STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

ORDER WQO 2004 - 0013

In the Matter of the Petition of

YUBA CITY

For Review of Waste Discharge Requirements Order
No. R5-2003-0085 and Cease and Desist Order No. R5-2003-0086
Issued by the
California Regional Water Quality Control Board,
Central Valley Region

SWRCB/OCC FILE A-1580

BY THE BOARD:

On June 6, 2003, the Central Valley Regional Water Quality Control Board (Regional Board) reissued waste discharge requirements in Order No. R5-2003-0085 (Permit) and a cease and desist order in Order No. R5-2003-0086 (CDO) to Yuba City (City). The requirements authorize the City to discharge secondary-treated effluent from its Wastewater Treatment Facility (Facility) to the Feather River and to disposal ponds located within the floodplain of the Feather River. The Permit is much more comprehensive than the prior permit, including numerous effluent limitations that are new or more stringent. The CDO includes time schedules for compliance with some of the Permit's requirements. The City filed a petition for review of the Permit and CDO with the State Water Resources Control Board (State Board or Board).[1]

The City challenges virtually every requirement and effluent limitation in the Permit. Some of the challenges involve contentions that this Board has previously rejected in prior orders, or claims for which the City has no evidentiary support. Except where the Regional Board did not follow prior State Board rulings, we will not address such issues. But the City

[1] The City also requested a stay of the Permit and CDO. The State Board's Executive Director denied the stay request by letter dated August 12, 2003.

does raise some significant issues that this Board has not previously addressed, especially those concerning allowance for dilution credits, mixing zones, and assimilative capacity. In this Order, the State Board upholds many provisions of the Permit, but concludes that the Regional Board improperly refused to grant the City dilution credit and a mixing zone for acute toxicity and improperly calculated the dilution credits and mixing zone that it granted for chronic toxicity and human health criteria. It also failed to assume the correct hardness of the receiving waters in calculating effluent limitations for metals. Finally, for some constituents the Regional Board adopted water quality-based effluent limitations that were made more stringent to reflect past performance, without explaining the need for performance-based limitations. This Order remands the Permit and the CDO to the Regional Board for modifications. In the interim, the relevant effluent limitations are vacated. The issues that are not addressed are dismissed.[2]

I. BACKGROUND

The City's Facility provides secondary level wastewater treatment prior to discharge to the Feather River. The Facility has an average dry weather design capacity of 7.0 million gallons per day (mgd) and currently treats an annual average of approximately 5.7 mgd of domestic and industrial wastewater and hauled septage. The Facility receives wastewater from Yuba City, which has a population of approximately 40,000, and septage from homes in Sutter and Yuba Counties. Industrial wastewater sources are significant, contributing more than twenty percent of the average annual flow to the Facility.

The Feather River is a major California waterway, with flows ranging from 1,000 cubic feet per second (cfs) during dry weather to 300,000 cfs in a 100-year flood, and averaging approximately 3,600 cfs.[3] Beneficial uses of the Feather River downstream of the discharge, as listed in the Regional Board's Water Quality Control Plan (Basin Plan), include municipal and domestic supply, agricultural irrigation, body contact recreation, non-contact recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold

[2] See *People v. Barry* (1987) 194 Cal.App.3d 158 [239 Cal. Rptr. 349]; Cal. Code Regs., tit. 23, § 2052(a)(1).

[3] In comparison, the Facility discharges an average daily flow of 5.7 mgd (or 8.8 cfs) through the diffuser and a maximum flow of 8.4 mgd (13 cfs).

spawning habitat, and wildlife habitat. In addition, the Regional Board found that beneficial uses of groundwater recharge and freshwater replenishment also exist.

The Facility's treatment system consists of comminution, aerated grit removal, primary sedimentation, pure oxygen aeration, secondary clarification, pH adjustment with sodium hydroxide, disinfection with chlorine, and dechlorination with sodium bisulfite. Nutrients are added to the process to compensate for nutrient deficient waste. Waste sludge is thickened by a dissolved air floatation thickener, then pumped to anaerobic digesters, dewatered by belt press and/or drying beds, and disposed of off-site. The City has begun preliminary designs to increase the dry weather flow capacity to 9.0 mgd.

The effluent is discharged to the Feather River through a submerged diffuser or to a series of six percolation disposal ponds, which are located within the flood plain adjacent to the Feather River. The ponds have historically been subject to inundation by high river flows. In the prior permit, the ponds were not directly regulated and direct discharge of effluent to the Feather River (through the diffuser) was generally prohibited from May 15 through October 31. The findings in the Permit indicate that the Regional Board has now determined that the ponds represent point source discharges to the Feather River, and the Permit therefore covers discharges to the ponds. There is no longer a prohibition against dry weather discharges.

The Permit also contains many effluent limitations that were not in the prior permit. The prior permit was adopted before the California Toxics Rule (CTR)[4] was in effect, and it contained only a limited number of effluent limitations. This Permit includes many effluent limitations for priority toxic pollutants and for other pollutants that may be discharged to the Feather River from the diffuser and the ponds. Effluent limitations for biological oxygen demand (BOD), total suspended solids, settleable solids, and total coliform organisms apply when the discharge is through the diffuser, but not when the discharge is to the disposal ponds. The Permit allows dilution credit for chronic toxicity and human health standards for some constituents. For other constituents, the Regional Board determined that there was limited or no assimilative capacity available and no dilution was granted. There is no dilution credit granted for acute toxicity criteria.

[4] 40 Code of Federal Regulations (C.F.R.) part 131.38. The CTR establishes water quality criteria for priority toxic pollutants in California.

The chief areas of disagreement between the Regional Board staff and the City concern the available dilution and mixing zones for the discharges to the Feather River. The Permit concludes that there is not sufficient information to support a mixing zone, but allows the City to provide more information justifying an acute mixing zone and includes a re-opener provision.[5]

In light of the new and more stringent effluent limitations, the Permit includes a five-year compliance schedule for numerous constituents, along with interim limitations. The constituents subject to the time schedule and interim limitations in the Permit are priority pollutants. In addition, the CDO was issued for prospective violations of the interim limitations for eight of these constituents[6] and for the final limitation for Electrical Conductivity. The CDO contains findings that the City threatens to violate the effluent limitations for these constituents and requires compliance in five years, and orders the City to nitrify to the maximum extent practicable in the interim.

The administrative record in this matter reveals that the City submitted numerous documents to the Regional Board throughout the time the Regional Board staff was preparing various drafts of the Permit, in addition to the original application for the Permit.[7] As new information was submitted, the Regional Board staff revised the draft Permit, ultimately distributing three separate tentative permits for public review. In response to the final draft Permit, the City submitted a lengthy comment letter and 71 different attachments, some of which were substantial reports. Among the attachments were studies and models intended to justify the City's request for more dilution credits and a mixing zone for acute toxicity. The final submittal—documentation intended to support the City's contentions concerning the appropriate hardness value for metals effluent limitations—was received from the City on June 5, one day before the Regional Board acted to adopt the Permit. The Regional Board included all of these submittals in the administrative record, even though it appears that the Regional Board's staff did

[5] Permit, Provision H.11.

[6] These constituents are organochlorine pesticides, aluminum, ammonia, diazinon, ethion, iron, manganese, and molybdenum.

[7] The City submitted a Report of Waste Discharge, or application, on January 31, 2002. It submitted supplemental information on March 21, July 8, September 6, September 23, September 24, October 28, November 25 and December 12, 2002, and on January 2, January 28, March 25, and April 1, 2003.

not have an opportunity to fully consider them. We have reviewed the entire record submitted by the Regional Board, and based on that record we do find that there are a number of Permit provisions—including the denial of a mixing zone for acute toxicity and the appropriate dilution credit—that require a remand of this Permit to the Regional Board.

We find it unfortunate that the City was not clearly required to submit documents supporting its requests for dilution credit at a much earlier point in the process, with the result that these numerous studies were submitted as comments on the final draft of the Permit. The State Implementation Plan (SIP), which provides guidance on adopting National Pollutant Discharge Elimination System Permits (NPDES) permits, anticipates that requests for mixing zones and dilution credits will be accompanied by studies submitted to the Regional Board no later than when a report of waste discharge is submitted.[8] The Regional Board has a tremendous workload in issuing numerous permits, many of which are complex and controversial, and it is appropriate and necessary for the Board to establish and enforce reasonable deadlines for submission of documents. The deadline for submitting studies in support of mixing zones should be long before the comment period on the final draft Permit. Nonetheless, these documents were allowed into the Regional Board's record and we have had the opportunity to review the entire record. This Order is based on that record.[9]

II. CONTENTIONS AND FINDINGS

A. Reasonable Potential Analysis

Regional Boards must evaluate whether there is "reasonable potential" that a discharge may cause or contribute to excursions above any water quality standards in the

[8] Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, at 1.4.2.

[9] The State Board circulated a draft of this Order on April 21, 2004, and accepted written comments on the draft if received by May 21, 2004. In its comment letter, the City added a new argument about the dissolved oxygen effluent limitations and sought inclusion into the record of a recent letter from an environmental scientist at United States Environmental Protection Agency (US EPA). The letter is not admitted into the record because it has limited usefulness and parties have not had an opportunity to consider its effect, if any, on the Permit. The new argument and the reference to documents that are not in the record are stricken from this record. On June 4, 2004, the State Board circulated a revised draft of this Order and accepted written comments limited to the revisions to the draft, if received by 12:00 pm on June 16. Yuba City submitted a letter that included comments on issues that were not addressed in the revised draft; that portion of the letter (on pages 3 – 6) is not included in the record. DeltaKeeper submitted a letter on June 16 that addressed only matters that were not revised in the June 4 draft; the letter is not admitted to the record.

receiving water. This "reasonable potential" analysis is the basis for deciding which pollutants to limit in the permit. A finding that a "reasonable potential" exists means that the Regional Board must limit or prohibit the discharge of that constituent. We have discussed this issue in detail in prior orders.[10] We will not address the issues regarding "reasonable potential" that have been addressed before.

Contention: The City challenges all of the Regional Board's determinations to include water quality-based effluent limitations (WQBELs), except for iron and manganese. The City argues that the Regional Board must use the Technical Support Document (TSD)[11] published by the US EPA, rather than the SIP, to determine reasonable potential for non-priority pollutants.

Finding: The Regional Board properly used the SIP to determine the need for WQBELs. The City claims that the fact that the SIP requires a WQBEL does not mean that there is reasonable potential.[12] Whether or not one uses the term "reasonable potential," the SIP is the regulatory document to be used for deciding whether to include WQBELs for priority toxic pollutants.[13] For non-priority pollutants, the Regional Board used the TSD's reasonable potential multiplying factors, but then followed the SIP in not considering dilution where assimilative capacity was available. Thus, it apparently used a method combining aspects of the TSD and SIP methods for determining reasonable potential. In prior orders, we have held that a Regional Board may use the SIP implementation provisions as guidance for water quality-based toxics control.[14] It appears that the Regional Board's methodology was appropriate, but it should clarify the methodology it used in findings. It was also appropriate for the Regional Board to reject the methodology proposed by the City for non-priority pollutants especially where, as here, it was submitted as a comment on the final draft Permit.

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[10] See, e.g., Order WQ 2002-0012 (Chevron).

[11] Technical Support Document for Water Quality-Based Toxics Control, March 1991.

[12] Essentially, the City argues that because the SIP does not consider dilution in determining the need for WQBELs, it may not be factually accurate that the City's discharge has the "reasonable potential" to cause or contribute to exceedances of all water quality standards for which effluent limitations are required.

[13] The SIP methodology is admittedly conservative, but it is the appropriate and legally applicable method to use in California.

[14] See, Order WQO 2001-16 (Napa).

Contention: The City contends that the Regional Board should have ignored data that were more than 4.5 years old.

Finding: There is no basis for the City's contention that older data should be eliminated from review in determining reasonable potential. There is also no basis for the City's claims that all "outlier" data, which are higher than most other data points, should be discarded. While outlier data that are shown to be unreliable should be discarded, such data are not unreliable simply because they are high. Because of the nature of publicly owned treatment works (POTWs) as receptacles of waste from numerous sources, there is no basis to claim that older data will not recur. Moreover, the use of a larger set of sample data improves the accuracy of projected concentrations, and such data should be included to show trends.

B. Hardness Values

In establishing metals effluent limitations for the protection of aquatic life, the Regional Board must determine the value of hardness in the receiving water. The CTR lists the applicable water quality criteria for priority pollutants for the Feather River. Some of the priority pollutant criteria for metals are hardness dependent. Generally, the lower the value for hardness in the receiving water, the more stringent the effluent limitations must be in order to comply with water quality standards. The Regional Board used the "worst-case (lowest of receiving water and effluent)" hardness value of 23.8 milligrams per liter (mg/l) to determine the need for effluent limitations for cadmium, copper and zinc.[15] This selection was based on a sample collected and reported by the City in 1996. On the day before the hearing, the City submitted a recalculation of that sample, which showed that the hardness should have been calculated as 35.2 mg/l. The effluent limitations for cadmium, copper, and zinc are based on a "floating" or variable hardness value, which is calculated based on the current hardness value of the receiving water.

Contention: The Regional Board erred in establishing the hardness value of 23.8 mg/l because it should not have considered the hardness of the effluent, it should not have relied on the "worst-case" data, and the value of 23.8 mg/l was incorrectly calculated.

Findings: The Regional Board based its determination on hardness in the receiving water on a hardness value that the City reported to it. Although the findings refer to the

[15] Permit Findings 21, 24, and 44.

hardness of the effluent, in fact the hardness value was based only on the receiving water. The value of 23.8 mg/l was reported downstream of the plant in 1996.[16]

The SIP does not discuss the manner in which hardness is to be ascertained. The value selected should provide protection for all times of discharge under varying hardness conditions. Thus, it was appropriate for the Regional Board to use the worst-case observed minimum hardness. The City also claims that hardness is a specific type of translator and that the SIP[17] provides statistical values for the median and 90th percentile to determine the appropriate value. The City is incorrect. These statistical values are applied to translate acute and chronic dissolved metals criteria to total recoverable metals criteria. Hardness is a factor affecting the toxicity of a metal; it is not a translator of dissolved to total recoverable criteria.

As discussed above, it was the City that submitted the data showing the hardness value calculated at 23.8 mg/l (using the titration method) on March 21, 1996. The Regional Board reviewed this sample, and also another sample taken February 8, 1996. For the February sample, laboratory analysis performed at the time reported a non-detect for hardness using the titration method. Apparently, the hardness upstream of the plant was tested at 37 mg/l that same day. The upstream information supports the conclusion that the reported value calculated by the titration method was in error. The Regional Board therefore disregarded the February sample and used the March 21, 1996, sample, also calculated by the titration method, as the next worst-case hardness value. Shortly before the Board meeting in 2003, the City sought recalculation of the March value from the laboratory, using a different method.[18] On June 5, 2003, the City submitted the recalculation of the March value to the Regional Board using ICP data. The recalculation resulted in a hardness of 35.2 mg/l. The City claims that 35.2 mg/l is, therefore, the worst-case hardness value.

Calculations from ICP data are more reliable than calculations using titration. The proper data to recalculate, however, is from the worst-case sample, which was taken on February 8, 1996. This sample was recalculated at 32.7 mg/l. Although this value was not

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[16] The City points to a section in the SIP regarding the preferred method for measuring ambient background concentrations for priority pollutants (section 1.4.3), in support of its contentions. That section does not address hardness.

[17] SIP, at section 1.4.1.

[18] The second method analyzing hardness is called Inductively Coupled Plasma (ICP).

reported in 1996, it is more reliable as representative of hardness of the receiving water. The need for numeric effluent limitations for metals should be reassessed using this higher hardness value.[19]

C. Mixing Zones and Dilution Credit for Discharges from the Diffuser

The discharge is to the Feather River, which allows for significant mixing of the effluent. Upstream of the discharge point is an outfall for Linda County Water District (Linda). The City's discharge to the River is through a diffuser, which currently has 25 open ports.[20] The river is approximately 588 feet wide at the diffuser. Several hundred feet downstream is a waterfall. Several U-shaped portions of the waterfall promote mechanical mixing, in addition to the hydraulic jump formed by river flow over the bed step. Thereafter, the river flow converges through a narrow contraction and then widens downstream of the contraction. No diversions for drinking water are noted within these reaches.

The City claims that complete mixing exists within two stream widths downstream of the discharge. It requests mixing zones and dilution credits for chronic and acute toxicity, and for human health criteria.[21] The Regional Board granted a mixing zone and dilution credits for chronic toxic and human health-based criteria for constituents for which it found that assimilative capacity exists. It denied an acute mixing zone, stating that there were no data demonstrating that such a mixing zone would not adversely affect aquatic life and that regional boards are not required to grant mixing zones.[22] It also denied dilution credit for chronic aquatic and human health-based criteria for some constituents, while granting less dilution credit than the City requested for those constituents for which it did allow a mixing zone.

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[19] We note that while the Regional Board could have used this hardness value to calculate effluent limitations for cadmium, copper and zinc, it instead applied a variable hardness value whereby effluent limitations will vary depending on the actual, current hardness values in the receiving water. We recommend that the Regional Board establish either fixed or seasonal effluent limitations for metals, as provided in the SIP, rather than "floating" effluent limitations.

[20] Fifteen other ports are covered by river deposits.

[21] The Regional Board correctly notes that the studies in support of the City's requests were not submitted until shortly before the Regional Board meeting, as part of a response to the final draft Permit. We agree that the SIP anticipates that such studies should have been conducted earlier. Nonetheless, these studies were included in the Regional Board's administrative record and were responded to by the Board, and we therefore consider them fully.

[22] Permit Finding 15.

Contention: The City contends that the Regional Board erred in denying a mixing zone and dilution credit for acute criteria.

Finding: The City contends that both the Basin Plan and the SIP allow for mixing zones for acute aquatic life criteria. The City contends that it produced studies that justify an acute mixing zone. The Regional Board responds that the City submitted its reports supporting the mixing zone on May 10 and May 16, 2003, without any explanation why these were not included in the original report of waste discharge submitted in January 2002. The Regional Board explains why it rejected the request, but also notes that it included a re-opener in the Permit that would allow for later modification to include an acute mixing zone and appropriate revisions to effluent limitations.

The issue of dilution credit is key in reviewing this Permit because where dilution credit is denied for acute criteria, such criteria tend to govern the establishment of maximum daily and average monthly effluent limitations, even where, as in this Permit, dilution credit is granted for chronic aquatic life criteria. The City states that there is "complete mixing" based on the river flow, and requests an acute dilution credit of 66.4 to 1.[23]

In prior orders, we have held that while regional boards have discretion in allowing mixing zones and dilution credits, they must explain the denial of a mixing zone based on the facts of the discharge.[24] In denying an acute dilution credit, the findings in the Permit state that the Regional Board was not required to grant a mixing zone or to utilize the full assimilative capacity of the receiving stream, and that the City had not submitted data demonstrating that an acute mixing zone would not restrict the passage of aquatic life or cause acutely toxic conditions to aquatic life passing through the mixing zone.[25] From the record in this matter, and statements made by the Regional Board's representatives at the workshop meeting considering this Order, it is apparent that the Regional Board did not consider the City's submittals prior to adopting the Permit.

[23] The City also requests, in the alternative, a minimum acute dilution credit of 16.9 to 1 based on initial mixing from the jet action of the diffuser.

[24] See, Orders WQO 2002-0011 (Chevron) and WQO 2002-0012 (EBMUD).

[25] Permit Finding 15.

The SIP does allow for dilution credit for acute aquatic life criteria for a completely mixed discharge, but regional boards are given discretion to limit or deny dilution credit for pollutants.[26] The SIP also does not require regional boards to establish a mixing zone where the discharge is completely mixed. The SIP provides that if a mixing zone is granted, it shall not cause acutely toxic conditions to aquatic life passing through the zone or restrict the passage of aquatic life.[27] In requesting the mixing zone, the City followed one of the four approaches set forth in the TSD: showing that acute criteria are achieved within the most restrictive of three limiting distances.[28] The City submitted studies based on two computer models to show dilution downstream of the diffuser. The Regional Board is correct that the models did not review all pollutants for a mixing zone, did not address the observed maximum copper concentration (other than claim it was an "outlier"), and did not address the worst-case hardness. But the model information can be used to justify a smaller acute mixing zone that is sized to prevent lethality to passing organisms. Such a mixing zone would be based on acute criteria that could be applied uniformly and would create such a small mixing zone that the passing time for a drifting organism would be a matter of seconds. The City may not be able to achieve final effluent limitations with such a dilution credit at this time, but it could do so with modifications that would be more economically achievable.

While the Regional Board does have substantial discretion in establishing mixing zones, we find that the City has justified an acute mixing zone in this case, although a smaller zone than the City requests. The evidence the City has submitted demonstrates there would be no acutely toxic conditions to aquatic life passing through the mixing zone.[29] The City has shown that the travel time to the point of complete mixing is only 3-5 minutes, and only 3.5 seconds to where initial mixing by jet action from the ports is completed. This is far less time

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[26] SIP, Section 1.4.2.

[27] SIP, Section 1.4.2.2.

[28] The three distances are: 10% of the distance from the edge of the diffuser to the edge of the mixing zone; 50 times the discharge length; and 5 times the local water depth in any horizontal direction from any discharge outlet under mixing zone design conditions. The most restrictive distance was calculated at 4.1 feet.

[29] The City refers to the statement in the TSD, issued by the US EPA, which indicates that lethality is not expected if a full analysis of concentrations and residence times with the mixing zone finds that organisms drifting through the path of maximum exposure will not be exposed to concentrations exceeding acute criteria over a 1-hour averaging *[footnote continued next page]*

than the guidelines included in the TSD. The shortcomings the Regional Board notes in the study can be resolved using the existing model information. We conclude that an acute mixing zone should be allowed, but downsized to ensure that there will be no acutely toxic conditions to aquatic life passing through the mixing zone. An acute mixing zone could be limited to a distance of 4.1 feet downstream of the diffuser; the dilution associated with such a mixing zone would be 12.2 to 1.[30] The Regional Board may, however, further limit or deny the dilution credit if necessary, including for example, specific pollutants for which there is no assimilative capacity in the receiving water. While granting a mixing zone is discretionary, in reaching our conclusion we consider that the Regional Board did not fully consider information in the record, the high cost to meet the effluent limitations without allowing this dilution credit, and the lack of evidence of any harm associated with such a mixing zone.

Contention: The City contends that for chronic toxicity and human health-based criteria, the Regional Board improperly granted the City less than half the available assimilative capacity.

Finding: The Regional Board allowed dilution credits to apply to chronic aquatic life and human health criteria for some constituents. In granting dilution credits, the Regional Board applied two factors to limit the amount of dilution credits allowed. First, the Regional Board limited the available assimilative capacity, determining that it is not appropriate to fully utilize all of the existing available assimilative capacity, and that no more than half of what was available should be used to apply dilution credits.[31] Of the remaining assimilative capacity, the Regional Board determined that it was appropriate to reserve some for the Linda County Water District, because that district was planning to change its discharge location so that the two outfalls would be in close proximity.[32] The Regional Board found that the City's discharge was

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period. (TSD, section 2.2.2.) It also states that travel time through the acute mixing zone must be less than roughly 15 minutes in many situations if a 1-hour average exposure is not to exceed the criterion. (*Id.*)

[30] This distance reflects an alternative proposal advanced by the City, which is 5 times the local water depth in any horizontal direction from any discharge outlet under mixing zone design conditions. This was the most limiting distance and the most protective value included in the City's study, and corresponds to guidance in the TSD.

[31] Permit Fact Sheet, at page 3.

[32] Permit Fact Sheet, at page 3.

80% of the combined discharges, and therefore it granted to the City 40% (one-half of 80%) of the available assimilative capacity.

While the Regional Board is correct that it is not required to fully utilize the assimilative capacity of the River, there is no rationale given for its decision to use only 50% of the total. The issue is not that the Regional Board has the burden of proof in denying mixing zones, but that it must explain its actions in the findings. The City did provide information on the assimilative capacity, and there is no disagreement on that factual issue. The Regional Board has justified some minor decrease in the amount of capacity that should be granted, because of varying data on critical flow levels and the relative accuracy of the modeled dilution values, but the resultant mix in the receiving water is expected to be better than applicable criteria for all but extreme conditions of ambient background concentration and dilution flows. Full use of assimilative capacity of the receiving water would only occur if the flow of the discharge and the flow of the receiving water were both at levels corresponding to the dilution ratio values used to calculate dilution credits. Therefore, full allocation of the assimilative capacity, with reductions to allow for a safety factor in light of disputed critical flow levels and questions regarding the accuracy of the modeled dilution values, appears justified. If concerns such as future development are the basis for a reduction in allocating assimilative capacity, the Regional Board should explain its rationale.

The decision of the Regional Board to limit the City to 80% of the allocated assimilative capacity that will be granted is adequately justified. The relative flow contributions of the City and Linda are readily identified. If both dischargers were granted full dilution credits, at times there would be a lack of assimilative capacity. It is not appropriate to grant full dilution credits to one discharger on a stretch of river, so that another discharger would receive no dilution credits. Moreover, if there are more dischargers in the future, a more rigorous allocation scheme may be required. But for now, it is appropriate to allocate 80% of the assimilative capacity to the City.

Contention: The City contends that the Permit inappropriately disallowed assimilative capacity for constituents that are listed as impairing the Feather River.

Finding: The Permit includes as effluent limitations criteria for constituents that are listed as impairing the Feather River, pursuant to the list produced pursuant to Clean Water

Act section 303(d). The Permit explains that these constituents are on the 303(d) List, and "[t]herefore, the receiving water for the discharge has no assimilative capacity for these constitutes and applicable water quality standards must be applied as end-of-pipe effluent limitations."[33] The impairing constituents are diazinon, Group A pesticides, and mercury. The City challenges the effluent limitations for these constituents, stating that it was inappropriate to determine there is no assimilative capacity based only on the listing.

In Order No. WQO 2001-06 (Tosco), we addressed this same issue. There, we stated that "the listing itself is only suggestive; it is not determinative." We stated that in developing effluent limitations, regional boards must review available ambient data and base their determinations on those data. In this matter, it appears that the Regional Board may have adequate ambient monitoring data to justify its effluent limitations. For example, in Finding 14.e, the Regional Board refers to impairment due to diazinon that "is significantly documented in the records of the Regional Board." But the Permit does not describe the data nor state that its determinations are based thereon. Instead, it states that end-of-pipe limitations are included because the constituents are on the 303(d) List. Pursuant to our instructions in Order No. WQO 2001-06, the Regional Board must revise its findings and link the denial of assimilative capacity to the ambient monitoring data.

D. Calculation of Effluent Limitations for Discharges from the Diffuser

The Permit states that it includes effluent limitations for National Toxics Rule (NTR) and CTR criteria that are developed in compliance with the SIP. It states that where the final WQBELs cannot be met at this time, performance-based interim effluent limitations are included.[34] The Permit, however, includes effluent limitations that are labeled as interim,[35] but which are identical to effluent limitations that are labeled as final.[36] In adopting these effluent limitations, the Regional Board apparently calculated the WQBEL as required by the SIP, and

[33] Permit Finding 14.

[34] Permit Finding 13.

[35] Permit, Effluent Limitations B.1.

[36] Permit, Effluent Limitations B.3.

then compared the result to the performance of the plant, setting the effluent limitation lower to reflect plant performance.[37]

Contention: The City objects to all of the effluent limitations because adequate dilution was not considered. This issue is discussed above. The City also objects to the 15 effluent limitations that were calculated at levels lower than WQBELs based on performance at the plant.

Finding: The City contends that the performance-based effluent limitations for 15 constituents were incorrectly calculated and that the Fact Sheet does not provide adequate information regarding the basis for these limitations. The Permit's findings[38] and Fact Sheet[39] do provide information on the calculation of performance-based effluent limitations. The Regional Board used methods set forth in the TSD in developing performance-based effluent limitations and the City does not proffer any valid objection to the Regional Board's methodology. There is a problem, however, in the calculation of final effluent limitations. It appears that, except for four constituents not at issue in this discussion,[40] the final effluent limitations have been reduced to reflect actual performance, and that there is no difference between the interim and the final effluent limitations. Because there is no explanation of the need for effluent limitations more stringent than WQBELs, these limitations will be remanded to the Regional Board for revision or further justification.

The Permit states that the Regional Board staff calculated the final effluent limitations pursuant to the SIP, and that where the City could not comply with those limitations, it calculated interim, performance-based limitations. The calculation of performance-based effluent limitations is properly done. This Board has held that regional boards have discretion in the manner in which they calculate performance-based interim limitations.[41] In this case, the Regional Board calculated final effluent limitations[42] in a manner that was consistent with the

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[37] Permit Fact Sheet, at page 5.

[38] Permit Finding 13.

[39] Permit Fact Sheet, at page 5.

[40] These constituents are listed at Effluent Limitation B.2.: Bis (2-ethylhexyl) phthalate, cadmium, copper, and zinc.

[41] WQO Order No. 2003-0012 (Los Angeles County Sanitation Districts).

[42] The result is the average monthly effluent limitation (AMEL) and maximum daily effluent limitation.

SIP, and then compared these results to the plant's performance. The Fact Sheet explains that the results were compared to the maximum observed effluent concentration (MEC) and to the "mean plus 3.3 standard deviations." If the average monthly effluent limitation (AMEL) was greater than the larger of the MEC and the mean plus 3.3 standard deviations, then the final effluent limitation was set at the larger of the two. In other words, rather than determining the final effluent limitations based on the SIP calculations (the AMEL) and establishing a less-stringent interim performance-based standard if the effluent contained higher pollutant levels than the AMEL, the Regional Board calculated the AMEL *and then decreased it—made the limitation more stringent*—if the existing effluent was of better quality than the AMEL. This resulted in final and interim effluent limitations that were identical.

The calculations of final effluent limitations should be remanded to determine whether there is a basis for limitations that are more stringent than those required by calculating the AMEL. In light of our discussion above, the Regional Board needs to recalculate effluent limitations in any event, to reconsider the dilution credits. We note that there are situations where a more stringent, performance-based effluent limitation may be required pursuant to our anti-degradation policy, but if that is the case, the findings must clearly explain the basis for establishing the more stringent effluent limitations. Finally, if the City can meet the final effluent limitations, then the Permit should not include interim limitations at all. Interim effluent limitations for priority pollutants are only allowed under the SIP as part of a legally defensible compliance schedule. Certainly, the establishment of identical interim and final effluent limitations is confusing and unnecessary.

Contention: The City contends that the Permit should have different mass-based limitations for wet-weather flows.[43]

Finding: We note in the administrative record that the Regional Board has, in other permits, provided higher mass effluent limitations for conventional pollutants during wet weather flows. On the record in this matter, we cannot discern if the actual mass discharge varies with seasonally higher flows for various constituents. We conclude that, in light of the highly variable flows in the Feather River, the mass limitations should be conditioned to allow the mass

[43] The City raised numerous other issues regarding mass limitations. These arguments have been rejected in prior orders. See, e.g. Order WQO 2001-16 (Napa).

loading to increase in proportion to the discharge flow during wet weather discharge flows greater than 7.0 mgd. On remand, the Regional Board may instead consider adopting appropriate seasonal mass limitations.

1. Organochlorine Pesticide Effluent Limitations

Contention: The City contends that the effluent limitations for organochlorine pesticides, or Group A pesticides, are inappropriate.

Finding: The effluent limitations for these pesticides are based on the Basin Plan water quality objective, which requires that Group A pesticides not be detectable in the effluent.[44] The City states that the Basin Plan objective has been superseded by the CTR criteria pesticides, and cites General Note (c). This statement is incorrect. General Note (c) states: "The [CTR] criteria . . . apply concurrently with any criteria adopted by the State, except when State regulations contain criteria which are more stringent for a particular parameter and use . . . ." Thus, General Note (c) actually states the opposite of what the City claims; the CTR criteria apply, unless they are superseded by more stringent state standards. In addition, the City claims that DDT was never detected, and therefore there is no "reasonable potential" supporting an effluent limitation. We find that use of an estimated "j-flag" value, however, is an appropriate method of determining detectable levels of pollutants.[45] We also reject the City's argument that effluent limitations are not appropriate for pesticides whose use has been banned, since these pollutants have been found in the effluent.[46] We do agree, however, as stated above, that the Regional Board must review assimilative capacity and the propriety of granting dilution credits for the Group A pesticides.

2. Electrical Conductivity Effluent Limitation

Contention: The City claims that the effluent limitation for Electrical Conductivity (EC) should not have been adopted and was inappropriately calculated.

Finding: The Regional Board included the appropriate findings to show the need for an effluent limitation for EC and appropriately referred to the water quality objectives in its Basin Plan. It states that the numbers used to calculate the effluent limitations are based on

[44] See, Permit Finding 14.d.

[45] See, WQO 2002-0012 (EBMUD), at page 28.

[46] Two of the banned pesticides are DDT and lindane.

electrical conductivity data from 1998 until 2003. The findings or Fact Sheet should cite the specific data on which it relied in its calculations.

3. Aluminum Effluent Limitations

Contention: The City claims the effluent limitations are inappropriate and should be removed.

Finding: The Regional Board relied on US EPA criteria guidance to implement its toxicity water quality objective. The US EPA's criteria document suggests that it is preferable to use the acid-soluble method rather than total recoverable analysis to evaluate the ambient water and to calculate the effluent limitations. The City should be given the opportunity to reassess the ambient water using the acid-soluble method.

4. Ethion Effluent Limitations

Contention: The City claims the effluent limitations for ethion are inappropriate and should be removed.

Finding: The Regional Board relied on US EPA criteria guidance from 1972 to establish these effluent limitations. The 1972 criteria have not been repeated in more recent US EPA publications and other guidance numbers are higher. It appears that the Regional Board should not have relied on this outdated criterion. Therefore, the Regional Board should reconsider these effluent limitations.

5. Survival of Aquatic Organisms in Bioassays

Contention: Effluent limitation B.9 provides that: "Survival of aquatic organisms in unmanipulated 96-hour bioassays of undiluted waste" shall be no less than threshold percentages.[47] The City contends that it should be allowed to perform the tests using pH stabilization.

Finding: US EPA allows for parallel testing (both pH-stabilized and unstabilized) to determine whether toxicity in the effluent is resulting from pH drift of pH-dependent constituents.[48] The Regional Board responds that effluent ammonia concentration has been measured as high as 47 mg/l, and that ammonia is both toxic and biostimulatory. The

[47] The thresholds are 70% for each single bioassay and 90% for the median of three consecutive bioassays.

[48] EPA-821-R-02-013.

Regional Board believes that the City's past practice of using pH stabilization artificially depresses the pH and masks toxicity due to ammonia.

If the objective of the test is to determine the toxicity of the effluent in the receiving water, the pH should be maintained at the pH of the receiving water. If the objective is to determine the absolute toxicity of the effluent, the pH should be maintained at the pH of the sample. The US EPA method gives the permitting authority discretion to allow parallel testing. If the tests are conducted in parallel and the unstabilized test shows no toxicity, then these results should be used to show permit compliance. If the unstabilized test shows toxicity, then the pH-stabilized test should be used to determine compliance, provided this test meets test acceptability criteria and the pH was properly stabilized. Thus, the results of parallel tests can be used to determine whether toxicity in the effluent is resulting from pH drift of pH-dependent toxicants, and the Regional Board should allow such parallel tests.

E. Discharges from Disposal Ponds

The City discharges disinfected secondary wastewater into six evaporation/percolation ponds from May through October. The ponds lie within the floodplain of the Feather River. Unlike the prior permit, the discharges from the ponds are covered by the Permit, and there is no disagreement that the ponds should be covered by an NPDES permit. The ponds with the lowest levees are inundated when the River reaches approximately 60,000 cfs, which represents a four-to-five-year storm frequency. When the ponds overtop, a mixture of storm water and wastewater discharges into the Feather River. The Permit establishes effluent limitations for discharges to the Feather River from the ponds. In establishing the effluent limitations, the Regional Board noted that the wastewater in the ponds was subject to concentration by evaporation, but also that there may be significant dilution available at the times they are inundated and discharge.[49]

1. Effluent Limitations for Disposal Ponds

Contention: The City claims that because the discharges from the ponds are infrequent, the effluent limitations should be deleted. In the alternative, the City contends that a dilution credit should be granted. The City also contends that there is no known method to

[49] Permit Finding 48.

sample the ponds prior to imminent flooding. The Permit's findings acknowledge that sampling of the pond discharge during flooding poses a danger to City personnel.[50]

Finding: In light of the varying elevations of the ponds and levees, the ponds will be successively inundated as the flood level rises. All ponds may be inundated at a flood flow of 150,000 cfs, which is about half the flow of the 100-year storm. The Regional Board provided adequate justification for the need for WQBELs for individual pollutants limited in the Permit. We also agree that using the ponds may result in increased concentrations of pollutants because of evaporation. The City argues that WQBELs are not appropriate for discharges that generally occur less than once every three years. While aquatic life water quality criteria are established at a level that is protective, assuming no more than one exceedance in three years,[51] there is no support for the statement that effluent limitations are not required for infrequent discharges.[52] The Regional Board's concerns, as expressed in the findings, that discharges from the pond may result in magnified concentrations as well as volumes of pollutants, provide adequate justification for WQBELs.

The effluent limitations are expressed in terms of concentration and mass. The City asserts that there will be tremendous dilution during the discharge periods. Unlike the discharge through the diffuser, discussed above, the City did not provide a dilution study to support the extent of available dilution during flood periods. The City provided estimates of dilution from each pond based on "reasonable assumptions," but these estimates are based on the assumption that it would take four hours to drain and mix an entire pond with the Feather River. The only support for the assumptions is reference to a single flood event in 1997. These assumptions appear in the City's Points and Authorities, which are signed by the City's attorney. Therefore, the City did not provide adequate technical information to establish a mixing zone and dilution credit for periods of pond inundation and discharge. Even if the City had provided data to support its claim of dilution, the Regional Board would have had to consider other factors, such as whether the fish would try to escape floodwaters and remain close to the pond levees, in the path of the pond discharges. We conclude, however, that the land discharge specification

[50] Permit Finding 49.

[51] 40 C.F.R. § 131.38(c)(2), Table 4, notes 1 and 2.

[52] Once the criteria are established, there is no right to exceed the effluent limitation at any time.

should be for discharges "into" the ponds rather than for pH in the ponds. The limitation is based on the pH water quality objective, but the ponds discharge only during inundation, at which times the receiving water limitation for pH would be protective.

While there are methods to sample the concentration of the pollutants in the ponds prior to discharge, such as taking grab samples upon a forecast of a large storm, we find that the City's arguments regarding the difficulty of measuring effluent are persuasive when applied to the mass limitations. Calculation of mass generally requires measuring both concentration and flow. Usually this can be done at a discrete conveyance point. But during flood inundation of the ponds, there is no way to measure the flow (and therefore mass) being discharged beyond the pond boundaries. The Permit is not clear regarding how the Regional Board will assess compliance with the mass limitations. The mass in a pond could be estimated by multiplying the volume in the pond by its concentration. In that case, it must be assumed that the entire mass is discharged to the Feather River and the ponds would then essentially become part of the River. There would be no gain by listing both concentration and mass limitations. In any event, in a flood situation, aquatic life organisms are not affected by mass, but instead are affected by concentration in the water column. We conclude that the mass limitations should be removed from the Permit.

2. 100-Year Storm Protection

As discussed above, under the prior permit the disposal to the ponds was not recognized as subject to NPDES requirements. Instead, it was treated as a dry-weather land disposal option. Under the current Permit, the ponds are recognized as point source discharges to the Feather River, in that they are constructed in the floodplain and overtop in storm events. The Permit requires that a study be conducted to determine whether discharges from the ponds are adversely affecting water quality. If the results demonstrate impacts, then the City is required to propose a plan that may include pond closure.[53]

[53] Permit Provision H.12.

Contention: The City contends that the ponds should be excluded from the provision requiring that treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to 100-year frequency storms.[54]

Finding: This provision is standard in the Regional Board's permits, and generally is of obvious value in protecting water quality. In this case, the record shows and the Regional Board agrees, the ponds have been in use for many years, and were not properly regulated until now. In its response, the Regional Board states that the requirement for the study on the ponds addresses the contention. While we agree that the effect of the pond disposal should be studied, and, if necessary, plans should be made to close them, it is not appropriate to apply the prohibition against facilities in the 100-year flood zone when it is acknowledged that is where they have been located and operated pursuant to waste discharge requirements for years. The Regional Board should exclude the ponds from this provision at this time, with the clear understanding that the issue will be addressed again after completion of the study.

F. Monitoring Requirements

1. Concurrent Acute and Chronic Toxicity Testing

Contention: The City states that the monitoring requirements are unclear as to whether, during months that chronic toxicity is measured, acute toxicity testing must still be performed.

Finding: The Regional Board responds that acute toxicity testing and chronic toxicity testing will sometimes overlap, but that, since the tests measure different endpoints, overlapping is justified. Although the two toxicity tests appear to measure different endpoints, the 7-day chronic test provides both acute and chronic toxicity information concurrently. Therefore, acute toxicity testing is not necessary when chronic toxicity testing is being conducted in the same reporting period. No revision to the Permit is necessary since the City can comply with both requirements in this manner.

2. Receiving Water Monitoring

Contention: The City claims that the Permit should clarify that it need not monitor the Feather River except during times of direct discharge to the River.

[54] Permit Provision H.1.

Finding: The monitoring provisions require weekly sampling of three stations without regard to whether a direct discharge is occurring. In addition to the receiving water monitoring, the Permit requires a hydrogeologic investigation of pond flow. Thus, the Regional Board clearly requires data on ambient water quality conditions, including whether seepage from the ponds affects the ambient conditions. These requirements are reasonable, especially in light of the provision allowing the City to recommend the location downstream of the disposal ponds. Year-round receiving water monitoring at all stations is required.

III. CONCLUSIONS

1. In preparing to re-issue NPDES permits, the Regional Board should establish clear deadlines for the submission of studies, models, and data. The State Board will consider any data that is admitted into the record, even though it was too late for the Regional Board to thoroughly consider.

2. It was appropriate for the Regional Board to use the methodology in the SIP to determine the need for water quality-based effluent limitations for priority pollutants.

3. It was appropriate for the Regional Board to use a combination of the methodologies in the SIP and the TSD to determine the need for water quality-based effluent limitations for non-priority pollutants, but it must explain its methodology in the findings.

4. It is appropriate for the Regional Board to consider all available monitoring data in developing a permit for POTWs, including data older than 4.5 years and "outlier" data.

5. In calculating the hardness value of the receiving water for purposes of determining the need for effluent limitations for metals, i.e., the reasonable potential, it is appropriate to use the "worst-case" historical data, but use of ICP data is more reliable than the titration method.

6. In establishing effluent limitations for metals, it is preferable to establish fixed or seasonal effluent limitations, as provided in the SIP, rather than "floating" limitations.

7. The Regional Board should have granted a mixing zone and dilution credit for acute criteria. The City justified an acute mixing zone that could be limited to a distance of 4.1 feet downstream of the diffuser, with a dilution of 12.2 to 1.

8. For those constituents for which the Permit granted a mixing zone and dilution credit for chronic toxicity and human health-based criteria, the Regional Board did not provide rationale for granting the City less than 80% of the total assimilative capacity.

9. For constituents for which dilution credit and a mixing zone are denied because of lack of assimilative capacity, the Regional Board cannot base its determination merely on the listing pursuant to Clean Water Act section 303(d).

10. For 15 constituents for which the Regional Board adopted effluent limitations more stringent than the calculated AMEL, in order to reflect performance, the appropriate effluent limitation is the AMEL, unless the Regional Board provides justification for more stringent, performance-based limitations.

11. Interim limitations for priority pollutants cannot be used except where the discharger cannot currently and consistently meet the final effluent limitations, and the discharger meets the SIP criteria for a compliance schedule. If used, they should be less stringent than the final limitations in order to reflect current performance.

12. The Regional Board should have adjusted the mass-based effluent limitations to reflect high-flow situations.

13. The Regional Board appropriately considered the water quality objectives in its Basin Plan to establish effluent limitations for organochlorine pesticides. Applicable CTR criteria must concurrently be considered.

14. In establishing the effluent limitation for Electrical Conductivity, the Regional Board appropriately determined the need for the effluent limitation and applied the applicable water quality objective from its Basin Plan. It must, however, provide adequate reference to the data on which the calculations were based.

15. The aluminum final effluent limitation may be appropriate, but the City should be given the opportunity to reassess the ambient water using the acid-soluble method.

16. The effluent limitations for ethion are based on outdated EPA criteria and should be reconsidered.

17. In conducting bioassay tests, the City should be allowed to conduct parallel testing (both pH-stabilized and unstabilized).

18. The Regional Board appropriately adopted effluent limitations for discharges from the ponds, even though those discharges occur infrequently.

19. The City did not provide documentation to support dilution credits for discharges from the ponds.

20. It is inappropriate to include mass limitations for discharges from ponds that overflow only during flood events. pH limitations should apply to effluent entering the ponds.

21. The disposal ponds should be excluded from the prohibition against waste disposal units in the 100-year flood zone, and the issue should be reviewed upon completion of the pond study.

22. The Permit allows the City to comply with acute and chronic toxicity concurrently where the tests overlap.

23. The Permit properly requires year-round receiving water monitoring at all stations.

IV. ORDER

IT IS HEREBY ORDERED:

The NPDES Permit and Cease and Desist Order for the Yuba City wastewater treatment plant are remanded to the Regional Board for reconsideration consistent with this Order. In the interim, the effluent limitations that are remanded in this Order are vacated.

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In all other respects, the Petition is denied.

V. CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on July 22, 2004.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gary M. Carlton
Nancy H. Sutley

NO: None.

ABSENT: None.

ABSTAIN: None.

Debbie Irvin
Clerk to the Board