Finding No. 14 in the tentative Waste Discharge Requirements (WDR) to be an appropriate commentary on the public health aspects of the body contact recreational use of the Mokelumne River. While there is no acknowledged awareness of body contact recreation on Jackson Creek and the other tributaries that connect Jackson Creek to the Mokelumne River, opportunities for such recreation are abundant and anecdotal information suggests that such recreation does occur. Therefore, the recommendations in Findings Nos. 14 and 15 of the WDR are appropriate.

Finding No. 17 states that domestic water supply is a "potential beneficial use for Jackson Creek and Lake Amador". This should be corrected to acknowledge that domestic water supply is an established beneficial use for Jackson Creek and Lake Amador. Jackson Creek and Lake Amador are the source of supply of surface water used for domestic purposes by both the Lake Amador Recreation Area located at Lake Amador and the Oaks Community Association, which is a short distance downstream of Lake Amador in Buena Vista.

The Oaks Community Association operates a public water system that serves the Oaks Mobile Home Park, a planned residential community. The mobile home park development has been approved for 250 residences at buildout. Currently, the Oaks water system is serving a population of about 450 through 134 active service connections. Domestic water use in 1999 exceeded 16 million gallons.

The Lake Amador Recreation Area operates a public water system that serves about 20 year-around residents that occupy mobile homes or travel trailers, 111 approved camp sites, a restaurant, and a significant day use population. The Amador County Environmental Health Department, which regulates this water

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system, estimates that during the 4 to 6 prime recreation months each year, the campsites experience an average occupancy of about 75% and about 100 additional vehicles per day attend the recreation area to participate in day use activities including fishing and picnicking. The purveyor at the recreation area indicates that the transient population served by the water system reaches about 5000 visitors per month in the summer.

In addition, the Jackson Valley Irrigation District (JVID) distributes raw surface water from Lake Amador to other residents of Jackson Valley, including an estimated 50 residential connections. Information relevant to the use of the raw water for drinking is primarily anecdotal at this time. However, some of the residences served the raw water are renters that may not be aware of the lack of treatment and the public health concerns associated with consuming raw surface water. The domestic use of raw water from Jackson Creek and Lake Amador poses increased risks because of the discharge of the City of Jackson's waste water treatment plant (WWTP) effluent into Jackson Creek. Since ground water in the Jackson Valley area is limited in both quality and quantity, ground water is not generally a viable option to replace the use of surface water from Jackson Creek and Lake Amador.

Although the exact number of JVID customers receiving raw water for domestic use has not yet been well defined, the use of water from Jackson Creek and Lake Amador for domestic purposes is occurring with absolute certainty. While discharges into receiving waters with downstream municipal use are not uncommon, the lack of adequate dilution of the City of Jackson WWTP effluent makes the discharge unacceptable from a public health point of view.

For the protection of the public health of the downstream users of surface water from Jackson Creek for domestic purposes, the Department recommends that there should be no discharge of WWTP effluent allowed to Jackson Creek when the ratio of downstream water flow to effluent flow is less than 20 to 1. Although more stringent treatment regulations have generally improved the performance of surface water treatment plants, waterborne disease outbreaks continue to be a significant public health concern. In 1993, an outbreak of *Cryptosporidium* in Milwaukee, Wisconsin caused 400,000 cases of acute gastrointestinal illness with over 100 cases severe enough to result in death. The water treatment facilities in Milwaukee complied with the existing regulations governing the use of surface water; however, the regulations focused primarily on treatment technology to deal with microorganisms other than *cryptosporidium*. Subsequently, additional disease outbreaks have been confirmed in Austin, Texas, Las Vegas, Nevada, and Sydney, Australia due to pathogenic organisms in treated surface waters. These incidents verify that the potable reuse of waste water effluent, even with significant dilution, does not always adequately protect public health due to the impairment of the source water by the waste water discharge.

The lack of dilution of the City of Jackson discharge greatly exacerbates the public health risks associated with potable reuse.

The Department has consistently recognized the need to consider all discharges on a case by case basis when determining the appropriate recommendations relevant to waste water discharges. Because of the lack of dilution of the City of Jackson waste water discharge, the Department is concerned that the tentative WDR, NPDES NO. CA0079391, does not provide adequate public health protection for the downstream users of surface water from Jackson Creek and Lake Amador as their source of water for domestic supply.

Recent actions by the County of Amador and the Jackson Valley Irrigation District confirm the knowledge in the area that Jackson Creek and Lake Amador are impaired water sources. Amador County approved a new subdivision in Buena Vista in the recent past with a condition, established by the Amador County Environmental Health Department, that surface water from Lake Amador, on Jackson Creek, cannot be used as the source of water for domestic service in the subdivision. Upon visiting the Department's Stockton office of the Drinking Water Field Operations Branch, Richard Johnson, who represented himself as the legal counsel for the JVID, stated that JVID is requiring that the parcel approved for development must be deleted from the JVID service area as development begins to relieve JVID of any obligation to provide source water for the residential development. These actions affirm the acknowledgement by both the Amador County Environmental Health Department and JVID that Jackson Creek/Lake Amador is an impaired source that is not suitable for domestic supply.

Provision No. 4 of the tentative WDR is a good beginning to an effort to abate the existing health hazard. However, the proposed time schedule is unacceptable. The use of water from Jackson Creek and Lake Amador is a fact documented in this letter. There is no need to provide time for a study to determine this use. Similarly, the Department's basic recommendation is that there should be no discharge of sewage effluent to streams and rivers used for domestic water supply. The Department acknowledges that this objective cannot always be achieved. However, the Department maintains that where it is not possible to prevent a discharge to freshwater rivers and streams, no discharge is appropriate where the dilution ratio is less than 20 to 1 and domestic water supply is a beneficial use. If there is doubt that the dilution ratio at low stream flow is less than 20 to 1, the best available engineering methods for estimating flows should be used to determine the approximate dilution ratio. If the estimates indicate that the ratio is close to 20 to 1, perhaps the allowance of time to generate flow data for Jackson Creek would be acceptable. However, if the available anecdotal information is correct and the dilution ratio is determined to be considerably less than 20 to 1, any study to measure such flows

should be considered to be an inappropriate delay in improving the quality of the water received by downstream domestic water users. Since the public health of the downstream water users is at risk, expedient definition and implementation of remedial action is essential.

Pending elimination of this discharge from Jackson Creek, monitoring of the effluent for Total Coliform Organisms should be required daily, rather than 3 times per week.

The Department trusts that the Regional Water Quality Control Board will recognize the public health significance of the City of Jackson's waste discharge and will institute actions that will assure the most expeditious response to the existing threat to the public health of the beneficial users of water from Jackson Creek and Lake Amador downstream of the City of Jackson's WWTP discharge.

Joseph O. Spano

Joseph O. Spano, P.E.
District Engineer
Drinking Water Field Operations Branch

cc: Mike Isreal, Amador County Environmental Health Department
Richard Mills, State Water Resources Control Board
✓ Richard McHenry, Regional Water Quality Control Board

DEPARTMENT OF HEALTH SERVICES
DRINKING WATER FIELD OPERATIONS BRANCH
31 EAST CHANNEL STREET, ROOM 270
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May 25, 2000

Mr. Gary M. Carlton, Executive Officer
Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, CA 95827-3003

TENTATIVE WASTE DISCHARGE REQUIREMENTS, CITY OF JACKSON

This letter confirms the discussions that occurred during a meeting between the Department of Health Services and the Central Valley Regional Water Quality Control Board on May 22, 2000, regarding the tentative NPDES permit for the City of Jackson. The meeting was convened to discuss the Department's letter of May 12, 2000, regarding the Jackson discharge and to clarify the unique impact of the discharge on downstream users of the receiving waters (Jackson Creek), which are a source of domestic supply.

The Department of Health Services is responsible for evaluating the water quality and quantity served by public water systems as part of our permitting process. We have serious concerns over the domestic use of treated tertiary wastewater when the dilution available is limited. We prefer land disposal options to any discharge to waters of the state due to the potential hazard posed by domestic reuse. Further, we believe that when a surface water discharge is necessary, there should be additional protection (such as significant dilution) beyond normal tertiary treatment if domestic use of the wastewater is planned, in order to protect against any chemical or microbiological pathogenic hazards. As we informed RWQCB staff at the meeting, the Department is concerned about any treated sewage discharges to ephemeral streams that may be used for domestic purposes due to the lack of sufficient dilution water in the stream during periods of the year.

We have not permitted any additional use of water from Lake Amador to be used for domestic purposes due to the City of Jackson discharge and are taking enforcement action against Jackson Valley Irrigation District in regard to distributing untreated surface water to homes in Jackson Valley. However, State and Federal law continue to allow raw water to be used in residences when the domestic use is incidental to the agricultural use. Therefore, while the Department's enforcement actions will require that bottled or other treated water be used for drinking and cooking, raw water may still be used for bathing, showering, hand washing, oral hygiene, dish washing, laundry, and general household cleaning. As a result, it should

be clear that the situation on Jackson Creek is not representative of the typical mountain stream proposed for domestic use.

While many consumers that use raw water for domestic purposes believe that their Point of Entry (POE) treatment systems protect them from the hazards of the raw water, the POE systems being used are only approved for polishing of treated waters that are provided by public water systems, permitted by the Department, that distribute water that meets all of the Department's drinking water standards and treatment techniques. Therefore, the actual public health protection provided by the POE systems in use in the Jackson Valley is minimal and unreliable.

The Department of Health Services staff attended a meeting of the Amador County Water Committee to present our concerns over the domestic use of water from Lake Amador on Jackson Creek. Also present at the meeting were the Jackson Valley Irrigation District (the purveyor of raw water in the Jackson Valley), the Amador County Department of Public Works, and the City of Jackson. These three agencies have since voluntarily elected to initiate a series of meetings to investigate alternatives to the existing City of Jackson discharge in order to minimize the impacts of the discharge or eliminate the impacts on the Jackson Valley water users. The meetings resulted in a list of 12 alternatives that would address the impact of the City of Jackson discharge on the Jackson Valley. Many of the alternatives focus on gravity diversions that avoid the cost of energy involved in pumping the wastewater from the canyon, an alternative that was abandoned by Jackson several years ago. Most of the alternatives would utilize land disposal and wastewater recycling, as encouraged by the RWQCB to solve the water quality concerns associated with discharge to the creek.

The Department concurs with the RWQCB staff that the Jackson Waste Discharge Requirements (WDRs) need to be modified to require the City to continue evaluating alternative disposal options in detail to minimize the potential impairment of the water quality of Jackson Creek. The studies should continue with the participation of the Jackson Valley Irrigation District and the Amador County Department of Public Works since these agencies have an enormous stake in the outcome of the process. The JVID has a current pressing need to provide its non-agricultural users with treated potable water and the Amador County Department of Public Works has identified Jackson Creek as an affordable conveyance for delivering surface water from the Mokelumne River in the vicinity of Lake Tabeaud to the Buena Vista area where it would be treated for use in Service Area No. 3. This Service Area is experiencing both quantity and quality problems with its ground water supply.

Since JVID has considerable data relevant to the level of the water in Lake Amador and relevant to their water deliveries and discharges, that data should be considered in determining flows

in Jackson Creek. Establishing accurate measurements on flows in Jackson Creek in the next year should provide a basis for defining dilution patterns that will be needed to govern future discharges.

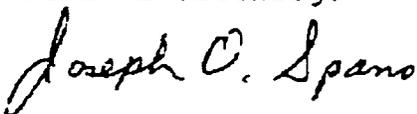
It was stated by RWQCB staff that the City of Jackson has committed to add chemical coagulation to its tertiary treatment process. This should be encouraged since it is clear that the alternatives for minimizing the impact of the discharge on Jackson Creek will not be implemented for 2 to 3 years, at best. Coagulation will improve the quality of the water received by downstream users in the interim period.

The WDRs should require the City of Jackson to present its findings related to flows and to alternative disposal means within one year so that dilutions over the broad range of conditions can be predicted. The alternatives available to alleviate the impairment of Jackson Creek can be further evaluated once this information is available to further define the periods of when inadequate dilution or insufficient treatment occurs. Since the health hazard associated with the current discharge cannot be eliminated, it is important to proceed as quickly as practical in instituting measures to minimize the negative impacts of the discharge.

Since there are a number of options that will be studied with the objective of either eliminating the City's discharge into Jackson Creek during periods of low dilution or bypassing the discharge around the established drinking water uses centered around Lake Amador, such an evaluation should be expedited to define discharge limitations that will benefit downstream water users as soon as practical.

The Department is encouraged that various entities in Amador County recognize the value of Jackson Creek and have already begun exploring the opportunities to minimize the need for Jackson to discharge into Jackson Creek and eliminate the discharge during times when dilution flows are minimal. It appears that the local interest in modifying the Jackson discharge may be a primary force in driving the objectives of the RWQCB in protecting the quality of the waters of the State and of the Department in protecting public health.

Thank you for the opportunity to meet with your staff to foster an understanding of the public health significance of the City of Jackson discharge.



Joseph O. Spano, P.E.
District Engineer
Drinking Water Field Operations Branch

Gary Carlton
Regional Water Quality Control Board

City of Jackson Tentative WDR
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cc: Mike Isreal, Amador County Environmental Health Department
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