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California Regional Water Quality Control Board Central Valley Region

Robert Schneider, Chair



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29 September 2003

Ms. Joyce Horizumi
Environmental Coordinator
Sacramento County
Department of Environmental Review and Assessment
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COMMENTS ON DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR), SACRAMENTO REGIONAL WASTEWATER PLANT (SRWTP), SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT, SACRAMENTO COUNTY, SCH# 2002052004

Thank you for providing the opportunity to comment on the proposed project. The wastewater discharge from the Sacramento Regional Wastewater Treatment Plant (SRWTP) is currently permitted by NPDES Order No. 5-00-188, which allows discharge of 181 mgd of secondary effluent to the Sacramento River.

The project alternative selected in the DEIR proposes to expand the SRWTP to accommodate future growth in the planning period up to year 2020. The project proposes to increase secondary treatment capacity to 218 mgd for discharge to the Sacramento River, an increase of 37 mgd over the current treatment capacity of 181 mgd. Following are our comments on the Draft EIR.

1. Alternatives analysis

The projects considered in the alternatives analysis included: no project alternative (181 mgd), rerating of the existing facility (slightly greater than 200 mgd), the proposed project, and tertiary treatment for the incremental increase in flow. During the master planning process, several Stakeholders expressed the opinion that filtration was an appropriate additional treatment step to be considered in the EIR. The selection of the proposed project, expansion of secondary treatment facilities, appeared to be based solely on the conclusion that the impacts analysis did not identify potentially significant water quality impacts, even though the proposed project was not one of the environmentally superior alternatives.

The alternatives analysis should have included evaluation of tertiary treatment of the entire SRWTP effluent, ammonia removal, and alternatives for achieving full compliance with the SRWCB's Thermal Plan.

In addition, before an NPDES permit can be written for the proposed project, the SRCSD must demonstrate that the project complies with SWRCB Resolution 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (antidegradation policy). Based on the

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information presented in the DEIR, the proposed project does not meet the antidegradation policy requirements for the following reasons:

- (a) Documentation is needed that evaluates whether the socioeconomic impacts of the proposed project outweigh the environmental benefits of the environmentally superior alternatives. It should include discussion of the best practicable treatment or control necessary to assure that (1) pollution or nuisance will not occur, and (2) the highest quality water consistent with the maximum benefit to the people of the State will be maintained. The discussion should also compare impacts from higher mass loadings from all chemical constituents, with particular attention to increased loadings from bioaccumulative and non-threshold pollutants.
- (b) As outlined in this letter, questions regarding the implementation, interpretation and conclusions of the modeling study prevent adequate evaluation of the effects of the proposed project on water quality.

2. Data used to predict water quality impacts

We have several concerns regarding the data used to predict the environmental impacts of chemical constituents in the proposed discharge. These concerns regarding the DEIR's water quality impacts analysis make the conclusions very uncertain at this time.

- (a) Receiving water monitoring data only from wet years (1996-2000) was used to predict future environmental impacts even though data for dry years was available and described in Appendix G. Water quality data during dry years and lower river flows should have been included in the impacts analysis, as dry years may experience periods of higher receiving water concentrations and reduced assimilative capacity.
- (b) Receiving water concentrations for nine constituents were assumed to be zero when less than 35% of the monitoring data were above laboratory reporting limits. This could affect the accuracy of the impacts analysis, as this assumption does not reflect the worst-case conditions in the river.
- (c) The effluent water quality data used was limited to data from 1998 to 2000, reportedly due to the closure of some canneries, which could have altered effluent characteristics. The reduction in cannery wastes discharged to the collection system may or may not impact effluent concentrations of specific pollutants. It is highly desirable to use as large a data set as possible to evaluate effluent characteristics, so we advise using at least five years of effluent data for the evaluation. If the entire data set is not used, a constituent-by-constituent evaluation should be performed describing why data acquired prior to 1998 are not appropriate for predicting environmental impacts.
- (d) Water quality data obtained after 2000 for both the receiving water and effluent, including the mandatory one-year monitoring data set required by the State Implementation Plan, were not used. The impacts analysis is incomplete because it does not address all of the California Toxics Rule constituents.

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- (e) Tertiary treatment will likely reduce concentrations of chemical constituents in the effluent to levels below what can be achieved by secondary treatment alone. Since the available effluent concentration data are for a secondary treatment facility, descriptions of how effluent concentrations were obtained to conduct the water quality assessment modeling for the tertiary treatment alternative should be provided.
- (f) Although statistical information regarding constituent monitoring data is provided, the actual data used in the analysis was not submitted. Therefore, further comments on the appropriateness of the data used in the impacts analysis cannot be provided until the full data set, including the data that was either censored or eliminated from the analysis have been made available.

3. Computer Model

- (a) The submitted documents pertaining to the modeling studies lack a number of key elements that preclude acceptance of (1) the conclusion that secondary treatment of existing and future increased flows will have a "less than significant" effect on surface water quality and (2) the use of the modeling approach for NPDES permit development. The following critical items regarding the modeling effort should have been provided. (We note that a separate comment letter containing detailed comments related to the technical basis of the assumptions used and how the model results were interpreted will be provided to SRCSD at a later date):
 - i. Adequate and complete documentation for models used in the analysis, including citations to readily available model manuals, reports describing previous applications, and peer-reviewed papers supporting the veracity of the proprietary models.
 - ii. Descriptions of and justifications for all assumptions inherent in the models and their inputs.
 - iii. Model source or executable codes, adequate user information to set up and run the models, and all input and output files so that independent assessments of water quality impacts and effluent limitation determinations can be made.
 - iv. Observational field data used to setup, calibrate and verify the model predictions.
 - v. Sensitivity analysis to support specific model assumptions and the choice of data used in the models.
 - vi. Some calibration and verification results are presented graphically in Appendix F of the DEIR. Quantitative error measures should be presented as well as justification of the acceptability of these error measures.

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- vii. Comparison of the model output with the output, for the same conditions, using known, industry-accepted models. This can include comparisons of side-by-side testing against less complex industry-accepted models to show the relative exactness of the solutions.
- (b) After the two-day workshop that discussed the modeling approach, the Independent Technical Review Committee (ITRC) provided comments on the modeling effort. Review of subsequent modeling documents submitted to the Regional Board show that the following comments made by the ITRC do not appear to have been completely addressed:
- i. A description of the technical basis for the 14:1 dilution ratio criteria for stopping discharge to the river should be provided, as well as an evaluation of whether doubling the rate of discharge during post-tide periods causes or will cause environmental damage, and whether there is enough dilution to accommodate future increased double discharges during the return tide.
 - ii. The justification for why a limited (incomplete) uncertainty analysis was used with the Monte Carlo simulation and how it affects the modeling assessment should be provided as this approach does not produce a complete error analysis.
 - iii. Details should be provided on the conservative approach used for the modeling work versus the alternative expected value approach and how the chosen approach affects the modeling assessment.
- (c) The modeling work assumed no discharge plume interaction with benthic communities. Since the discharge plume impinges on the river bottom, an evaluation should have been provided of the effects of the discharge on benthic communities.
- (d) The DEIR reports daily median, not average, concentrations. However, aquatic life acute criteria are based on 1-hour averaging periods, aquatic life chronic criteria are based on 4-day averaging periods, and human health criteria are 30-day averaging periods. The alternatives analysis should be based on appropriate averaging periods. In addition, the summary tables in the DEIR appear to evaluate compliance with water quality criteria based on median concentrations, not the one in three year exceedance criteria recommended in EPA's Technical Support Document. Compliance with the one in three year exceedance criteria should be evaluated and presented for each constituent.
- (e) The constituent screening analysis described in Appendix H states that chemical constituents with observed maximum concentrations that were less than water quality criteria were omitted from evaluation. However, these constituents should be carried through the modeling analysis, as the maximum values that could be sampled from the log-normal distributions could potentially exceed the observed maximum concentrations, with potential to exceed water quality criteria.

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- (f) Chemical constituent modeling results for the project alternatives other than the proposed project were not presented. The modeling results for all of the project alternatives, and a modeling evaluation for full tertiary treatment as an additional alternative should be provided, along with a technical evaluation of the relative environmental benefits of the various projects.

4. Temperature

The current facility cannot comply with the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan), and has an exception (Resolution No. 5-00-192) from specific water quality objectives 5A(1)a and 5A(1)b. Specific water quality objective 5A(1)a states, "The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F", and 5A(1)b states, "Elevated temperature waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point". Expanding the discharge with no modifications to the process or discharge facilities will not improve compliance with the Thermal Plan. The alternatives analysis should evaluate ways to come into compliance with the thermal plan. For the upcoming NPDES renewal, we will reevaluate whether a thermal exception for the proposed project can be made.

The DEIR for the project states, "... the current Thermal Plan and NPDES permit limitations are not well supported by the current science regarding thermal effects on aquatic life. Therefore, compliance with these temperature limitations is not predictive of (or well correlated to) thermal impacts to aquatic life downstream of the SRWTP discharge. Consequently, a detailed, scientifically based, quantitative assessment of near-field and fully mixed temperature modeling results for the purpose of assessing potential thermal impacts of the project to aquatic life is provided below." (pg 4.6-32) The DEIR then uses a dynamic model to assess the potential for (a) a thermal plume to block or substantially delay upstream migration; (b) thermal effects on fish and macroinvertebrates exposed to the plume for short periods while moving downstream past the diffuser; and (c) population or community level effects to fish or macroinvertebrates from the incremental increase in downstream water temperatures. The DEIR finds all thermal impacts to aquatic life are less than significant.

One of the reasons provided in support of this conclusion is on page 4.6-33, which states that modeling predicts there will always be 100-foot wide zones of passage on each side of the river where the ambient water temperatures are unaffected. However, a zone of passage of 100 feet on the east side of the river is not evident on all the graphs for locations 60 feet downstream of the diffuser. Also, most of this 100 foot wide zone of passage is side slope, not the full depth of the river, so organisms would need to move to the side of the river and to shallower depths to avoid the plume. The DEIR should evaluate whether organisms are likely to move laterally and to shallower depths to avoid the plume, and whether movement through shallower depths will adversely impact them (such as increased bird predation).

Additionally, although dye study information is available from as close as 25 feet downstream of the diffuser, and dynamic model results for constituent modeling have been provided starting at 30 feet downstream of the diffuser, thermal plume graphics for these locations were not provided. These

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graphics should be provided as well as cross-sectional plots of actual measured temperature or dye study data to corroborate the model predictions and DEIR conclusions.

The proposed project and the project alternatives must be evaluated against the existing requirements. Until the Thermal Plan is revised, the requirements of the existing Thermal Plan still apply, and all dischargers will have to show that they are in compliance with the existing Thermal Plan provisions. The environmental impacts analysis for effluent temperature contained in the DEIR is incomplete because it does not evaluate compliance with the SWRCB's Thermal Plan.

Exceptions to the Thermal Plan may be granted by Regional Boards in accordance with Section 316(a) of the Federal Clean Water Act. Section 316(a) states it must be demonstrated that the existing thermal limits (Thermal Plan) are more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife near the outfall diffuser. The original and subsequent exceptions from the Thermal Plan were made based on conclusions from an analytical model that were discussed in the October 1987 Supplemental EIR for the facility. However, SRCSD has not yet provided in-stream monitoring data showing that the receiving water in the vicinity of the outfall currently has a balanced, indigenous population of shellfish, fish or wildlife, and that the proposed project will not cause changes in species diversity and abundance. If the SRCSD plans to again request exceptions to the Thermal Plan, results from in-stream bioassessment studies downstream of the outfall showing these results must be provided.

5. Cumulative impacts analysis

The cumulative analysis is inadequate in its assumption that background water quality will not change due to future growth of communities in the watershed. Growth upstream in the watershed is significant. Additionally, since a mixture of Sacramento and San Joaquin Rivers are pumped to southern California for water supply, the significant community growth in the San Joaquin Basin should also have been considered in the far field impacts.

6. Chlorine

The DEIR states that the proposed project will include chlorine contact basins, or equivalent improvements, near the secondary treatment facilities, while continuing to dechlorinate the chlorinated final effluent at the outfall, approximately 1.5 miles away. The SRWTP has historically experienced occasional violations of effluent limitations for chlorine, and the DEIR states that proposed chlorine contact basins will address these chlorine excursions. However, the SRWTP has reported in the past that these chlorine excursions were caused by other factors such as power failures, effluent diversions, and maintenance items. Higher flows may result in more frequent diversions, which may result in more frequent excursions. The DEIR failed to address this issue. The environmental impacts analysis regarding chlorine is incomplete because an evaluation of other alternatives that would directly reduce the potential for chlorine discharges was not discussed, nor was a technical evaluation of the effects of chlorine discharges on receiving water beneficial uses provided.

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7. Toxicity

(a) Interactive Effects of Multiple Constituents

The DEIR states that a scientific literature search on additive toxicity indicates that increased toxicity due to interactive effects of multiple constituents is not expected. However, this conclusion was primarily based on a literature search that was not comprehensive. The reference material focused on metals and ammonia with only one article regarding pesticides. In addition, most of the species represented in the literature review were fish, which tend to be less sensitive than invertebrate species. Only one article summarized additive effects on an invertebrate species (*C. dubia*). The environmental impacts analysis for additive toxicity is inadequate as the analysis was based on a limited literature search. Therefore, the conclusion that there will be a less than significant impact to water quality from additive toxicity with the proposed project has not been substantiated.

(b) Whole Effluent Toxicity Results

The DEIR states that toxicity testing indicates that the current discharge does not have toxic effects to algae, invertebrates or fish. However, Appendix J states that 10 out of 55 tests showed that undiluted R-3 (downstream) river water exhibited a significant difference in test response compared to the test control (upstream river water). In other words, nearly 20% of the time, the Sacramento River downstream of the discharge is toxic compared to the upstream river water. From this, it can be concluded that, at least some of the time, the SRWTP's discharge is causing toxicity in the downstream receiving water. The SRWTP's self monitoring reports indicate that a number of the toxic test responses showed significant effects to the ability of *C. dubia* to reproduce. The SRWTP's Toxicity Identification Evaluation studies have indicated this response might be caused by non-polar organic compounds. The SRCSD should identify the specific chemical constituents causing the toxicity, and implement measures to remove those constituents from its discharge. These test results contradict the DEIR's statement that the current discharge does not cause toxicity. The conclusion that the proposed project will cause less than significant impacts from toxicity has not been substantiated.

(c) Effects to passing organisms and benthic community

The DEIR concludes that the SRWTP's discharge under current and future project conditions will not have toxic effects on aquatic biota in the Sacramento River. To substantiate this conclusion, Appendix J indicates that planktonic (drifting) organisms are not in contact with the discharge long enough to be impacted by it. Further, Appendix J indicates that under current and future project conditions, benthic (bottom or substrate dwelling) organism community composition is not affected by the discharge. However, no instream bioassessment studies downstream of the outfall were presented to corroborate this conclusion, so this cannot be substantiated.

8. Ammonia

The DEIR states that the modeling work predicted no exceedances of acute ammonia criteria anywhere downstream of the outfall. However, no technical justification of this conclusion was provided, as

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model predictions that relate ammonia concentrations to river pH on an hourly basis were not presented. Additionally, the DEIR states that ammonia concentrations are predicted to exceed criterion continuous concentrations for distances up to 60 feet downstream of the outfall. The model predictions were not presented, so this conclusion also has not been supported.

The information presented in the DEIR indicates the river pH is predicted to range as high as 8.3. With pH concentrations this high, ammonia concentrations as low as 3.15 would exceed acute criteria, and 1.07 mg/l for the 30-day chronic criteria (assuming temperature is 20°C). Based on this information, there appears to be potential for the chronic ammonia criteria to be exceeded for distances beyond 60 feet downstream of the outfall, and it also indicates that acute criteria for ammonia could be exceeded for some distance downstream of the outfall.

Additionally, the far field modeling results indicate the proposed project is predicted to substantially increase ammonia concentrations in the far field. For example, with the proposed project, the SRWTP's contribution to Greene's Landing ammonia concentrations are expected to increase by 40% on average, and 120% at the 99.91st percentile.

The impacts assessment should consider alternatives for ammonia reduction because acute and chronic ammonia criteria could be exceeded in the near field, and the proposed project is predicted to contribute to significant increases in ammonia concentrations in the far field, both of which could potentially be significant impacts.

9. Minimum Dilution Ratio

- (a) NPDES Order 5-00-188 specifies that discharge to the Sacramento River is prohibited unless there is a minimum of 1300 cfs river flow and a 14:1 (river:effluent) flow ratio available in the River. The DEIR states that the minimum 14:1 dilution ratio was based on a river:effluent discharge percentage of 7-10% to prevent thermal blockages that was recommended in an outfall dispersal analysis from the October 1987 Supplemental EIR. This implies that human health protection was not a consideration for the basis of the minimum 14:1 dilution ratio. The DEIR states that the Department of Health Services 1987 Disinfection Guidelines contains recommendations for river:effluent dilution ratios to protect against pathogens. With the proposal to increase discharge flow, the frequencies of 14:1 dilution may increase. The human health impacts of increased frequency of 14:1 dilution in the proposed discharge and the project alternatives should be evaluated against DHS' 1987 Disinfection Guidelines. Additionally the project alternatives analysis should evaluate the modifications that would be needed to operate with a minimum dilution ratio of 20:1.
- (b) Under the current permit, when dilution is less than 14:1, effluent must be diverted into storage ponds until the tidal cycle increases dilution back to at least 14:1. The DEIR indicates additional storage ponds will not be needed for the expansion. However, there have been times in the past where storage capacity has nearly been exceeded. This indicates that the proposed project may need additional storage capacity to accommodate higher effluent flows, or potential discharges at less than 14:1 dilution will be more likely.

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- (c) An evaluation should be provided detailing whether the existing diffuser has capacity for effluent flows that are returned to the river after a diversion for year 2020 conditions.
- (d) If there are plans to continue diversion options for less than 14:1 dilution (e.g. 9:1 dilution), water quality impacts analyses of the effects of the discharge for these dilutions must be provided, including an evaluation of how much more frequent these low dilution ratio discharges will occur for year 2020 conditions.

10. Effluent BOD and Ammonia Effects on Dissolved Oxygen

The DEIR states that the current discharge does not cause a dissolved oxygen sag in the Sacramento River because comparison of dissolved oxygen measurements immediately upstream of the outfall and miles downstream of the outfall at Greene's Landing do not show a marked decrease. However, dissolved oxygen concentration profiles in a river tend to follow a curve with the lowest point in the curve a certain distance from the outfall. A conclusion of no dissolved oxygen sag based on data from two monitoring points located miles away from each other is not adequate because the low point in the curve may have been missed. The impacts analysis and cumulative impacts analysis are incomplete because a dissolved oxygen sag calculation and analysis was not presented. The effects on DO sag resulting from the increased volumes of BOD and ammonia that will be discharged by the proposed project should be evaluated and compared against the corresponding effects on DO sag for the project alternatives.

11. Assumption regarding water intakes

The impacts assessment assumed that no municipal/domestic, industrial, or irrigation diversions occur near the outfall, and water quality impacts to these beneficial uses were based on fully-mixed modeling results. However, there is a water intake immediately adjacent to the diffuser that provides water for irrigation uses. The impacts analysis should be corrected to address the near field effects on water quality near this water intake, and a survey of water intakes near the outfall should be undertaken to establish whether there are others that may have been overlooked.

12. Groundwater/Sludge Disposal

The DEIR states there are plans to close two of the five DLDs and construct a Biosolids Recycling Facility that will convert sludge to compost for beneficial use. The market demand for biosolids compost is currently unknown, and the future land application facilities at the SRWTP will be 3/5 of the current capacity. With a reduction in the original capacity for biosolids disposal, we are concerned as to whether adequate solids management facilities are available for the expansion if the market for biosolids compost turns out to be poor. An evaluation of whether the SRWTP's expansion requires additional biosolids management facilities, and whether the current facilities can handle the increased loading should be provided. The need for expanded sludge handling/disposal facilities should also address increased volumes of sludge and potentially changed characteristics of sludge generated from partial and full tertiary treatment alternatives.

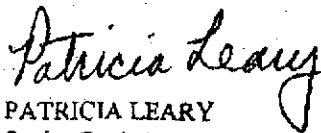
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Additionally, several of the emergency storage basins that are used for purposes of temporarily storing raw wastewater, primary effluent, or secondary effluent during diversions, maintenance periods, or during emergencies, are not imperviously lined. These basins are located adjacent to the levee for Laguna Creek. Monitoring studies should be conducted to evaluate whether the wastewater temporarily stored in these basins have already degraded or present a future threat to groundwater quality.

Should you have any questions, please contact me at (916) 255-3023 or Karen Niiya of my staff at (916) 255-3362.



PATRICIA LEARY
Senior Engineer
NPDES Section

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John Tinger, USEPA Region 9, San Francisco
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State Clearinghouse, Sacramento
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Gerald Bowes, State Water Resources Control Board, Sacramento
Mike Healey, Department of Fish and Game, Sacramento
Janna Herren, Department of Fish and Game, Sacramento
Robert Shanks, District Engineer, SRCSD, Mather
Bill Jennings, DeltaKeeper, Stockton



California Regional Water Quality Control Board Central Valley Region

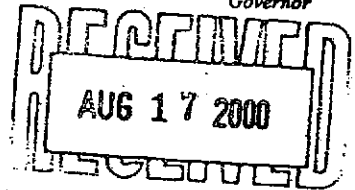
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11 August 2000

Mr. Robert F. Shanks
Director of District Engineering
Sacramento Regional County Sanitation District
827 7th Street, Room 304
Sacramento, CA 95814

**NOTICE OF ADOPTION
RENEWED WASTE DISCHARGE REQUIREMENTS
AND
RESOLUTION FOR THERMAL PLAN EXCEPTION
FOR
SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT,
SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
SACRAMENTO COUNTY**

Waste Discharge Requirements Order No. 5-00-188 and Thermal Plan Exemption Resolution No. 5-00-192 for the above named discharger were adopted by the California Regional Water Quality Control Board, Central Valley Region, on 4 August 2000 meeting.

If you have any questions, please contact Mark Gowdy at (916) 255-3033.

PATRICIA H. LEARY, P.E.
Chief, NPDES Unit, Delta Watershed

MJG:lm

Enclosure Adopted Order
Adopted Resolution, Thermal Plan Exception
Standard Provisions (Discharger only)

cc: List Attached

California Environmental Protection Agency



Mr. Robert F. Shanks
Sacramento Regional County Sanitation District
Sacramento County

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11 August 2000

cc w/Encl: U.S. Environmental Protection Agency, Region IX, San Francisco
U.S. Army Corps of Engineers, Sacramento
U.S. Fish and Wildlife Service, Sacramento
U.S. National Marine Fisheries Service, Santa Rosa
Department of Water Resources, Sacramento
Office of Drinking Water, Department of Health Services, Sacramento
Environmental Management Branch, Department of Health Services, Sacramento
Department of Fish and Game, Region II, Rancho Cordova
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Office of Chief Counsel, State Water Resources Control Board, Sacramento
Division of Water Quality, State Water Resources Control Board, Sacramento
Office of Historic Preservation, Sacramento
Sacramento County Health Department, Sacramento
Sacramento County Planning Department, Sacramento
Solano County Health Department, Fairfield
Yolo County Health Department, Woodland
California Urban Water Agencies, Sacramento
Contra Costa County Water District, Concord
Metropolitan Water District, Los Angeles
Mr. Bill Jennings, Delta Keepers, Stockton
Mr. Stan Dean, Sacramento Regional Wastewater Treatment Plant, Elk Grove
Mr. Paul Marshall, CalFed Bay-Delta Program, Sacramento
Mr. James Sequeira, Director, Department of Utilities, Sacramento
Mr. Joe Luchi, Director, Department of Public Works, Folsom
Mr. Wendell Kido, Sacramento Regional County Sanitation District, Elk Grove
Mr. Robert Seyfried, Sacramento Regional County Sanitation District, Elk Grove
Mr. Michael Mulkerin, Sacramento Regional County Sanitation District, Sacramento
Mr. Larry Nash, City of Sacramento, Department of Utilities, Sacramento
Mr. Milton Presler, City of West Sacramento, Department of Utilities, West Sacramento
Ms. Marjit Aramburu, Delta Protection Commission, Walnut Grove
Mr. Morris Allen, Director of Municipal Utilities, City of Stockton, Stockton

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. 5-00-192

GRANTING AN EXCEPTION TO THE WATER QUALITY CONTROL PLAN
FOR THE CONTROL OF TEMPERATURE
IN THE COASTAL AND INTERSTATE WATERS
AND ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA
FOR THE SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT'S (DISTRICT)
WASTEWATER DISCHARGE INTO THE SACRAMENTO RIVER

WHEREAS, Objective 5A(1), Water Quality Control Plan for the Control of Temperatures in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (the Thermal Plan) prohibits:

- a. a waste discharge to estuaries that exceeds the natural receiving water temperature by more than 20 degrees F;
- b. a waste discharge which causes more than a 1 degree F (0.56 degrees C) rise in more than 25 percent of the receiving water cross section at the discharge location; and
- c. no discharge shall cause a surface water temperature rise greater than 4 degrees F above the natural temperature of the receiving waters at any time or place; and

WHEREAS, the District has an existing discharge of an elevated temperature municipal wastewater into the Sacramento River at a location in the San Francisco Bay-Delta Estuary; and

WHEREAS, the District requests exception to Specific Water Quality Objective 5A(1)a from October through 30 April and exception to Specific Water Quality Objective 5A(1)b throughout the entire year, of the Thermal Plan; and

WHEREAS, the Board granted exceptions to objectives 5A(1)a and 5A(1)b of the Thermal Plan in 1989; and

WHEREAS, the State Water Resources Control Board (State Board) reviewed the exceptions and granted an exception to objective 5A(1)a and postponed action on objective 5A(1)b. In 1992 the State Board granted a five year exception to objective 5A(1)b, which expired in October 1997; and

WHEREAS, an exception of the Thermal Plan is available under General Water Quality Provision No. 4, in accordance with Section 316(a) of the Clean Water Act, and subsequent federal regulations; and

WHEREAS, the District has completed a Supplemental Environmental Impact Report (SEIR) that has evaluated the potential impacts of the elevated thermal discharge on the beneficial uses and aquatic environment of the receiving water; and

WHEREAS, the Regional Board has reviewed and concurs with the findings of the SEIR that Objectives 5A(1)a. and b. are more stringent than necessary to assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the Sacramento River; and

EXCEPTION TO THE WATER QUALITY CONTROL PLAN
SACRAMENTO COUNTY REGIONAL SANITATION DISTRICT
SACRAMENTO COUNTY

WHEREAS, the Department of Fish and Game has stated that water temperatures of the Sacramento River may not be suitable for specific life stages of the Chinook salmon at all times and in all areas of the river, that little information is available to determine the temperature regime in the river which minimizes impairment to this fishery, and that if subsequent studies identify that the elevated temperature discharge is resulting and/or contributing to impacts to this fishery, the District will remain accountable and may need to participate in mitigation measures for the protection and propagation of a balanced indigenous population of fish; and

WHEREAS, studies have shown that differential temperature areas may not be the only parameter necessary to protect Chinook Salmon. Total temperature may be more critical than differential temperature and higher temperatures can stop adult salmon immigration. Immigrating adults have been found to remain in the San Francisco Bay until the river temperatures were 70 degrees F or below. When water temperatures dropped to 66 degrees F the fish resume immigration. This information does not affect the District's compliance with the requirements of the Thermal Plan; and

WHEREAS, the District will continue to restrict discharges to the Sacramento River under low-flow conditions to prevent inadequate dispersion and mixing of elevated temperature wastewater that could result in short-term blockage of passage of migrating anadromous fish; and

WHEREAS, the alternatives to ensure compliance by the District with Specific Water Quality Objectives 5A(1)a and 5A(1)b would require modifications not commensurate with benefit to the aquatic environment; and

WHEREAS, the District shall comply with Specific Water Quality Objective 5A(1)c; and

WHEREAS, the Board, on 4 August 2000, held a hearing in Sacramento and considered all evidence concerning this matter: Therefore be it

RESOLVED, that the California Regional Water Quality Control Board, Central Valley Region, grants an exception to Specific Water Quality Objectives 5A(1)a and 5A(1)b of the Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California for the District's municipal wastewater discharge into the Sacramento River; and be it further

RESOLVED, that this action waiving Specific Water Quality Objective 5A(1)a is applied to the period of 1 October through 30 April, and in the period of 1 October through 30 April, the temperature shall not exceed that natural receiving water temperature by more than 25 degrees F; and be it further

RESOLVED, that this exception is conditional and may be terminated at any time.

I, GARY M. CARLTON, Executive Officer, do hereby certify that foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on 4 August 2000.


GARY M. CARLTON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 5-00-188

NPDES NO. CA0077682

WASTE DISCHARGE REQUIREMENTS
FOR
SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT
SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT
SACRAMENTO COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The Sacramento Regional County Sanitation District (hereafter Discharger), submitted a Report of Waste Discharge, dated 21 December 1994 (along with additional effluent and receiving water information as listed in Attachment A as submitted by the Discharger) and applied for a revised permit to discharge wastewater under the National Pollutant Discharge Elimination System (NPDES) for the Sacramento Regional Wastewater Treatment Plant (hereafter Regional Plant). The discharge is presently governed by Waste Discharge Requirements Order No. 94-006, adopted by the Board on 28 January 1994.

The Regional Plant is owned and operated by the Sacramento Regional County Sanitation District. The Regional Plant is in Elk Grove, approximately eight miles south of the City of Sacramento, and one mile east of Freeport, in Section 19, T7N, R5E, MDB&M. The facility location is shown on Attachment B, which is incorporated herein and made a part of this Order.

3. The service area covered by the Regional Plant collection system is generally defined as the Sacramento Metropolitan area, including the cities of Sacramento, Citrus Heights, and Folsom, and the urbanized areas of the County of Sacramento. The City of Folsom is responsible for collection system operation and maintenance within its city limits. The City of Sacramento is responsible for operation and maintenance of portions of the collection system within its city limits, and Sacramento County Sanitation District No. 1 is responsible for the remainder. Sacramento County Sanitation District No. 1 is also responsible for collection system operation and maintenance in the City of Citrus Heights and in the unincorporated areas of Sacramento County. These entities are neither owners nor operators of the Regional Plant and are not named in this permit as dischargers. However, they have been assigned operating and maintenance responsibilities for their respective portions of the collection system as delineated in the December 1996 Sacramento Regional Wastewater Management Program Master Interagency Agreement (MIA). In addition, the Sacramento Regional County Sanitation District Sewer Use Ordinance applies to all portions of the collection system tributary to the Regional Plant regardless of who has operation and maintenance responsibility. Among other things, the Sewer Use Ordinance gives the Discharger authority to administer its pretreatment program throughout the entire collection system.

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4. During wet weather the Regional Plant is contracted to accept up to 60 mgd of wastewater and storm runoff from the downtown Sacramento combined collection system. Combined collection flows in excess of 60 mgd are managed by the Combined Wastewater Control System (CWCS) operated by the City of Sacramento. The CWCS discharge is governed by Waste Discharge Requirements Order No. 96-090 that was issued to the City of Sacramento and the Sacramento Regional County Sanitation District. Depending on treatment and conveyance capacity, flow in excess of 60 mgd may be received at the Regional Plant.
5. The Regional Plant provides secondary level wastewater treatment consisting of mechanical bar screens, aerated grit removal, primary sedimentation, pure oxygen activated sludge aeration, secondary clarification, chlorine disinfection with dechlorination, and a diffuser for River discharge. Solids are processed using dissolved air flotation thickeners, gravity belt thickeners, two blending digesters, nine other digesters, solids storage basins, and biosolids disposal. Discharge to the River can be ceased for short periods of time by storage of raw wastewater, primary or secondary undisinfecting effluent, or disinfected effluent in the Emergency Storage Basins (ESBs).
6. The discharge from the Regional Plant to the Sacramento River (hereafter River), a water of the United States, is in proximity and south of the town of Freeport, in Section 14, T7N, R4E, MDB&M. Discharge of final effluent in the River is achieved with a multi-port diffuser approximately 400 feet in length, transverse to the River, and anchored to the River bottom. During periods of adequate River flow conditions, the diffuser provides jet diffusion and rapid mixing of the effluent and receiving water within a short distance of the discharge. The Sacramento River in the vicinity of the discharge is influenced by tides. As a result slack flows and flow reversals can occur on occasion. To prevent a breakdown in jet diffusion, and to prevent double dosing of the River with effluent during flow reversals, the Discharger diverts effluent to the on-site ESBs when the River flow conditions of Discharge Prohibition No. A.3 are not met. Once adequate River flows resume, discharge of effluent can also resume. Flows in the River can vary drastically during the course of a day and throughout the year. River flow conditions near those of Discharge Prohibition No. A.3 (which prohibit discharge to the River when river:effluent flow ratios are less than 14:1 or River flow is less than 1300 cfs) typically last for less than an hour. The discharge location is shown on Attachment B.
7. The Discharger has determined in previous studies that River flows of at least 1,300 cubic feet per second (cfs) and providing a flow ratio of at least 14 to 1 (river:effluent) are required to allow for adequate mixing of the effluent. However, based on comments received in previous versions of the tentative permit, the Regional Board has as part of this Order required that the Discharger evaluate the likelihood of double-dosing of effluent into the River under these flow reversal conditions. The Discharger has already begun this study, but was not able to complete it prior to adoption of this permit. The scope and time schedule for this study is in Provision E.4. If after review of this study any adjustments to the minimum operating dilution ratio are required to avoid double dosing concerns in the River, then the Regional Board may reopen the permit accordingly.

Although the permit does not allow discharge to the River when flow velocity and dilution are less than above, as a proactive precautionary measure, the Discharger has developed a set of emergency operating procedures in their April 1990 Plan of Operation which define how the plant shall be operated in response to a combination of influent/effluent and River flow conditions beyond their control that may force operation of the Regional Plant beyond the above limits. (Such events are contemplated in Standard Provision A.14.) These emergency procedures were designed with the intent of minimizing any negative water quality impacts from such an event while preventing damage to or overflow from Regional Plant treatment processes. The Discharger has indicated that there has not been a need to implement these emergency operating procedures since their inception.

8. The Report of Waste Discharge and later monitoring reports describe the Sacramento Regional Wastewater Treatment Plant discharge as follows:

Monthly Average (seasonal dry weather) Flow: 146 million gallons per day (mgd)
 Design Flow (seasonal average dry weather): 181 mgd
 Average Temperature: 80.2 °F Summer; 68.3 °F Winter

<u>Constituent</u>	<u>mg/l</u>	<u>lbs/day¹⁾</u>
BOD ²⁾	11 mg/l	13,394
Total Suspended Solids	6 mg/l	7,306
Arsenic	2.2 µg/l (average)	
Copper	5.6 µg/l (average)	
Lead	0.81 µg/l (average)	
Silver	0.34 µg/l (average)	
Zinc	30.9 µg/l (average)	
Mercury	0.01 µg/l (average)	
Cyanide	3.16 µg/l (average)	
Bis (2-ethylhexyl)Phthalate	1.4 µg/l (average of EPA Method 625 detections)	
Chlorpyrifos	0.03 µg/l (average)	
Diazinon	0.12 µg/l (average)	
Lindane	0.04 µg/l (average)	

(footnotes)

1) Based on seasonal dry weather flow concentrations and monthly average discharge of 146 mgd. These values are discharge quantities, not discharge limitations.

2) 5-Day, 20°C biochemical oxygen demand.

9. The design capacities of the Regional Plant are: (1) seasonal average dry weather flow of 181 million gallons per day (mgd); and (2) peak wet weather flow of 392 mgd.

10. The Regional Plant will have a tertiary treated wastewater system for unrestricted use of reclaimed wastewater. The tertiary plant is expected to be in operation in 2001. The capacity of the tertiary plant is 5.0 mgd (10 mgd ultimate) and shall be governed by Waste Discharge Requirements

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No. 97-146. Reclaimed wastewater from the tertiary plant may be used at the Regional Plant and on landscape at various sites within the Laguna Creek community. Attachment C contains a site map.

11. The Discharger has requested permission to use disinfected secondary effluent for various on-site activities. This Order allows such uses as described in Discharge Prohibition A.1.
12. The Discharger operates three major waste management facilities for biosolids storage and disposal. These include: (1) the Solids Storage Basins (SSBs); (2) Dedicated Land Disposal areas (DLDs); and (3) a landfill (closed in 1994). Waste Discharge Requirements Order No. 98-087 regulates operation of these facilities. Biosolids may also be land applied at agronomic rates at on-site locations as regulated by Waste Discharge Requirements Order No. 95-140 (General Order for Reuse of Biosolids) or at off-site locations as regulated by their respective permits and applicable regulations.
13. As part of the Waste Discharge Requirements (WDR) Order No. 98-087, a corrective action program (CAP) was initiated by the Discharger. The CAP is to address elevated constituent concentrations that were observed in samples from groundwater monitoring wells downgradient of the DLDs and the Class III landfill when compared to upgradient groundwater monitoring wells. Extraction wells shall be used for hydraulic control of the site. Characterization of the groundwater aquifer is documented in the reports submitted twice annually pursuant to WDR Order No. 98-087. The Discharger proposes to convey the extracted groundwater from the CAP extraction wells, estimated at approximately 1.0 MGD, to the Regional Plant effluent channel downstream of the secondary clarifiers and upstream of the plant chlorination station. The first phase of this project has already been completed and 0.25 MGD of extracted groundwater is being discharged to the headworks of the Regional Plant. Discharging water from the CAP system downstream of the secondary clarifiers is acceptable and does not decrease the amount of treatment as the treatment processes upstream of this discharge point are not designed for removal of the CAP discharge constituents of concern. Furthermore, based on the extracted groundwater sampling, estimates of CAP discharge constituent concentrations are either below current Regional Plant effluent concentrations or do not have a reasonable potential to violate water quality objectives in the receiving water. Based on these considerations, the Board finds disposal of CAP discharge as described above and in Provision E.2 to be acceptable. This permit may be reopened if later data or other information is significantly different from that assumed above.
14. The Discharger has developed, implemented and maintained an effective U.S. EPA approved pretreatment program in accordance with Federal pretreatment regulations (40 CFR 403). The Discharger continues annually to evaluate the effectiveness of its source control programs and to investigate additional reasonable control measures the programs might implement to further reduce influent loadings.
15. The U.S. Environmental Protection Agency (EPA) and the Regional Board have classified this discharge as a major discharge.

16. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.
17. Previous expansion of the facility to 181 MGD was covered under a supplemental Environmental Impact Report (EIR), dated February 1988. The supplemental EIR concluded that the expansion of the Regional Plant would not result in significant impacts to water quality if the discharge is in compliance with waste discharge requirements issued by the Board. This Order does not provide for an increase in the permitted flow of 181 MGD as an average dry weather flow allowed under Order 94-006.
18. The Board adopted a Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basin (hereafter Basin Plan) in 1995. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all water of the Basin. These requirements implement the Basin Plan.
19. The beneficial uses of the Sacramento-San Joaquin Delta downstream of the discharge as identified in Table II-1 of the Basin Plan are municipal and domestic supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, body contact and other non-body contact water recreation, warm and cold freshwater aquatic habitat, warm and cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation.
20. The State Water Resources Control Board (SWRCB), on 16 May 1974, adopted Resolution No. 74-43 titled "Water Quality Control Policy for the Enclosed Bays and Estuaries of California". The Regional Plant discharges to the Sacramento River, an estuarine water of the state, through a multi-port diffuser in compliance with Resolution No. 74-43.
21. The U.S. EPA adopted the California Toxics Rule (CTR) in April 2000 which, together with the U.S. EPA National Toxics Rule (NTR), provides numeric water quality criteria for priority pollutants. The *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, hereafter referred to as the State Implementation Plan, was adopted in March 2000 by the State Board. It provides guidance on implementing the CTR and NTR and was followed as appropriate in the development of this permit.
22. After further evaluation and numerous comments from the U.S. EPA and other designated parties during the current permit renewal process, the Regional Board has determined that the existing chlorine limits alone may not adequately address the potential impacts to water column and benthic organisms from intermittent combinations of high concentration, short-duration chlorine discharges for which the Regional Plant has a history. To better protect beneficial uses against these possible situations, the Regional Board intends to consider a new limit to address short-term discharges of chlorine, such as a one-hour average limitation, in addition to possible modifications to the daily maximum and average monthly limitations already in place. However, before the Regional Board

can establish protective quantitative limits there are a number of uncertainties related to 1) selecting an appropriate criterion concentration that properly addresses short-duration chlorine exposures and 2) the consideration of a mixing zone/dilution credits for the applicable criteria. Therefore, this Order requires further studies to analyze potential impacts to beneficial uses and to develop more appropriate site-specific criteria as described in Provision E.4. Based on the improved performance of the chlorination-dechlorination system and the fact that there are numerous technical uncertainties regarding a specific numeric limit, interim modifications to the existing chlorine effluent limits shall not be required while the above study is being performed. Once the studies in Provision E.4 have been completed by the Discharger and evaluated by Regional Board staff, the permit will be reopened to incorporate the final determination of appropriate criteria, dilution credit/mixing zone allowances and additional short-duration average limits as appropriate. Also, modifications to the existing maximum daily and average monthly limits may be required.

23. The daily maximum and worst-case monthly average ammonia concentrations in Regional Plant effluent measured between March 1999 and February 2000 both exceeded the most stringent U.S. EPA ambient water quality criteria for ammonia. Although there appears to be adequate ambient assimilative capacity to keep receiving water concentrations below the applicable criteria at the edge of a mixing zone, there has been no mixing zone or dynamic analysis performed by the Discharger demonstrating that granting such a mixing zone would be protective of aquatic life. Of particular concern are the facts that 1) ammonia toxicity increases drastically as a function of increasing pH, 2) the Regional Plant has a history of intermittent excursions of elevated pH in its effluent associated with flow diversions and other events and 3) both of these considerations are important in determining if acute or chronic toxic conditions exist in the mixing zone. Also, the physical dimensions of a pH/ammonia mixing zone need to be defined. Therefore, this Order requires the Discharger to perform a mixing zone study and possibly dynamic analysis as described in Provision E.4. Based on the results of an acceptable study, the Regional Board will re-evaluate its findings and reopen the permit as necessary to make any necessary modifications to the Discharge Limitations.

To be assured of protection against increased ammonia toxicity that may be caused in the interim by upward excursions of pH, a interim upper effluent pH limit of 7.5 as a 1-hour average of continuously monitored pH is being imposed as described in the Discharge Limitations. With this interim limit in place and based on the fact that ammonia concentrations have not been identified through past whole effluent toxicity testing as causing acute or chronic toxicity, the Regional Board finds this interim limit to be adequate assurance of aquatic life protection. This is being imposed during the period that the studies and permit revisions are being completed. If the requested studies support elimination of the interim pH limit, it is the intent of the Regional Board that the new information in these studies would be the basis for doing so and that this would not constitute backsliding. If the Discharger fails to conduct the studies as required in Provision E.4, the Board will reopen this Permit and impose final effluent limits following US EPA procedures, based on criteria as calculated in Section 6.3 of the Information Sheet and without consideration of dilution credits.

24. Occasionally the Regional Plant dechlorination facility experiences difficulty in controlling effluent chemistry associated with events such as flow diversion to the ESBs. These difficulties sometimes

cause a pH excursion in the effluent. To address these situations, Effluent Limitation B.3 requires that the discharge shall not a pH value of less than 6.0 nor greater than 8.5 as calculated by a running 20-minute average of continuously monitored effluent pH. The 20-minute averaging period provides adequate protection against excursions above or below the stated limits. The pH limitation also restricts pH from being greater than 7.5 as calculated by a running 1-hour average of continuously monitored effluent pH based on issues regarding ammonia toxicity as described in Finding 23. To comply with the Basin Plan, Receiving Water Limitation D.8 requires that pH of the discharge cannot cause the pH in the receiving water to be less than 6.5 nor exceed 8.5 outside of the zone of initial dilution. This permit also requires the study of pH as it affects ammonia toxicity in the mixing zone (see Finding 23 and Provision E.4). If the results of these studies find the need for modifications to these effluent pH limitations, the permit will be reopened accordingly. As discussed regarding ammonia, the upper effluent pH limit of 7.5 as a 1-hour average is an interim limit only and may be eliminated if the above studies and Regional Board analysis find that the lower pH limit is not needed to prevent ammonia toxicity. It is the intent of the Regional Board that the new information in these studies would be the basis for doing so and that this would not constitute back-sliding. Also, definition of the physical dimensions of a pH mixing zone shall be included when the permit is reopened.

25. Based on Regional Plant effluent data collected between 1994 and 1998, the maximum effluent concentrations of copper, lead, silver, zinc, and cyanide exceeded at least one of the applicable CTR aquatic life criteria. Therefore, according to the SIP Section 1.3 there is reasonable potential for each of these constituents to cause or contribute to an excursion above applicable water quality criteria which then requires effluent limits to be established. Based on the steady-state modeling approach in SIP Section 1.4.B effluent limits have been calculated, however, because no mixing zone studies have been performed yet for these constituents by the Discharger, these effluent limits do not include any dilution credits or mixing zone considerations. Based on historical effluent data, the Regional Plant will not likely be able to comply with effluent limits calculated without the consideration of dilution credits. However, taking into consideration the likelihood that mixing zone analysis and/or dynamic modeling techniques could lead to less stringent, yet defensible and protective effluent limits, this permit is allowing the Discharger a time schedule in accordance with SIP, Section 2.2 to perform these studies. The studies and associated time schedules are described in Provision E.4. Once the studies are completed by the Discharger, Regional Board staff will evaluate the new information and reopen the permit to incorporate final effluent limits. Interim performance-based effluent limits as shown in Effluent Limit B.1 will be in effect until such time as the studies are completed and the permit is reopened to incorporate final effluent limits as needed. It is the intent of the Regional Board that the new information in these studies would be the basis for reconsideration of these effluent limits and that if final effluent limits are less stringent than interim limits this would not constitute back-sliding. If the Discharger fails to conduct the studies as required in Provision E.4, the Board will reopen this Permit and impose final effluent limits as calculated in Table 10.1 of the Information Sheet.

26. The Delta waterways are 303(d) listed for mercury and lindane based on bioaccumulation in fish tissue. Although the Regional Plant effluent contains concentrations of mercury and lindane below

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CTR priority pollutant criteria, the fact that the assimilative capacity of the receiving water is exceeded for a certain pollutant (leading to bioaccumulation in fish tissue), any loading of that pollutant from the discharger may have the reasonable potential to cause or contribute to an excursion above the criteria. Furthermore, the Basin Plan requires that organochlorine pesticides shall not be present in the water column in detectable concentrations. Therefore, water quality based effluent limits for mercury and lindane that properly address bioaccumulation and the non-detect Basin Plan standard are required. TMDLs for mercury and lindane are currently scheduled to be completed by December 2005 and December 2011, respectively. For situations like this, the SIP recommends that limiting mass loading of the bioaccumulative pollutant(s) should be considered in the interim at representative, current levels pending development of applicable water quality standards. Based on calculations presented in the Information Sheet, interim mass load limits are being established in this permit for mercury at 5.1 lbs/year and for lindane at 19.0 lbs/year. As described in Effluent Limitation B.8 and providing that the Discharger is in compliance with the terms of its compliance schedule, actual mass loading above or below this interim mass limit can be "banked" until such time a discharge specific offset program is adopted by the Board into the permit to provide a means for offsetting these loads.

Based on the provisions of the SIP, this Order contains a compliance schedule for mercury. Also, based on the provisions of the Basin Plan, this Order contains a compliance schedule for lindane. As part of the compliance schedules for both of these constituents, the Discharger shall develop and implement a pollution prevention program in compliance with California Water Code Section 13263.3(d)(3), perform engineering feasibility studies, and develop an offset program as described in Provisions E.5, 6, and 7. These plans and studies, among other things, will provide the Regional Board staff with site- and watershed- specific information necessary to prepare terms for a final offset program. This permit will be reopened to provide for public comment and Regional Board approval of the final offset program. An effluent limit of non-detectable lindane concentrations is imposed in this permit and must be met at the end of the 10-year lindane compliance schedule. The final effluent limits (mass load allocations) for mercury in the Regional Plant effluent shall come from the TMDLs. The interim mass limits shall remain in effect until that time. Once the mercury TMDL has been adopted, any mass discharge over and above the TMDL shall be banked and addressed by the offset program. If the mercury TMDL is not completed on schedule, future permits shall impose a "zero-net discharge" for the facility. If an offset program is considered infeasible, the Board will reconsider the interim mass cap.

27. Regional Plant effluent was sampled and analyzed by the Discharger for diazinon and chlorpyrifos between December 1996 and May 1999. Based on U.S. EPA guidance for reasonable potential analysis, both of these constituents shall require effluent limits. Also, due to the fact that the River is listed as a 303(d) impaired water body for these types of constituents, no mixing zone/dilution credit could be granted in the determination of reasonable potential or derivation of effluent limits. The Regional Plant does not currently have treatment processes designed to meet effluent limits based on these criteria applied end-of-pipe. However, as the above criteria for chlorpyrifos and diazinon were released after the Basin Plan narrative toxicity criteria were issued, the Basin Plan allows for a compliance schedule of up to ten years from the adoption date of the new criteria in March 2000. As

a result, a time schedule for compliance with the new corresponding effluent limitation is allowable. The compliance schedule includes developing and implementing a pollution prevention plan in compliance with CWC 13263.3(d)(3) and performing a feasibility study as described in Provisions E.5 and 6. Implementation of the pollution prevention plan shall commence immediately upon approval of the plan by the Executive Officer. The findings of the feasibility study will be used in developing the remainder of the compliance schedule and final discharge limitations as appropriate in the next permit renewal. If the Discharger fails to conduct the studies as required in Provisions E.5 and E.6, the Board will reopen this permit and impose final effluent limits as indicated in Section 9.1 of the Information Sheet.

28. There were five organic compounds present in the Regional Plant effluent above the CTR one-in-a-million incremental cancer risk criteria for water and fish consumption. These constituents are dichloromethane, chloroform, tetrachloroethylene, dichlorobromomethane, and bis-2 ethylhexyl phthalate. Based on data summarized in Table 13.1 of the Information Sheet and the reasonable potential calculations of SIP Section 1.3, these five constituents shall require effluent limits. Following effluent limit calculation procedures in SIP Section 1.4, which were then modified as described in Information Sheet Item No. 13.3 to prevent unnecessary granting of assimilative capacity, final effluent limits for these constituents were calculated and included in Effluent Limitations B.1.

Based on historical data the Regional Plant can meet these limits. Therefore, taking into consideration CWC Section 13241 and 13263 the Regional Board does not find there to be significant economic impacts associated with the more stringent interpretation of the SIP used in the calculation of these final effluent limits. The Board finds, on the balance, that these requirements are necessary to protect the beneficial uses of the Sacramento-San Joaquin Delta. Although no hydraulic analysis has been performed by the Discharger yet to delineate the extent of the associated mixing zones for these constituents, the Regional Board finds the nature of the discharge is such that protective final effluent limits can be established. However, a mixing zone analysis of the effluent discharge into the River performed at the appropriate critical flow conditions (harmonic mean of receiving water flow) to delineate the extent of the corresponding mixing zone is required in Provision E.4.

29. In May and June of 1999, in response to a Regional Board request, the Discharger collected four samples of prechlorinated effluent and analyzed them for the following oxygenates: di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), and methyl tertiary butyl ether (MTBE). The first three of these oxygenate compounds were not detectable in any of the four samples (<1.0 µg/l in three of the samples and <0.5 µg/l in the fourth). MTBE, however, was detected above the 1.0 µg/l reporting limit, with values of 1.4, 1.9, and 2.2 µg/l. As of this time, however, only a secondary MCL has been established by the California Department of Health Services at 5 µg/l. Due to the very limited number of effluent data and the fact that criteria for MTBE are still being developed, the Board shall not establish an effluent limitation at this time. However, the attached Monitoring and Report Program No. 5-00-188 requires monitoring of these oxygenates to better assess reasonable potential against developing water quality objectives.

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30. To better assess and understand the nature of potential chronic toxicity in the effluent and the receiving water, a revised protocol for three species chronic toxicity monitoring has been included in this Order. Three species chronic toxicity tests have been performed by the Discharger since 1993 and although some chronic toxicity was observed in these previous tests, it is uncertain to what extent these results are indicative of impact to on the River. The new protocol shall use ambient receiving water for dilution series of effluent samples to better understand the chronic toxicity of the actual mixture of ambient receiving water and effluent. At the same time concurrent tests shall be run on undiluted upstream and downstream samples to better assess ambient chronic toxicity and any increase in receiving water chronic toxicity downstream of the discharge. In addition, other concurrent tests shall be run to help identify factors that may be contributing to unknown toxicity in the River, which is 303(d) listed. Trigger levels for the performance of TRE's have also been revised. This protocol is described in the Monitoring and Reporting Program No.5-00-188, and Provision No. E.11 and shall be implemented in two phases. Phase I shall be a 12-month toxicity characterization with the new protocol being performed on monthly samples. This phase shall start within 3 months of adoption of this permit. Phase II shall be the same as Phase I except it shall consist of quarterly monitoring beginning with the second year of the monitoring program.
31. The SWRCB Water Quality Control Plan for Control of Temperatures in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (the Thermal Plan) is applicable to this discharge. The Board, on 26 May 1989, adopted Resolution No. 89-094 granting an exception to objectives 5A(1)(a) (from 1 October to 30 April) and 5A(1)(b) of the Thermal Plan. Additionally, Resolution 89-094 requires that the temperature of the discharge shall not exceed the natural receiving water temperature by more than 25°F from 1 October through 30 April. The SWRCB, on 20 September 1990, adopted Resolution No. 90-103 approving and modifying Board Resolution No. 89-094. SWRCB Resolution No. 90-103 approved the exception to objective 5A(1)(a), but not the one to 5A(1)(b). It further required a study of the feasibility of meeting the existing objective, 5A(1)(b). The Discharger submitted the required study in a report in October 1991, with supplements in November and December 1991. Based on the study, the SWRCB adopted Resolution No. 92-82 on 22 October 1992, granting the Discharger an exception to objective 5A(1)(b). Specifically, the exception allows a maximum increase of 2 °F in a zone that does not exceed 25 percent of the cross-sectional area of the main River channel at any point. The exception also limited any excursion of objective 5A(1)(b) to no more than one hour per day as an average in any thirty-day period when the upstream temperature of the Sacramento River is 65 °F or greater. These limitations are found in Receiving Water Limitations D.10, 11, and 12. The Board adopted Resolution No.5-00-192 on 4 August 2000 granting continued exception to the Thermal Plan in conjunction with requiring the Discharger to study the impacts of its discharge on the fishery.
32. Studies by the National Marine Fisheries Service and the U.S. Bureau of Reclamation have identified the Sacramento Chinook Salmon as a species that is affected by elevated temperatures in the Sacramento River. There are four runs of salmon in the Sacramento River and there are adults and juveniles in portions of the River every month of the year. Juvenile salmon show signs of adverse effects at River temperatures of 65 °F. Migration of adults is usually delayed when River

temperatures reach 70 °F. At 72 °F, adult mortality may occur. In a Department of Water Resources Study, adult salmon will cease migration if water temperatures are above 70 °F. The Thermal Plan does not protect aquatic life from high temperature wastewater being discharged to an elevated temperature River. However, the Thermal Plan limits incremental increases in temperature. Discharge from the wastewater treatment plant of treated effluent with an elevated temperature may affect salmon and other migrating fish in the Sacramento River. In so far as elevated temperature is deleterious to Chinook salmon, effluent temperature must be limited so as not to cause the receiving water to be harmful to the salmon. When the assimilative capacity of the River is diminished, effluent temperature must be held to the water quality criteria. This permit contains Provision E.4 requiring the Discharger to study (among other issues) the potential impacts to the fishery associated with a discharge of treated effluent with elevated temperatures. Resolution No. 5-00-192 may be revised accordingly after review of the study to incorporate Regional Board findings and requirements as appropriate.

33. Coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways. According to California Department of Health Services (DHS) guidelines, a median 23 MPN/100 ml limitation is applicable to discharges with flow ratios (river:effluent) greater than or equal to 20:1 based on "an average over a period of time and not the instantaneous minimum low flow of the year". Based on historical River flow data between January 1970 and September 1998 the Regional Board found more than 20:1 flow ratio on a 7-day average basis for all but three minor exceptions. Therefore, the 23 MPN/100 ml limitation is found to be appropriate. However, based on comments from DHS in February 2000 and further technical evaluation, compliance with this limit shall be based on a 7-day median as opposed to the 30-day median in the previous permit.

Based on a review of the most recent three years of effluent monitoring, the Discharger is already able to meet the 7-day median. Therefore, taking into consideration CWC Section 13241 and 13263 the Regional Board does not find there to be significant economic impacts associated with the more stringent interpretation of the SIP used in the calculation of these final effluent limits. The Board finds, on the balance, that these requirements are necessary to protect the beneficial uses of the Sacramento-San Joaquin Delta. Based in part on limitations of the Regional Plant chlorination system, the previous permit also specified an effluent limitation for total coliform at 500 MPN/100 ml as daily maximum, which was not to be exceeded on two consecutive days. DHS was consulted on the applicability of this limitation in March 1997 and again in February 2000. They concluded that the current daily maximum total coliform limitation is sufficient for the protection of human health.

34. The Board has considered anti-degradation pursuant to 40 CFR 131.12 and SWRCB Resolution No. 68-16 and finds that the permitted discharge is consistent with those provisions. This Order does not allow for any increase in the volume or mass of pollutants discharged as compared to Order No. 94-006. To the extent an increase results under this Order (by an increase up to the existing volume or effluent concentration limitations) the impact on water quality will either be localized or insignificant. To the extent that any increase is regarded as occurring as a result of this Order, it will

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allow wastewater utility service necessary to accommodate economic expansion in the Sacramento Metropolitan area, and there is no evidence to indicate it will cause significant impacts on aquatic life beneficial uses, which are the primary uses affected by the pollutants discharged (BOD, suspended solids, chlorine residual, temperature, and metals).

35. The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.) requiring preparation of an environmental impact report or negative declaration, in accordance with Section 13389 of the California Water Code.
36. The Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The attached Information Sheet is part of this Order.
37. The Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
38. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.
39. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments hereto, and shall take effect upon the date of adoption, provided EPA has no objections.

IT IS HEREBY ORDERED that Order No. 94-006 is rescinded and Sacramento Regional County Sanitation District, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge from the Regional Plant at any point other than through the discharge manifold in the Sacramento River downstream of the Freeport Bridge is prohibited, with the following exceptions. Disinfected secondary effluent may be reclaimed for dust control and compaction on construction projects, landscape irrigation, wash down water, vehicle washing and grounds maintenance within the Regional Plant boundaries. It may also be used for in-plant process water and fire protection and used in the tertiary treatment plant and distribution system. Any use of reclaimed Regional Plant disinfected secondary effluent must meet the requirements of Title 22, California Code of Regulations, Section 60301, et seq. and the associated DHS guidelines as applicable. However, no runoff from such projects is allowed except as regulated by the Master Water Reclamation Permit, Regional Board Order 97-146.
2. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13 in "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)" and as described in Finding No. 13.

3. As described in Finding No. 7, discharge to the Sacramento River is prohibited unless there is a minimum of 1300 cfs River flow and a 14:1 (river:effluent) flow ratio available in the River.

B. Effluent Limitations:

1. The discharge of effluent in excess of the following limits is prohibited:

<u>Constituents (Units)</u>	<u>Yearly Total</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>Daily Average</u>	<u>Daily Maximum</u>
BOD ¹⁾ (mg/l)	-	30	45	60	-
(lbs/day) ²⁾	-	45,286	67,929	90,572	-
(lbs/day) ³⁾	-	98,078	147,118	196,157	-
Total Suspended Solids (mg/l)	-	30	45	60	-
(lbs/day) ²⁾	-	45,286	67,929	90,572	-
(lbs/day) ³⁾	-	98,078	147,118	196,157	-
Chlorine Residual (mg/l)	-	0.011	-	0.018	-
(lbs/day) ²⁾	-	17	-	27	-
(lbs/day) ³⁾	-	36	-	59	-
Settleable Matter (ml/l)	-	0.1	-	-	0.5
Total Coliform (MPN/100 ml)	-	-	23 (median)	-	500 ⁴⁾
Oil & Grease (mg/l)	-	10	-	-	-
(lbs/day) ²⁾	-	15,095	-	-	-
(lbs/day) ³⁾	-	32,693	-	-	-
Copper (µg/l) ⁵⁾	-	-	-	(9.7) 22.8	-
(lbs/day) ²⁾	-	-	-	34	-
(lbs/day) ³⁾	-	-	-	75	-
Lead (µg/l) ⁵⁾	-	-	-	(5.1) 7.8	-
(lbs/day) ²⁾	-	-	-	12	-
(lbs/day) ³⁾	-	-	-	26	-
Silver (µg/l) ⁵⁾	-	-	-	(0.57) 0.72	-
(lbs/day) ²⁾	-	-	-	1.1	-
(lbs/day) ³⁾	-	-	-	2.3	-
Zinc (µg/l) ⁵⁾	-	-	-	(46.7) 69.8	-
(lbs/day) ²⁾	-	-	-	105	-
(lbs/day) ³⁾	-	-	-	228	-
Cyanide (µg/l) ⁵⁾	-	-	-	(6.1) 10.8	-
(lbs/day) ²⁾	-	-	-	16	-
(lbs/day) ³⁾	-	-	-	35	-
Lindane (lbs/yr)	19.0 ⁶⁾	-	-	-	ND ⁷⁾
Mercury (lbs/yr)	5.1 ⁶⁾	-	-	-	-

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Methylene chloride ($\mu\text{g/l}$)	--	14.3	--	32.1	--
(lbs/day) ²⁾	--	22	--	48	--
(lbs/day) ³⁾	--	47	--	105	--
Chloroform ($\mu\text{g/l}$)	--	37.3	--	55.3	--
(lbs/day) ²⁾	--	56	--	83	--
(lbs/day) ³⁾	--	122	--	181	--
Tetrachloroethylene ($\mu\text{g/l}$)	--	14.1	--	35.6	--
(lbs/day) ²⁾	--	21	--	54	--
(lbs/day) ³⁾	--	46	--	116	--
Dichlorobromomethane ($\mu\text{g/l}$)	--	3.6	--	7.2	--
(lbs/day) ²⁾	--	5.4	--	11	--
(lbs/day) ³⁾	--	12	--	24	--
Bis-2 ethylhexyl phthalate ($\mu\text{g/l}$)	--	8.6	--	19.1	--
(lbs/day) ²⁾	--	13	--	29	--
(lbs/day) ³⁾	--	28	--	62	--

(footnotes)

- 1) 5-day, 20°C biochemical oxygen demand.
 - 2) Based upon a design average dry weather flow capacity of 181 mgd, applicable from May through October
 - 3) Based upon design peak wet weather flow capacity of 392 mgd, applicable from November through April
 - 4) Daily Maximum limit, shall not be exceeded in any two (2) consecutive days.
 - 5) Trigger concentrations (in parenthesis) and interim limits per Effluent Limit B.9 and Information Sheet Item No. 10.6. Trigger concentrations are not subsequently expressed as mass limits.
 - 6) As calculated per Effluent Limit B.8
 - 7) Not applicable if Discharger is in compliance with time schedules of Provisions Nos. E.5, E.6, and E.7 and Finding No. 26. Non-detectable (ND). The Discharger shall use EPA standard analytical techniques that have the lowest practical level for lindane with a minimum acceptable reporting level of 0.02 $\mu\text{g/l}$. Detectable concentrations of lindane less than 0.02 $\mu\text{g/l}$ shall be considered in compliance with this effluent limit.
2. The arithmetic mean of 20°C BOD (5-day) and total suspended solids in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).
 3. The discharge shall not have a pH value of less than 6.0 nor greater than 8.5 as calculated by a running 20-minute average of continuously monitored effluent pH nor have a pH value greater than 7.5 as calculated by a running 1-hour average of continuously monitored effluent pH. As discussed in Finding 23 and 24 the upper limit of 7.5 as 1-hour average is an interim limit until completion of further studies at which time its necessity will be reassessed. Per Provision E.9, this limitation shall become effective 1 November 2000. In the interim, the effluent limits and monitoring and reporting requirements of the rescinded Order No. 94-006 will remain in effect.
 4. The 30-day average dry weather flow shall not exceed 181 mgd.
 5. The daily peak wet weather flow shall not exceed 392 million gallons per day.

6. The effluent shall not cause acute toxicity to test fish in 96-hour continuous flow-through bioassays of undiluted waste performed as described in Monitoring and Reporting Program No. _____. Tests resulting in survival less than the following criteria shall be considered violations of this limitation:
 - a) Minimum for any one bioassay ----- 70%
 - b) Median for any three or more consecutive bioassays ----- 90%
7. The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 25°F from 1 October through 30 April or by more than 20°F from 1 May through 30 September.
8. The total annual mass discharge of mercury and lindane shall not exceed 5.1 lbs and 19.0 lbs., respectively, per year. These are an interim performance-based limit that shall be in effect until a final TMDL is established for both of these constituents. Actual mass loading over or under these limits shall be banked for future offset and shall not be considered a violation as long as the Discharger is in compliance with Provision No. E.7. The procedures for calculating mass loadings and banking are as follows:
 - a) The total mercury mass load for each individual month shall be determined using an average of all concentration data collected that month and the corresponding average monthly flow. All monitoring data collected under the monitoring and reporting program, pretreatment program and any special studies shall be used for these calculations.
 - b) In calculating compliance, the Discharger shall count all non-detect measures at one-half of the detection level. If compliance with the effluent limit is not attained due to the non-detect contribution, the Discharger shall improve and implement available analytical capabilities and compliance shall be evaluated with consideration of the detection limits.
 - c) The Discharger shall submit a cumulative total of mass loadings for the most recent twelve months in accordance with the Monitoring & Reporting Program No.5-00-188. The amount of this 12-month total over or under the interim limit shall be banked (added or subtracted) against a running net total of the same figures from all previous months.

If mercury is found to be causing toxicity based on chronic toxicity test results, or if a TMDL (Total Mass Daily Loading) program is adopted, this permit shall be reopened and the mercury mass effluent limit shall be modified (higher or lower) or an effluent concentration limitation imposed.

9. The effluent limits shown above in Effluent Limit B.1 for copper, lead, silver, zinc, and cyanide are interim limits as required by SIP Section 2.2.2. Once the Discharger has completed the studies in Provision E.4, the permit will be reopened to incorporate final limits, as needed, and the interim limits will be eliminated. Exceedance of the lower trigger concentration is not a violation of this Order, however, if the trigger concentration is exceeded in the effluent then an investigation into the cause of the exceedance shall be performed by the Discharger and the

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Regional Board notified of the results within 30 days. Upon review of the results of the investigation the Regional Board may require an action plan to address the cause of the exceedance.

C. Solids Disposal:

1. Collected screenings, biosolids, and other solids removed from liquid wastes shall be disposed of in accordance with Waste Discharge Requirements Order No. 98-087 or subsequently adopted order, or as otherwise approved by the Executive Officer.
2. Any proposed programmatic change in biosolids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and EPA Regional Administrator at least 90 days in advance of the change.
3. Use and disposal of biosolids shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503. Use and disposal of biosolids is currently regulated by 40 CFR 503. If the State Water Resources Control Board and the Regional Water Quality Control Boards are given the authority to implement regulations contained in 40 CFR 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. However, at a minimum, the Discharger must always comply with the standards and time schedules contained in 40 CFR 503.

D. Receiving Water Limitations:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. The following receiving water limitations apply to the entire River unless an exception for a mixing zone has been granted. However, a receiving water condition not in conformance with the limitation is not necessarily a violation of this Order. If it is determined that such a condition exists, the Board will require the Discharger to conduct an investigation to confirm and characterize the water quality condition. Based on the outcome of this investigation, the Board may then take appropriate action.

1. Dissolved oxygen concentrations in the Sacramento River to fall below 7.0 mg/l.
2. Oils, greases, waxes, or other materials that cause nuisance, result in a visible film or coating on the water surface or on objects in the water, or otherwise adversely affect beneficial uses.
3. Oils, greases, waxes, floating material (liquids, solids, foams, and scum) or suspended material to create a nuisance or adversely affect beneficial uses.
4. Aesthetically undesirable discoloration that causes nuisance or adversely affects beneficial uses.

5. Biostimulatory substances that promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
6. An increase of the monthly average turbidity to exceed the following:
 - a) More than 1 Nephelometric Turbidity Unit (NTU) if background is between 0 and 5 NTUs.
 - b) More than 20 percent where natural turbidity is between 5 and 50 NTUs.
 - c) More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.
 - d) More than 10 percent where natural turbidity is greater than 100 NTUs.
7. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units outside of the zone of initial dilution.
8. Deposition of material that causes nuisance or adversely affects beneficial uses.
9. The discharge shall not cause the receiving water temperature to increase more than 4°F above the ambient temperature of the receiving water at any time or place outside the zone of initial dilution.
10. The discharge shall not create a zone, defined by water temperature of more than 2.0°F above natural receiving water temperature, which exceeds 25 percent of the cross sectional area of the River at any point outside the zone of initial dilution.
11. If the natural receiving water temperature is 65 °F or greater, then the discharge shall not create a zone, defined by a water temperature of 1 °F or more above natural receiving water temperature, which exceeds 25 percent of the cross sectional area of the River at any point outside the zone of initial dilution for more than one hour per day as an average in any month.
12. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
13. Toxic substances to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
14. Taste or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin or that cause nuisance or adversely affect beneficial uses.

15. The Clean Water Act and regulations adopted thereunder provide that discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board. Accordingly if more stringent applicable water quality standards are approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board may reopen and revise or modify this Order in accordance with such more stringent standards and may consider the inclusion of a compliance time schedule if the Discharger is not able to meet a discharge requirement.

16. The fecal coliform concentration in any 30-day period to exceed a geometric mean of 200 MPN/100 ml or cause more than 10 percent of total samples to exceed 400 MPN/100 ml.

E. Provisions:

1. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall and condensates that are essentially free of pollutants.
2. Once installation of the CAP system is completed as described in Finding No. 13, sampling of the discharge is required in the attached Monitoring and Reporting Program No. 5-00-188. If based on this data or other information available at a later date CAP discharge is found to result in the Regional Plant effluent having additional reasonable potential to cause an adverse impact on beneficial uses of the receiving water, this permit may be reopened.
3. This permit may be reopened, and effluent limits may be added, deleted, or modified if new regulations or information becomes available. The Board may consider inclusion of a compliance time schedule within the bounds of the applicable regulations if the Discharger is not able to meet a new discharge requirement immediately.
4. *Localized Impact Study:* A comprehensive study of impacts in the vicinity of the discharge and any associated mixing zones shall be performed which includes, at a minimum, consideration of the issues listed below. A work plan for this study shall be completed and submitted to the Executive Officer within fourteen (14) months after adoption of this Order. The work plan shall include a schedule for completing all work in accordance with the work plan within twenty-two (22) months following work plan approval by the Executive Officer. Also, a progress report shall be submitted every six (6) months after approval of the work plan. Interim performance-based effluent limits as shown in Effluent Limit B.1 will be in effect for the inorganic priority pollutants until such time as the studies are completed and the permit is reopened to incorporate final effluent limits for those constituents. The permit will be reopened accordingly after review of the submittal to incorporate Regional Board findings and requirements as appropriate.
 - a) *Multiple Effluent Dosing:* As discussed further in Finding No. 7 and in Information Sheet Item No. 2, the Discharger shall evaluate the potential for multiple dosing of receiving water

with discharged effluent that could potentially be associated with tidally induced flow reversals in the Sacramento River. Based on historical flow data, astronomical tide models and other appropriate information and analytical tools, the Discharger shall evaluate the frequency and duration of such events.

- b) *Chlorine*: As discussed further in Finding No. 22 and Information Sheet Item No. 5 the Discharger shall provide the Regional Board with information needed for the determination of effluent limits protective of short-duration discharges of chlorine in Regional Plant effluent. The study shall include, but not be limited to: 1) summary and analysis of relevant peer-reviewed research literature, 2) mixing zone analysis at appropriate acute critical flow conditions, and 3) collection of relevant site-specific data.
- c) *Ammonia*: As discussed further in Finding No. 23 and Information Item No. 6, the Discharger shall provide the Regional Board with information to determine the need for or calculation of protective ammonia effluent limits. The study shall include, but not be limited to: 1) near- and far-field mixing zone analysis including consideration of pH, 2) assessment of acute and chronic exposure durations for water column and benthic organisms, and 3) possible dynamic modeling analysis.
- d) *Inorganic Priority Pollutants*: As discussed further in Finding No. 25 and Information Item No. 10, the Discharger shall provide the Regional Board with additional information required for the determination of final effluent limits. The study shall include mixing zone analysis and/or dynamic modeling analysis for copper, lead, silver, zinc, and cyanide.
- e) *Organic Priority Pollutants*: As discussed further in Finding No. 28 and Information Sheet Item No. 13, the Discharger shall perform a hydraulic analysis of the effluent discharge into the River shall be performed at the appropriate critical flow conditions (harmonic mean of receiving water flow) to delineate the extent of the corresponding mixing zone.
- f) *Additive Toxicity*: As required by the Basin Plan, the Discharger shall provide the Regional Board with information to assess possible additive acute and chronic toxicity from other stressors in the mixing zone including pH, ammonia, chlorine and temperature.
- g) *Thermal Impacts*: As discussed further in Finding No. 32 and Information Sheet Item No. 11, there are indications that elevated temperatures in the Sacramento River may affect migrating Chinook salmon and other fish during portions of the year. Temperature objectives in the Basin Plan and the Thermal Plan may not address the temperature parameters necessary to protect migrating fish. To evaluate the effect of an elevated temperature discharge to migrating fish, the Discharger shall conduct a study of the effect of an elevated temperature discharge to migrating fish (with particular attention being paid to those periods when River flow is lowest and/or River or effluent temperature are highest). The Discharger shall perform the study in consultation with the Department of Fish & Game, USEPA, NMFS, USF&WS and other interested parties.
- h) *Receiving Water Monitoring*: A program of receiving water monitoring shall be developed by the Discharger at a Station R-2 to be determined. The purpose of this monitoring program is to provide data that will help evaluate if receiving water concentrations are being met at the

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edge of the various mixing zones defined by the above activities. The specific constituent(s) to be measured and details of sampling frequency and locations for the program need to be outlined based on the findings of this study. When the permit is reopened to address the other findings of this study, the monitoring and reporting program will also be modified to include an R-2 monitoring program.

5. *Pollution Prevention Plans:* As discussed further in Finding No. 26 and Information Item No. 8 for mercury and lindane and as discussed further in Finding No. 27 and Information Item No. 9 for chlorpyrifos and diazinon, the Discharger shall prepare pollution prevention plans following the guidelines in CWC 13263.3(d)(3). Also, the Discharger shall continue its contribution of resources and sampling data to the respective TMDL processes. A work plan for preparation of these pollution prevention plans shall be completed and submitted to the Executive Officer within fourteen (14) months after adoption of this Order. The work plan shall include a schedule for completing all work in accordance with the work plan within twenty-two (22) months following work plan approval by the Executive Officer. Also, a progress report shall be submitted every six (6) months after approval of the work plan. Implementation of the pollution prevention plans shall commence immediately upon approval of the program by the Executive Officer.
6. *Treatment Feasibility Studies:* As discussed further in Finding No. 26 and Information Item No. 8 for mercury and lindane and as discussed further in Finding No. 27 and Information Item No. 9 for chlorpyrifos and diazinon, the Discharger shall perform the following treatment feasibility studies. A work plan for this study shall be completed and submitted to the Executive Officer within fourteen (14) months after adoption of this Order. The work plan shall include a schedule for completing all work in accordance with the work plan within thirty-four (34) months following work plan approval by the Executive Officer. Also, a progress report shall be submitted every six (6) months after approval of the work plan. The intent is to have the studies available in time for consideration in the next NPDES permit renewal cycle.
7. *Offset Programs:* As discussed further in Finding No. 26 and Information Item No. 8 for mercury and lindane, the Discharger shall perform the following offset program feasibility and development studies with the intention of mitigating the mass loading of these constituents in the Regional Plant effluent. Separate programs are required for mercury and lindane. A work plan for both the mercury and lindane studies shall be completed and submitted to the Executive Officer within fourteen (14) months after adoption of this Order. The work plan shall include a schedule for completing all work in accordance with the work plan within thirty-four (34) months following work plan approval by the Executive Officer. Also, a progress report shall be submitted every six (6) months after approval of the work plan. This permit will be reopened to provide for public comment and Regional Board approval of the final offset programs. Implementation of the offset programs shall commence upon its adoption by the Regional Board into the permit.

8. If the State Water Resources Control Board makes revisions to Resolution No. 92-82 (Approval of an Exception to the Thermal Plan) that contradict Receiving Water Limitations D.9., D.10., and/or D.11., this permit may be reopened and modified to address the revisions.
9. For effluent monitoring of pH, the Discharger shall maintain a continuous pH monitoring system capable of monitoring at intervals of at least once per second and report the results as required in the Monitoring and Reporting Program No. 5-00-188 for compliance with Effluent Limitation B.3. These reporting requirements and effluent limitation shall become effective on 1 November 2000 to allow discharger time to reconfigure their pH monitoring and reporting system accordingly. In the meantime, the effluent limits and monitoring and reporting requirements of the rescinded Order No. 94-006 shall remain in effect.
10. For constituents which did *not* have effluent monitoring requirements in rescinded Order 94-006 (lindane, TOC, arsenic, copper, lead, silver, zinc, mercury, cyanide, halogenated volatile organics, bis (2-ethylhexyl) phthalate, oxygenates, priority pollutants and acute and chronic bioassays), the applicable limits in the Effluent Limits of this Order, and effluent monitoring requirement of Monitoring & Reporting Program No. 5-00-188 shall become effective on 1 November 2000. This will allow the Discharger adequate time to set up the equipment and procedures necessary for the new monitoring requirements. Prior to 1 November 2000 acute and chronic bioassays shall be performed according to the schedules and requirements of the rescinded Order No. 94-006.
11. The Discharger shall conduct the three species chronic toxicity testing as specified in the Monitoring and Reporting Program No.5-00-188. If the chronic toxicity monitoring trigger levels are exceeded as indicated below, the Discharger shall implement the approved toxicity reduction evaluation (TRE) work plan.

Whenever a reportable no observable effects concentration (NOEC) in an effluent chronic toxicity test is equal to or greater than 8 toxicity units (TUs) for any test organism, accelerated monitoring shall go into effect. (A TU equals 100 divided by the no observable effect level (NOEL). The NOEL is determined from IC, EC, or NOEC values). Accelerated monitoring shall consist of the following:

- a) If a test species exhibits an NOEC equal to or greater than 8 TUs, the Discharger shall collect a fresh sample from the location where the toxicity was experienced within nine days of the event and conduct a new chronic toxicity test on the affected test species.
- b) If the follow up sample demonstrates an NOEC of less than 8 TUs, the Discharger shall conduct two additional weekly chronic tests from the same sample location on the affected test species to check for persistent toxicity. If there is no further significant toxicity shown on the follow up samples, the accelerated monitoring can be discontinued and event monitoring will resort to the regular schedule.
- c) If the follow up test exhibits an NOEC equal to or greater than 8 TUs, a TRE as described below shall be initiated immediately on the sample in an attempt to identify the toxicant. The

Discharger shall continue to perform follow up chronic testing for 6 consecutive months and return to routine scheduled sampling if the accelerated monitoring tests do not meet or exceed the trigger level of 8 TUs.

The Discharger shall submit a work plan and time schedule for the TRE work plan to the Executive Officer within six (6) months after adoption of this Order. Following approval by the Executive Officer, the Discharger shall implement the work plan as required above. The purpose of the TRE is to investigate the causes of, and to identify corrective control actions in response to effluent toxicity incidents. The objective of the TRE is to narrow the search for effective control measures for effluent toxicity. The TRE needs to be site specific but should follow EPA guidance and be conducted in a step-wise fashion. The following is a tiered approach in conducting the TRE:

Tier 1 includes basic data collection, followed by Tier 2, which evaluates optimization of the treatment system operation, facility housekeeping, and the selection and use of in-plant process chemicals. If unsuccessful in reducing toxicity, Tier 3, a toxicity identification evaluation (TIE) should be initiated and all reasonable efforts using currently available TIE methodologies employed. Assuming successful identification or characterization of the toxicant(s), Tier 4 is to evaluate final effluent treatment options and Tier 5 is to evaluate within plant treatment options. Tier 6 consists of confirmation once a toxicity control method has been implemented.

Many recommended TRE elements parallel source control, pollution prevention, and storm water control program best management practices (BMPs). To prevent duplication of efforts, evidence of complying with those requirements may be sufficient to comply with TRE requirements. By requiring the first steps of a TRE to be accelerated testing and review of the facility's TRE work plan, a TRE may be ended in its early stages. All reasonable steps shall be taken to reduce toxicity to the required level.

12. The Discharger shall submit to the Board on or before each compliance due date in Provisions 4 through 7 and 9 through 11 above, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Board by letter when it returns to compliance with the time schedule. The permit shall be reopened if any changes are required to the deliverable dates established in the above Provisions.
13. The Discharger shall use the best practicable cost-effective control technique currently available to limit mineralization to no more than a reasonable increment.
14. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment is referred to as "Standard Provisions".

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15. The Discharger shall comply with Monitoring and Reporting Program No. 5-00-188, which is a part of this Order, and any revisions thereto as ordered by the Executive Officer.
16. When requested by EPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program No. 5-00-188 for Discharger Self-Monitoring Reports.
17. This Order expires on 1 August 2005 and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.
18. The Discharger shall enforce the Pretreatment Standards promulgated under Sections 307(b), 307(c) and 307(d) of the Clean Water Act. The Discharger shall perform the pretreatment functions required by 40 CFR Part 403 including but not limited to:
 - a) Adopting the legal authority required by 40 CFR 403.8(f)(1);
 - b) Enforcing the Pretreatment Standards of 40 CFR 403.5 and 403.6;
 - c) Implementing procedures to ensure compliance as required by 40 CFR 403.8(f)(2); and
 - d) Providing funding and personnel for implementation and enforcement of the pretreatment program as required by 40 CFR 403.8(f)(3).
19. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this permit. If the Discharger fails to perform the pretreatment functions, the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB) or the U.S. Environmental Protection Agency (U.S. EPA) may take enforcement actions against the Discharger as authorized by the Clean Water Act.
20. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:
 - a) Wastes which create a fire or explosion hazard in the treatment works;
 - b) Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;
 - c) Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;
 - d) Any waste, including oxygen demanding pollutants (BOD, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

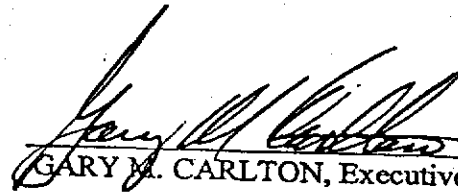
- e) Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the Regional Board approves alternate temperature limits;
 - f) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
 - g) Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and
 - h) Any trucked or hauled pollutants, except at points predesignated by the Discharger.
21. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:
- a) Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or
 - b) Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.
22. The Discharger shall submit quarterly and annual reports to EPA, State Board, and the Regional Board describing the Discharger's pretreatment activities over the reporting period. In the event that the Discharger is not in compliance with any of the pretreatment conditions or requirements of this permit, the Discharger shall include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements. The quarterly reports are due the 28th day of the month following the reporting period, and shall include a summary of the compliance status of industrial users and the Discharger, and actions taken by the Discharger in order to comply with the requirements of the pretreatment program. The annual report shall be submitted by 25 March of each year, and shall contain, but not be limited to, the items listed in Section G of the Standard Provisions.
23. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from, the State Water Resources Control Board (Division of Water Rights).
24. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.
25. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting

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Sacramento Regional County Sanitation District
Sacramento Regional Wastewater Treatment Plant
Sacramento County

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entity's full legal name, the state of incorporation if a corporation, the address and telephone number of the persons responsible for contact with the Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, GARY M. CARLTON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 4 August 2000.


GARY M. CARLTON, Executive Officer

AMENDED
MJG:lm