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29 September 2003

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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.

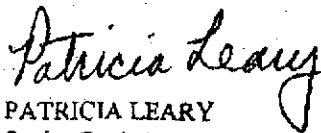
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Additionally, several of the emergency storage basins that are used for purposes of temporarily storing raw wastewater, primary effluent, or secondary effluent during diversions, maintenance periods, or during emergencies, are not imperviously lined. 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.



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California Regional Water Quality Control Board Central Valley Region

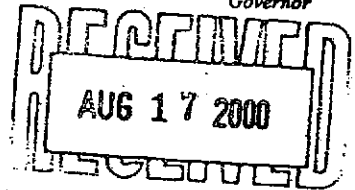
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11 August 2000

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**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

