CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 5-01-255

WASTE DISCHARGE REQUIREMENTS
FOR
SELMA-KINGSBURG-FOWLER COUNTY SANITATION DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

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

1. The Selma-Kingsburg-Fowler County Sanitation District (hereafter Discharger) owns and operates a Wastewater Treatment Facility (WWTF or Facility) and discharges undisinfected secondary-treated wastewater to evaporation/percolation ponds (hereafter disposal ponds). The WWTF is about two miles west of Kingsburg in Sections 21 and 28, T16S, R22E, MDB&M, as shown in Attachment A, a part of this Order.

2. The WWTF provides municipal and industrial sewerage service for the cities of Selma, Kingsburg and Fowler and unincorporated County areas. Waste Discharge Requirements Order No. 82-008 for the Discharger currently prescribes the terms and conditions for a discharge of undisinfected secondary-treated wastewater to disposal ponds.

3. Order No. 82-008 does not reflect current plans and policies of the Board. The purpose of this Order is to rescind Order No. 82-008 and update waste discharge requirements to be consistent with current Board plans and policies.

4. The WWTF is an extended aeration activated sludge system that consists of three equalization basins, headworks, two aerated grit chambers, scum removal area, three aeration basins (two with surface aerators and one with diffuse aeration), four clarifiers, two dual media filters, a facultative pond, one dissolved air flotation thickener, one gravity thickener, two aerobic digesters, six disposal ponds, 39 paved sludge drying beds, a sludge processing and biosolids storage area, and 180 acres of contiguous buffer zone property.

5. The Discharger changed from facultative treatment to an extended aeration mode of activated sludge after experiencing difficulties in treating seasonal industrial food-processing discharges in the late 1970s. When the Discharger changed its treatment process, it eliminated the need for the three equalization basins and the facultative pond, as originally designed. This reduced the treatment design flow of the Facility from 8.0 to 6.5 mgd. In 1984, the Discharger completed a major, four-part plant upgrade construction project that increased capacity back to the original design of 8.0 mgd. The Discharger now uses equalization basins as a contingency for short-term storage of influent that could result in pass-through or interference. The Discharger temporarily digests sludge in the facultative pond converted with floating mechanical aerators and in one of the aeration basins when performing maintenance on aerobic digesters, which was necessary in 1995 and 2000-2001.

6. A description of the WWTF's process flow is detailed in the Information Sheet and shown in Attachment B, a part of this Order.

7. Self-monitoring data from 1998, 1999, and 2000 indicates that WWTF influent exhibits the following characteristics:

Constituent/Parameter	Units	Average	Daily Maximum
Total Daily Flow	mgd	2.9[1]	6.2
BOD_5[2]	mg/L	710	1,690
Total Suspended Solids (TSS)	mg/L	340	1,500

[1] About 20 percent of the flow originates from industrial sources.
[2] Five-day biochemical oxygen demand at 20° Celsius

Self-monitoring data from 1998, 1999, and 2000 indicates that WWTF effluent exhibits the following characteristics:

Constituent/Parameter	Units	Average	Daily Maximum
BOD_5	mg/L	5	50
TSS	mg/L	14	240
Total Nitrogen	mg/L	15	45
Chloride	mg/L	57	77
EC[1]	µmhos/cm	544	1,923

[1] Conductivity at 25° Celsius

8. Order No. 82-008 requires that the 30-day average daily dry weather flow remain below 8.0 million gallons, which is the original design capacity of the WWTF. Further, Order No. 82-008 requires that the dissolved oxygen (DO) levels in disposal ponds remain above 1 mg/L, and prescribes the following effluent limitations: average and maximum BOD_5 concentration of 40 and 80 mg/L, maximum settleable solids content of 1 mL/L, maximum chloride concentration of 175 mg/L, EC concentration of 1,000 µmhos/cm, and pH range between 6.5 and 8.5.

9. Self-monitoring reports for 1998 and 1999 show that winter flows are normally not higher than summer flows, indicating there is no significant inflow and infiltration to the collection system during winter months.

10. Predominately, the Discharger's source water is groundwater provided by the Cities of Fowler, Kingsburg, and Selma (through California Water Service Company). About five percent of source water originates from private wells, mostly from Lion Raisins, Inc. and Sun-Maid Growers of California, Inc. Annual Water Quality Reports in 1998 indicate an average EC (as µmhos/cm) in source water from the City of Fowler of 140, Kingsburg of 310, and Selma of 220.

Pretreatment

11. The Basin Plan states that all publicly owned treatment works (POTWs) with a design flow greater than 5.0 mgd must comply with 40 CFR 403, the federal pretreatment program.

12. Special Order No. 85-244 regulates the Discharger's pretreatment program by requiring it to implement the pretreatment regulations prescribed in 40 CFR 403. Pretreatment requirements specified in this Order supercede requirements in Special Order No. 85-244 for the Discharger.

13. Pretreatment reports submitted by the Discharger in 2000 indicate that 12 significant industrial users (SIUs) discharge to the WWTF. KES Kingsburg L.P. and Upright, Inc. are categorical industrial users, while the remaining ten (Bee Sweet Citrus, Inc., Boghosian Raisin Packing Company, Inc., Cantisano Foods, Inc., Del Monte Foods, International Raisins, Inc., Lion Dehydrator, Lion Raisins, National Raisin Company, Simonian Fruit Company, and Sun-Maid Growers) are noncategorical industrial users. A review of 2000 pretreatment reports indicates that SIUs occasionally exceeded pretreatment limits for pH and EC.

Sludge Management and Biosolids Application

14. Clarifier sludge is returned to aeration basins as needed, or discharged to the dissolved air flotation thickener. Sludge from the dissolved air flotation thickener is routed to one of the two aerobic digesters, and supernatant back to the headworks. The Discharger applies sludge to sludge drying beds at a solids level of about 2.5 percent.

15. The Discharger uses 23 sludge drying beds east of the aeration basins totaling 5.1 acres and 16 sludge drying beds west of the aeration basins totaling 5.5 acres. Sludge drying beds are equipped with asphalt underdrains. The Discharger collects leachate from the west beds and routes it to the headworks, while it routes leachate collected from the east beds to aeration basin No. 3. Due to the configuration of the piping system, the Discharger must route leachate to different areas in the treatment system. After about one month of drying, the Discharger transfers sludge from drying beds to a two-acre sludge processing area that is underlain by soil-cement or uses one or more sludge drying beds for storage. The Discharger continually mixes sludge in the sludge processing area to aid in the drying process. The Discharger contracts with a licensed biosolids applicator, currently McCarthy Farms, to remove biosolids in the processing area for land application. The removal is done at least annually, usually in October.

16. In 1980, the Discharger commenced disposing of aerobic digester sludge to an 84-acre sludge application area, which is immediately north of the WWTF's northernmost disposal ponds (see Attachment C, a part of this Order). Immediately north of the sludge application area are nine storm water retention basins that serve the City of Selma. Prior to the rainy season, the Discharger normally discharges aerobic digester sludge to the sludge application area to ensure that the aerobic digesters have adequate capacity for the winter months. The sludge application area consists of a rectangular parcel (about 1,300 feet by 5,500 feet) bisected longitudinally by the Ward Drainage Canal (see Attachment A). The Ward Drainage Canal was originally established in the 1850s to control shallow groundwater levels. Currently, Consolidated Irrigation District

uses it as a percolation basin in wet years and years its canal system undergoes repair. From 1980 until about 1987, the Discharger used a special tractor to dispose of biosolids by injecting it six inches below the surface. From about 1987 until present, the Discharger discharged aerobic digester sludge via furrow irrigation. To uptake nitrogen in the applied sludge, the Discharger dry farms the sludge application area with wheat or oats. Nitrogen loading rates to the sludge application area have varied considerably and have at times been well above the expected crop nitrogen uptake. The Board will consider separate waste discharge requirements for the 84-acre sludge application area that are consistent, in part, with the requirements of Title 27, California Code of Regulations, section 20380 et seq.

17. Currently, the Discharger removes about one cubic yard of grit every two days from the grit chambers and buries it onsite. By letter dated 20 November 2000, the Board required the Discharger to characterize grit to determine if it poses a threat to water quality. By letter dated 16 January 2001, the Discharger characterized the grit as containing low levels of metals and organic compounds (possibly of microbial origin) that have boiling points within the range of diesel fuel.

18. Discharging untreated grit onsite is not consistent with Title 27, California Code of Regulations (CCR), section 20380 et seq. Screenings and grit are normally handled as solids waste and landfilled, according to EPA's *Biosolids Generation, Use, and Disposal in the United States*, Publication Number EPA 530-R-99-009.

Hydrology and Soils

19. The WWTF lies within the Tulare Lake Basin, specifically within the Consolidated Hydrologic Area (No. 551.70), as depicted on interagency hydrologic maps prepared by the California Department of Water Resources (DWR) in 1986. Areal topography indicates a slight slope of about 1 foot per 1,400 feet toward the south. All storm water runoff within the WWTF is collected and discharged to the headworks. Unless otherwise similarly contained, surface water drainage in the WWTF environs is by sheet flow to Cole Slough, approximately three miles south of the WWTF. Cole Slough, in turn, is the primary conveyance of Kings River water downstream of Peoples Weir in Section 1, T17S, R22E, MDB&M. Cole Slough converges with the Kings River downstream of Reynolds Weir just east of Laton.

20. Average annual precipitation is about 12 inches, while the average annual evaporation from the disposal ponds is about 80 inches, according to information published by DWR.

21. According to the *Eastern Fresno Area Soil Survey*, conducted by the National Resource Conservation Service and published in 1971, soils near the WWTF consist primarily of Delhi and Dello loamy sands. Delhi loamy sands are formed from wind deposits of sandy material. These soils are excessively drained, rapidly permeable, and coarse textured. Dello loamy sands are formed from wind deposits of sandy material when conditions result in poor drainage (e.g., high water table). When the water table rises, ponds will form above these soils, but if the water table is low these soils will exhibit rapid permeabilities. Shallow groundwater has periodically existed

in the topographically lower area, primarily during wet periods, according to the 1991 report by Kenneth D. Schmidt and Associates (KSA), the Discharger's consulting hydrogeologist.

22. A water balance performed by Board staff quantified the amount of effluent that might be percolating from disposal ponds. The water balance used the five disposal ponds that comprise 105 acres, as the Discharger rarely uses the sixth disposal pond. It was determined that (a) the average wastewater inflow to the Facility is 3,270 acre-feet/year, (b) the average total nitrogen concentration of effluent is 15 mg/L, and (c) about 700 acre-feet/year would evaporate from the disposal ponds. If correct, this would correspond to 2,570 acre-feet/year of effluent/year percolating to groundwater underlying the five disposal ponds. This discharge results in an annual nitrogen loading of about 56 tons (or about 1,000 lbs/acre). If the effluent nitrogen concentration was 10 mg/L (the maximum contaminant level (MCL)), the nitrogen loading would be about 660 lbs/acre/year. The excess 340 lbs/acre/year, if not attenuated in the soil profile, has a reasonable potential to pollute groundwater.

23. Land use in the WWTF vicinity primarily consists of agriculture. According to the UC Cooperative Extension, crops grown in the Kingsburg area include peaches, plums, walnuts and vineyards. The primary mechanism for irrigating these crops is by surface irrigation, but a few crops (i.e., walnuts) are sprinkler irrigated. The City of Kingsburg is about two miles east of the WWTF. Vie-Del Winery is about one mile north of the sludge application area and Sun-Maid Growers of California, Inc. is about one mile northeast of the sludge application area. Irrigated and fertilized commercial vineyards and orchards are found completely surrounding the Facility, for at least 0.5 miles in all directions. Within 60 feet of the Facility boundaries are the following: a turkey ranch to the south; an asphalt and concrete recycling facility with excavation activities to the southwest; and an abandon construction material landfill to the northeast. Approximately five miles to the north-northwest is the Selma Pressure Treating US EPA superfund cleanup site. Approximately, 7,500 feet to the southeast, at the corner of Clarkson Avenue and Highland Avenue (Highway 43) are the following: a regulatory-harvested eucalyptus grove and Rocha's Dairy and Farming.

Water Reclamation

24. The California Department of Health Services (DHS) established statewide water recycling criteria in Title 22, California Code of Regulations, section 60301 et seq. (hereafter Title 22). Revisions to the water recycling criteria in Title 22 became effective on 2 December 2000. The revised Title 22 requires that all wastewater used for reclamation receive, at a minimum, secondary treatment. Title 22, section 60323, requires recyclers of treated municipal wastewater to submit an engineering report detailing the use of recycled water, contingency plans, and safeguards.

25. Robert L. Dennis (hereafter User) submitted a Report of Water Reclamation, dated 21 March 1990, pursuant to section 13522.5 of the California Water Code. Water Reclamation Requirements Order No. 90-192, adopted by the Board on 22 June 1990 for the User, prescribe the terms and conditions for the recycling of WWTF effluent on the reclamation area. Water Reclamation Requirements Order No. 90-192 permits the reuse of WWTF effluent on 25 acres of

farmland just south of the WWTF. The User submitted an Irrigation Management Plan dated 24 September 1990 that indicated about 16 acres of orchard would receive effluent via flood irrigation. The Discharger has not discharged effluent to this farmland since April 1994. In 1998, the Discharger purchased 16.25 acres from the User. While effluent has not been recycled under the above permit since April 1994, the User and the Discharger both requested that Order No. 90-192 remain active in case they decide to resume water reclamation. The Discharger has yet to submit a Title 22 Engineering Report to DHS pursuant to Title 22, California Code of Regulations, section 60323. Before the User and Discharger continue recycling effluent under the terms and conditions of Order No. 90-192, the Discharger must submit a Title 22 Engineering Report to DHS and the Board.

Groundwater Conditions

26. Regional groundwater flows southwest and occurs about 20 to 30 feet below ground surface, according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by the Department of Water Resources (DWR) in Spring 1998.

27. The Discharger monitors eleven domestic wells in the WWTF vicinity. These wells are typically perforated from 120 to 165 feet below ground surface. Two domestic wells (DW-4 and DW-10) have consistently exhibited nitrate-nitrogen concentrations above the drinking water standard of 10 mg/L. Monitoring data from 1995 to 2000 indicates that DW-10 exceeded this limit in all sampling events, while DW-4 exceeded it about fifty percent of the time. DW-4 is expected to be upgradient of WWTF operations and DW-10, which is immediately adjacent to and downgradient of a poultry ranch, is expected to be downgradient. The use of domestic wells to monitor the effect of WWTF operation on the uppermost aquifer is inadequate, as they do not exclusively perforate levels corresponding to first encountered groundwater. By letter dated 8 November 2000, the Board approved a proposal from the Discharger to install a groundwater monitoring network around its disposal ponds. This network will facilitate evaluation of the effect of WWTF's discharges on the uppermost layer of water representative of the uppermost aquifer.

Basin Plan and Regulatory Considerations

28. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by references plans and policies adopted by the State Water Resources Control Board. These requirements implement the Basin Plan.

29. Cole Slough is a Valley Floor Water and major conveyance of Kings River water. The Basin Plan identifies beneficial uses of Valley Floor Waters as agricultural and industrial service and process supply, water contact and noncontact water recreation, warm freshwater habitat, wildlife habitat, groundwater recharge, and preservation of rare and endangered species. The Basin Plan identifies beneficial uses of the Kings River from Peoples Weir to Stinson Weir on the North Fork and to Empire Weir No. 2 on the South Fork as agricultural, water contact and noncontact water recreation, warm freshwater habitat, wildlife habitat, and groundwater recharge.

30. The Basin Plan identifies the beneficial uses of underlying groundwater as municipal, domestic, industrial process and service, and agricultural supply.

31. Water in the Tulare Lake Basin is in short supply, requiring importation of surface waters from other parts of the State. The Basin Plan encourages reclamation on irrigated crops wherever feasible and indicates that where opportunities exist to replace uses of fresh water with reclaimed water, evaporation of reclaimable wastewater is not an acceptable permanent disposal method.

32. The Basin Plan limits the increase in EC of a point source discharge to land to a maximum of 500 µmhos/cm over the EC of source water. If source water is from more than one source, the Basin Plan indicates that source water EC shall be a weighted average of all sources.

33. Section 13050(h) of the California Water Code defines water quality objectives as "... the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention or nuisance within a specific area."

34. The Basin Plan establishes numerical and narrative water quality objectives for surface and groundwaters within the basin, and recognizes that water quality objectives are achieved primarily through the Board's adoption of waste discharge requirements and enforcement orders. Where numerical water quality objectives are listed, these are the limits necessary for the reasonable protection of beneficial uses of the water. Where compliance with narrative water quality objectives is required, the Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives to maintain existing and anticipated beneficial uses of waters in the subject area.

35. The Basin Plan identifies numerical water quality objectives for waters designated as municipal supply. These are the MCLs specified in the following provisions of Title 22, CCR: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of section 64431, Table 64444-A (Organic Chemicals) of section 64444, and Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of section 64449 The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan requires the application of limits more stringent than MCLs as necessary to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses, whether the use is domestic drinking water supply, agricultural supply, or some other use.

36. The Basin Plan contains narrative water quality objectives for chemical constituents in and toxicity of groundwater that address constituents in the discharge that are potentially harmful to beneficial uses. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in plants or animals. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. Guidelines for identifying the quality of irrigation water necessary to sustain various crops were compiled by Ayers and Westcot in 1985 *(Food and Agriculture Organization of the United Nations — Irrigation Drainage Paper No. 29).* The Basin Plan recognizes these Guidelines for providing relevant numerical criteria to evaluate

compliance with the previously described narrative water quality objectives. The Guidelines are intended for use in estimating the potential hazards to crop production associated with long term use of the particular water being evaluated. The Guidelines divide water quality characteristics as having "No Problem – Increasing Problems – Severe Problems" based on large numbers of field studies and observations, and carefully controlled greenhouse and small plot research. In general, crops sensitive to sodium or chloride are most sensitive to foliar absorption from sprinkler applied water. Bicarbonate has been a problem when fruit crops or nursery crops are sprinkler irrigated during periods of very low humidity and high evaporation. The following table contains numerical criteria adapted from the Guidelines for protection of a range of crops under various circumstances, but the most stringent is not necessarily the concentration that assures no adverse affect on any nonagricultural use:

Problem and Related Constituent	No Problem	Increasing Problems
Salinity of irrigation water (EC, µmhos/cm)	< 700	700 – 3,000
Salinity of irrigation water (TDS, mg/L)*	< 450	450 –1,800
Specific Ion Toxicity		
From ROOT absorption		
Sodium (mg/L)	< 69	69 – 207
Chloride (mg/L)	< 142	142 – 355
Boron (mg/L)	< 0.7	0.7 –3.0
From FOLIAR absorption		
Sodium (mg/L)	< 69	> 69
Chloride (mg/L)	< 106	> 106
Miscellaneous		
NH_4-N (mg/L) (for sensitive crops)	< 5	5 – 30
NO_3-N (mg/L) (for sensitive crops)	< 5	5 – 30
HCO_3 (mg/L) (only with overhead sprinklers)	< 90	90 – 520
pH	normal range = 6.5 – 8.4	

* Assumes an EC:TDS ratio of 0.6:1

37. The existing and anticipated beneficial uses of area groundwater for agricultural supply include sprinkler and surface irrigation of crops sensitive to salt and boron. As described in Finding No. 23, crops grown in the WWTF vicinity include peaches, plums, walnuts and vineyards. The primary mechanism for irrigating these crops is by surface irrigation, but a few crops (i.e., walnuts) are sprinkler irrigated. Based on climate, soil type, and water quality, other crops sensitive to salt and boron might be capable of being grown in the area, and changing market conditions could drive a change in cropping patterns, but neither is expected to necessitate greater protection than crops already identified.

38. According to the Guidelines, reductions in crop yields are not evident when irrigating plums and vineyard with water having an EC of less than 1,000 µmhos/cm. According to the UC Cooperative Extension, boron sensitive crops (e.g., plums and peaches) may show injury when irrigated with water with boron ranging from 0.5 to 1.0 mg/L and reductions in crop yields when irrigated with water with boron ranging from 1.0 to 2.0 mg/L.

39. As explained in the attached Information Sheet, this Order implements water quality objectives established as necessary to maintain existing and anticipated beneficial uses of area groundwater for the production of crops that are sensitive to salt (i.e., sodium and chloride), boron, or both. The numerical values reflect the highest tolerable level of quality necessary to sustain sprinkler application, as these are more restrictive than for flood irrigation. These objectives include EC (900 µmhos/cm), the following expressed as mg/L: boron (0.7), chloride (106), sodium (115) and TDS (450). It is reasonable to conclude that the drinking water level for nitrate-nitrogen of 10 mg/L is adequately protective of existing and anticipated agricultural land uses. This Order implements a narrative groundwater water quality limitation for taste and odor by prescribing a groundwater limitation of 0.5 mg/L for ammonia. This concentration is based on a European Union drinking water standard. Discharger monitoring data indicate that effluent ammonia concentrations occasionally exceed 0.5 mg/L. As such, there is reasonable potential for the discharge to cause violations of the narrative water quality limitation for taste. There are several domestic wells in the vicinity of the disposal ponds. The groundwater ammonia limitation is protective of the beneficial uses of area groundwater for domestic supply.

40. The discharge authorized herein and the treatment and storage facilities associated with the discharge, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, CCR, section 20380 et seq. (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:

    a. The waste consists primarily of domestic sewage and treated effluent;

    b. The waste discharge requirements are consistent with water quality objectives; and

    c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

41. In the process of crop irrigation, evaporation and crop transpiration remove water from and result in accumulation of residual salts in the soil root zone. These salts would retard or inhibit plant growth except for a fraction of irrigation water applied to leach the harmful salt from the root zone. The leached salts eventually enter groundwater and concentrate above the uppermost layer of the uppermost aquifer. As this is the general condition throughout the agricultural Tulare Lake Basin, water supply wells for all beneficial uses typically are constructed to extract groundwater from below this level.

42. The use of municipal wastewater for irrigation at agronomic rates will have a comparable impact on groundwater as freshwater extracted and used for irrigation of the same crop. Beneficial reuse of wastewater conserves freshwater resources and is encouraged by the Basin Plan and agronomic application rates of wastewater cause comparable impact as widespread freshwater irrigation practices. Accordingly, benefits of groundwater monitoring in wastewater reuse areas do not justify the cost, provided the rates of wastewater applications do not exceed reasonable agronomic rates.

43. Infiltration from wastewater treatment and wastewater disposal ponds results in wastewater intersecting and accumulating on and in the uppermost layer of the uppermost groundwater until

dispersed horizontally and vertically into the main mass of the aquifer. Compliance with the various water quality objectives necessary to protect present and future beneficial uses within the aquifer should be determined by water representative of the uppermost zones. Site-specific studies to determine the appropriate zones and geographical locations should be conducted by the Discharger subject to Executive Officer approval.

44. California Department of Water Resources standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981), and any more stringent standards adopted by the Discharger or county pursuant to CWC section 13801, apply to all monitoring wells.

45. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA) in accordance with Title 14, CCR, section 15301.

Degradation

46. State Water Resources Control Board (SWRCB) Resolution No. 68-16 (hereafter Resolution 68-16 or the "Antidegradation" Policy) requires the Board in regulating the discharge of waste to maintain high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Board's policies (e.g., quality that exceeds water quality objectives).

47. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until a valley wide drain is constructed to carry salts out of the basin. Until the drain is available, the Basin Plan describes numerous salt management recommendations and requirements. The latter includes the requirement that discharges to land from wastewater treatment facilities not have an EC greater than source water plus 500 µmhos/cm. If source water is from more than one source, the Basin Plan indicates that source water EC shall be a weighted average of all sources. Accordingly, the Basin Plan allows for salinity degradation and focuses on controlling the rate of increase.

48. The Board finds that some degradation of groundwater beneath the WWTF and its associated discharge areas is consistent with Resolution 68-16 provided that:

- the degradation is confined to a specified area
- the discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures
- the degradation is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order
- the degradation does not result in water quality less than that prescribed in the Basin Plan

49. Some degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of California. The technology, energy, water recycling, and waste management advantages of municipal utility service for the Cities of Selma, Kingsburg and Fowler far exceed any benefits derived from an urban community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. When allowed, the degree of degradation allowed depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and most stringent water quality objective, source control measures, waste constituent treatability).

Treatment and Control Practice

50. The WWTF described in Finding No. 4 provides treatment and control of the discharge that incorporates:

- technology for secondary treatment of municipal wastewater
- biosolids handling and treatment for reuse
- constituent attenuation within the vadose zone
- concrete treatment structures
- a pretreatment program
- an active inflow and infiltration (I/I) rehabilitation program
- asphalt-paved sludge drying beds with underdrains for collection and treatment
  - soil-cement lined biosolids storage area
  - application of biosolids at agronomic rates
- a capital recovery fund
- an operation and maintenance (O&M) manual
- staffing to assure proper operation and maintenance

51. The Discharger's disposal of effluent by percolation results in concentrated loadings to groundwater of nutrients, salts, and other waste constituents. The existing impacts on groundwater and the appropriate level of degradation that complies with Resolution 68-16 has not been evaluated.

52. This Order, therefore, establishes schedules of tasks to evaluate BPTC for each treatment, storage, and disposal component of the WWTF and to characterize groundwater for all waste constituents.

53. This Order establishes groundwater limitations that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This means that where the stringency of the limitations for the same waste constituent differs according to beneficial use, the most stringent applies as the governing

limitation for that waste constituent. This Order contains tasks for assuring that BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16. Based on the results of the scheduled tasks, the Board may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution 68-16.

General Findings

54. California Water Code (CWC) section 13267 authorizes the Board to require anyone who discharges waste that could affect the quality of water, as the Discharger does, to furnish, under penalty of perjury, technical and monitoring program reports.

55. Section 13263 of the CWC authorizes the Board to prescribe discharge requirements that implement the Basin Plan and other applicable plans and take into consideration other factors, including the factors in CWC section 13241, which includes economic considerations. The State Water Resources Control Board, however, has held that a regional board need not specifically address section 13241 factors when implementing existing water quality objectives in waste discharge requirements because the factors were already considered in adopting water quality objectives. These waste discharge requirements implement adopted water quality objectives. Therefore, no additional analysis of the section 13241 factors is required.

56. Pursuant to CWC section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

57. Pursuant to CWC section 13274, the State Water Resources Control Board adopted Water Quality Order No. 2000-10-DWQ, *General Waste Discharge Requirements for the Discharge of Biosolids to Land for use as a Soil Amendment in Agricultural, Sivicultural, Horticultural, and Land Reclamation Activities* (hereafter General Order), on 17 August 2000.

58. The Discharger is not required to obtain coverage under an NPDES general industrial storm water permit because all storm water runoff is diverted back to the headworks of the WWTF, and does not discharge to a water of the United States.

59. The Board considered all the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, in establishing the following conditions of discharge.

60. 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.

61. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that Waste Discharge Requirements Order No. 82-008 is superceded except for terms and conditions applicable to the sludge application area (defined in Finding No. 16)

and that, pursuant to CWC sections 13263 and 13267, Selma-Kingsburg-Fowler County Sanitation District, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted thereunder, shall comply with the following at the Selma-Kingsburg-Fowler wastewater treatment facility:

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]

A. Discharge Prohibitions

1. The direct discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. The bypass or overflow of untreated or partially treated waste is prohibited, except as allowed in Provision E.2 of Standard Provisions and Reporting Requirements.

3. Discharge of waste classified as 'hazardous' as defined in section 2521(a) of Title 23, CCR, section 2510 et seq., or 'designated' as defined in section 13173 of the California Water Code, is prohibited.

4. Recycling of effluent to areas either lacking Board-adopted water reclamation requirements or waiver of said requirements is prohibited.

B. Discharge Specifications

1. The monthly average discharge to disposal ponds shall not exceed 8.0 mgd.

2. The monthly average EC of the discharge shall not exceed the annual average EC of the source water plus 500 µmhos/cm, or a total of 900 µmhos/cm, whichever is less.

3. The discharge to disposal ponds shall not exceed the following limits:

Constituent	Units	Monthly Average	Daily Maximum
BOD_5[1]	mg/L	40	80
TSS[2]	mg/L	40	80
Settleable Solids	mL/L	0.2	1.0

[1] Five-day biochemical oxygen demand at 20° Celsius
[2] Total suspended solids

4. The discharge shall not have a pH less than 6.0 or greater than 9.0.

5. Objectionable odors originating at the WWTF shall not be perceivable beyond the limits of the subject property at an intensity that creates or threatens to create nuisance conditions.

6. As a means of discerning compliance with Discharge Specification B.5, the dissolved oxygen content in the upper zone (one foot) of wastewater in all ponds shall not be less than 1.0 mg/L.

7. Ponds shall be managed to prevent breeding of mosquitoes. In particular:

   a. An erosion control plan should assure that small coves and irregularities are not created around the perimeter of the water surface.

   b. Weeds shall be minimized through control of water depth, harvesting, and herbicides.

   c. Accumulation of dead algae, vegetation, and debris on the water surface shall be minimized through control of water depth and harvesting.

   d. Vegetation management operations in areas in which birds have been observed nesting shall be carried out either before or after, but **not during**, the **April 1 to June 30** bird nesting season.

8. The WWTF shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year frequency.

9. The Discharger shall limit public access to the WWTF, disposal ponds, and sludge handling facilities through methods such as fences, signs, or other acceptable means.

10. Freeboard shall never be less than **one foot** in any pond (measured vertically from the lowest elevation of the pond embankment).

11. The Discharger shall install and maintain in each disposal pond permanent markers with calibration indicating the water level at design capacity and available operational freeboard. Upon the Discharger's written request, specific WWTF ponds may be exempt from this requirement. Such exemptions shall be subject to the Executive Officer's written approval.

12. Disposal ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

13. On **15 November** of each year, available storage capacity in storage ponds shall be at least equal to the volume necessary to comply with Discharge Specification B.12.

14. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of Groundwater Limitations.

15. The arithmetic mean of BOD_5 and of total suspended solids in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (80 percent removal).

C. Sludge Specifications

Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has undergone sufficient treatment and testing to qualify for reuse pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant operation.

2. Treatment and storage of sludge generated by the WWTF shall be confined to the WWTF property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations.

3. Any storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations.

4. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, WWTF, composting site, soil amendment site) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.

5. Use of biosolids as a soil amendment shall comply with General Biosolids Order (State Water Resources Control Board Water Quality Order No. 2000-10-DWQ, *General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities*). The Discharger must obtain a "Notice of Applicability" of the General Biosolids Order from the Executive Officer prior to discharge of biosolids to any site. Alternatively, use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water quality control board.

6. Use and disposal of biosolids should comply with the self-implementing federal regulations of 40 CFR 503, which are subject to enforcement by the U.S. Environmental Protection Agency (EPA), not the Board. If during the life of this Order the State accepts primacy for implementation of 40 CFR 503, the Board may also initiate enforcement where appropriate.

D. Groundwater Limitations

Release of waste constituents from any storage, treatment, or disposal component associated with the WWTF shall not, in combination with other sources of the waste constituents, cause groundwater under and beyond the WWTF and discharge area(s) to exceed any of the following:

1. Constituent concentrations specified below or natural background concentration, whichever is greater:

   a. Total coliform organisms of 2.2 MPN/100 mL.

   b. Total nitrogen in excess of 10 mg/L.

   c. For constituents identified in Title 22 (as described in Finding No. 35), the MCLs quantified therein.

2. Constituent concentrations listed below or natural background concentration, whichever is greater:

Constituent	Units	Limitation
Boron	mg/L	0.7
Chloride	mg/L	106
EC	µmhos/cm	900
Sodium	mg/L	115
Total Dissolved Solids[1]	mg/L	450

[1] A cumulative constituent comprised of dissolved matter consisting mainly of inorganic salts, small amounts of organic matter, and dissolved gases [e.g., ammonia, bicarbonate alkalinity, boron, calcium, chloride, copper, iron, magnesium, manganese, nitrate, phosphorus, potassium, sodium, silica, sulfate, total alkalinity]

3. Taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses, including, but not limited to, ammonia (as N) in excess of 0.5 mg/L or natural background, whichever is greater.

4. Constituent concentrations identified as follows or natural background concentration, whichever is greater: toxic substances in concentrations that produce detrimental physiological responses in human, plant, or animal life; or chemical constituents and pesticides in concentrations that adversely affect beneficial uses.

E. Pretreatment Requirements

1. The Discharger shall be responsible for the performance of all pretreatment requirements contained in 40 CFR Part 403 and shall be subject to enforcement actions, penalties, fines, and other remedies by the EPA, Board, or other appropriate parties, as provided in the Clean Water Act (CWA), as amended, for noncompliance.

2. The Discharger shall implement and enforce its approved Pretreatment Program. The Discharger's approved Pretreatment Program is hereby made an enforceable condition of this permit. The EPA or Board may initiate enforcement action against an industrial user for noncompliance with applicable standards and requirements as provided in the CWA.

3. The Discharger shall enforce the requirements promulgated under section 307(b), (c), and (d) and section 402(b) of the CWA. The Discharger shall cause industrial users subject to federal categorical standards to achieve compliance no later than that date specified in those requirements, or in the case of a new industrial user, upon commencement of the discharge.

4. The Discharger shall perform the pretreatment functions required in 40 CFR Part 403, including, but not limited to:

   a. Implementing the necessary legal authorities as provided in 40 CFR 403.8(f)(1);

   b. Enforcing the pretreatment requirements under 40 CFR 403.5 and 403.6;

   c. Implementing the programmatic functions provided in 40 CFR 403.8(f)(2);

   d. Providing the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3); and

   e. Publishing a list of industrial users which were in significant noncompliance and applicable pretreatment requirements as required by 40 CFR 403.8(f)(2)(vii).

   f. Conducting inspections in accordance with provisions of 40 CFR 403.8(f)(1)(v) and 403.8(f)(2)(v) and ensure compliance with pretreatment standards and requirements by (1) assessing and collecting, when appropriate, civil penalties and civil administrative penalties in accordance with Government Code sections 54740, 54740.5, and 54740.6, or (2) other equally effective means.

F. Provisions

1. The Discharger shall comply with Monitoring and Reporting Program (MRP) No. 5-01-255, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

2. The Discharger shall comply with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991, which are attached hereto and by

reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as *Standard Provision(s)*.

3. 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, groundwater, cooling waters, and condensates that without treatment are essentially free of pollutants.

4. **15 January 2002**, the Discharger shall submit a work plan that proposes how it will determine the impact of onsite grit disposal on groundwater. The work plan shall at a minimum include (a) how the Discharger will determine the lateral and vertical extent of grit disposal, (b) a soil sampling program for determining if constituents in grit have the potential to impact groundwater, and (c) a time schedule for implementing the work plan. A California registered civil engineer must oversee and certify the work plan. Following written approval of the work plan from the Executive Officer, this Provision shall be considered satisfied.

5. **By 15 January 2002,**, the Discharger shall submit a technical report that shows the disposal ponds have adequate capacity for a 100-year rainfall at a design flow of 8.0 mgd. The technical report shall also include a nutrient balance that estimates the amount of nitrogen (tons and lbs/acre) that will percolate annually to groundwater underlying the disposal ponds at the design flow. A California registered civil engineer must oversee and certify the technical report. Following written approval of the technical report from the Executive Officer, this Provision shall be considered satisfied.

6. **By 15 April 2002,** the Discharger shall submit a Sludge Management Plan that satisfies Attachment D *Information Needs For Sludge Management Plan*. A California registered civil engineer experienced in sludge disposal must oversee and certify the Sludge Management Plan. Following written approval of the Sludge Management Plan from the Executive Officer, this Provision shall be considered satisfied.

7. **By 15 February 2002,** the Discharger shall install a groundwater monitoring well network in the vicinity of its disposal ponds in accordance with the its work plan for Groundwater Monitoring Network, which the Board approved by letter dated 8 November 2000.

8. **By 15 February 2002**, the Discharger shall complete a hydrogeologic investigation within the area affected and potentially affected by the WWTF and submit a technical report to the Executive Officer. The technical report, which shall be prepared and professionally certified by a geologist registered to practice in California, shall describe the underlying geology, existing wells (active and otherwise), local well construction practices and standards, well restrictions, and hydrogeology. The report shall recommend representative monitoring zones of the uppermost aquifer with consideration given to the Discharger's existing data and provide a detailed evaluation of the existing monitoring well network. The recommendations shall be reviewed and approved as appropriate by the Executive Officer.

9. **Within 120 days following Executive Officer approval of representative monitoring zones in accordance with Provision F.8**, the Discharger shall submit for Executive Officer approval, a technical report proposing a modified groundwater monitoring network. The technical report shall consist of a Monitoring Well Installation work plan for a network that satisfies Attachment E, *Standard Monitoring Well Provisions for Waste Discharge Requirements*. The network shall include one or more background wells and sufficient number of wells to evaluate performance of BPTC measures and to determine compliance with this Order's Groundwater Limitations. These include monitoring wells immediately downgradient of components that do or may release waste constituents to groundwater (e.g., disposal ponds, sludge drying beds, grit disposal areas). Every monitoring well shall comply with applicable Well Standards. Monitoring of wells constructed to yield representative samples from approved monitoring zones within the uppermost aquifer in accordance with this Order's Monitoring and Reporting Program shall comprise the representative zone monitoring program. Implementation of the Monitoring Well Installation work plan shall be subject to the prior approval of the Executive Officer.

10. The Discharger shall comply with the following compliance schedule in implementing the groundwater monitoring network approved by the Executive Officer in Provision F.9:

	Task	Compliance Date
a.	Implement Monitoring Well Installation work plan (as described in Provision F.9)	150 days following work plan approval by Executive Officer
b.	Complete Monitoring Well installation	60 days following work plan implementation
c.	Commerce Groundwater Monitoring	30 days following completion of task 10.b
d.	Submit Monitoring Well Installation Report of Results	60 days following completion of task 10.b
e.	Submit technical report that characterizes natural background water quality in approved representative monitoring zones for all monitored constituents	365 days following completion of task 10.d

Technical reports submitted pursuant to this Provision shall be overseen and certified by a California registered civil engineer or registered geologist, and are subject to Executive Officer approval.

11. Compliance with Groundwater Limitations will be evaluated based on the approved representative zone monitoring program following completion of Provision F.10, task e. Should the Discharger fail to comply with the schedule to characterize natural background groundwater quality at the approved monitoring zone(s) by the date specified in Provision F.10, task e, the Board shall not consider the lack of natural background characterization as sufficient defense to enforcement for violations of Groundwater Limitations F.1 through F.4.

12. **By 15 April 2002**, the Discharger shall submit a written work plan in the form of a technical report that sets forth a schedule for a systematic and comprehensive technical evaluation of each component of the WWTF's waste treatment and control to determine for each waste constituent best practicable treatment and control as used in Resolution 68-16. The technical report shall contain a preliminary evaluation of each component and propose a time schedule for completing the comprehensive technical evaluations. The technical report shall be overseen and certified by a California registered civil engineer. The schedule to complete all comprehensive technical evaluations shall be as short as practicable, and shall not exceed two years. Upon written determination of adequacy by the Executive Officer of the technical report, this Provision shall be considered satisfied.

13. By the schedule approved by the Executive Officer pursuant to Provision F.12, but no later than **15 October 2004** the written comprehensive technical evaluation shall be submitted with the Discharger's written recommendations for WWTF modifications (e.g., component upgrade and retrofit). The report shall include specific methods the Discharger proposes as a means to measure processes and assure continuous optimal performance of BPTC measures. Comprehensive technical evaluations shall be overseen and certified by a California registered civil engineer. The source of funding and proposed schedule for modifications shall be identified. The schedule shall be as short as practicable but in no case shall completion of the necessary improvement exceed **four years** past the Executive Officer's determination of the adequacy of the comprehensive technical evaluation submitted pursuant to this provision unless the schedule is reviewed and specifically approved by the Board. The adequacy of the component evaluation, recommended improvements, and schedule are subject to the Executive Officers review and determination.

14. The groundwater limitations set forth in this Order are not final and not an entitlement. **By 15 June 2005**, the Discharger shall submit a technical report that proposes specific numeric groundwater limitations for each waste constituent that reflects full implementation of BPTC and compliance with the most stringent applicable water quality objectives for that waste constituent. The report shall describe how these were determined considering actual data from monitoring wells comprising the approved representative zone monitoring program, impact reductions through full implementation of BPTC, reasonable growth, the factors in Water Code section 13241, State Water Resources Control Board Resolution No. 68-16, the Basin Plan, etc. The most stringent applicable water quality objective shall be interpreted based on the Regional Board policy entitled Application of Water Quality Objectives on pages IV-21 through IV-23 of the Basin Plan. Where the stringency of a proposed water quality objective can vary according to land use, the Discharger must provide documentation from similar third party government authorities that there is no potential for

there is no potential for the more sensitive land use to occur, and the reason, if it wishes the Board to consider a proposed water quality objective, that provides protection for only less sensitive uses. The Board will consider the documentation and recommendation for the governing water quality objective, and it is this accepted value that will establish the maximum permissible groundwater limitation the Board will consider in Phase 2 evaluation. The Discharger may, at its discretion, submit results of a validated groundwater model or other hydrogeologic information to support its proposal.

15. Upon completion of tasks set forth in Provisions F.12 and F.14, the Board shall consider the evidence provided and make a determination regarding whether the Discharger has justified BPTC and the appropriate numeric groundwater limitations that comply with Resolution 68-16.

16. **By 15 January 2002,** the Discharger shall submit a Revenue Plan that describes the costs associated with completing Provisions F.8 through F.13 and shows how the Discharger will finance each item. Should the Revenue Plan show that there are inadequate funds, the Discharger must also include an implementation schedule that shows how the Discharger will raise the necessary funds.

17. The Discharger shall report to the Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

18. **By 15 October 2003**, the Discharger shall submit a feasibility study that describes opportunities to recycle effluent on agricultural lands where fresh water is currently used. The study shall also include implementation schedules for each identified opportunity. Following Executive Officer approval of the feasibility study, this Provision shall be considered satisfied.

19. **By 1 March 2002,** the Discharger shall submit a report for Executive Officer approval outlining EPA test methods and detection limits for priority pollutants listed in Title 40, Code of Federal Regulations, Part 131.

20. The Discharger shall implement best practicable treatment and control, including proper operation and maintenance, to comply with this Order.

21. If the Board determines that waste constituents in the discharge have reasonable potential to cause or contribute to an exceedance of a limit for groundwater, this Order may be enforced or, alternately, reopened for consideration of addition or revision of appropriate numerical effluent or groundwater limitations for the problem constituents.

22. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result

in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

23. 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.

    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 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 B.3 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.

24. A copy of this Order shall be kept for reference by personnel responsible for compliance with this Order. Key operating personnel shall be familiar with its contents.

25. The Board will review this Order periodically and will revise requirements when necessary.

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 19 October 2001.

for GARY M. CARLTON, Executive Officer

Order Attachments:

Monitoring and Reporting Program
A. Location Map
B. Flow Process Diagram
C. Sludge application area
D. Information Needs for Sludge Management Plan
E. Standard Monitoring Well Provisions for Waste Discharge Requirements

Information Sheet
Standard Provisions (1 March 1991 version) (separate attachment to Discharger only)

RAS/jlk:fmc:10/19/01 AMENDED

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 5-01-255
FOR
SELMA-KINGSBURG-FOWLER COUNTY SANITATION DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Sample station locations are depicted on Attachment B. Changes to sample location shall be established with concurrence of Board's staff, and a description of the revised stations shall be submitted to the Board and attached to this Order. All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. Samples shall be analyzed in accordance with the latest version of *Standard Methods for the Examination of Water and Wastewater* or 40 CFR Part 136.

INFLUENT MONITORING

Selma-Kingsburg-Fowler County Sanitation District (hereafter Discharger) shall collect influent samples at the headworks of the treatment facility prior to any treatment of waste. Time of collection of a grab sample shall be recorded. Influent monitoring shall include at least the following:

Constituent/Parameter	Units	Type of Sample	Frequency
Flow	mgd	Metered	Continuous
pH	pH units	Grab	Daily[1]
Settleable Solids	mL/L	Grab	Daily[1]
BOD_5[2]	mg/L	24-hr Composite[3]	Twice/Week
Monthly Average BOD_5	mg/L	Calculated	Monthly
Total Suspended Solids	mg/L	24-hr Composite[3]	Twice/Week
Monthly Average TSS[4]	mg/L	Calculated	Monthly

1 Sample frequencies referenced hereafter in this program as daily shall not include weekends or holidays.
2 Five-day, 20° Celsius biochemical oxygen demand
3 24-hr Composite samples as referred to in this program shall be flow-proportioned.
4 Total suspended solids

EFFLUENT MONITORING

The Discharger shall collect effluent samples at a point in the system following treatment and before discharge to disposal ponds. Effluent samples shall be representative of the volume and nature of the discharge. Time of collection of a grab sample shall be recorded. Effluent monitoring shall include the following:

Constituent	Units	Type of Sample	Frequency[1]
Settleable Solids	mL/L	Grab	Daily
pH	pH units	Grab	Daily
BOD_5	mg/L	24-hr Composite	Twice/Week
Monthly Average BOD_5	mg/L	Calculated	Monthly
Percent Removal	%	Calculated	Monthly
Total Suspended Solids	mg/L	24-hr Composite	Twice/Week
Monthly Average TSS	mg/L	Calculated	Monthly
Percent Removal	%	Calculated	Monthly
EC[2]	µmhos/cm	24-hr Composite	Twice/Week
Total Organic Carbon	mg/L	24-hr Composite	Twice/Month[3]
Total Dissolved Solids[4]	mg/L	24-hr Composite	Twice/Month[5]
Total Kjeldahl Nitrogen	mg/L	24-hr Composite	Twice/Month
Ammonia **(as N)**	mg/L	24-hr Composite	Twice/Month
Nitrate **(as N)**	mg/L	24-hr Composite	Twice/Month
Total Nitrogen	mg/L	Calculated	Twice/Month
General Minerals[6]	mg/L	Grab	Quarterly[7]
Metals[8, 9]	mg/L	Grab	Annually[10]
Priority Pollutants[11]	µg/L	Grab	Annually[10]

1 If results of monitoring indicate that a pollutant appears to violate effluent limitations, but monitoring frequency is not sufficient to validate violation, the sampling frequency shall be increased to confirm the magnitude and duration of violation.

2 Conductivity at 25°C

3 Concurrent with BOD_5 testing

4 Total Dissolved Solids (TDS) referenced hereafter in this program shall be determined using EPA Method No. 160.1 for combined organic and inorganic TDS and EPA Method No. 160.4 for inorganic TDS or equivalent analytical procedures specified in 40 CFR Part 136.

5 Concurrent with EC sampling

6 General Minerals as referred to in this program shall include the constituents in the General Minerals Analyte List presented below.

7 January, April, July and October

8 Metals as referred to in this program shall include zinc, cadmium, lead, nickel, selenium, arsenic, molybdenum, mercury, and copper.

9 Samples shall pass through a 0.45 µm filter prior to analysis.

10 April, coincident with general minerals analysis .

11 The Discharger must submit a report for approval by 1 March 2002 outlining EPA test methods and detection limits for priority pollutants listed in Title 40, Code of Federal Regulations, Part 131.

General Minerals Analyte List

Bicarbonate Alkalinity (as $CaCO_3$)	Hardness (as $CaCO_3$)	Potassium
Boron	Iron	Sodium
Calcium	Magnesium	Sulfate
Carbonate Alkalinity (as $CaCO_3$)	Manganese	
Chloride	Phosphate	

Sample Collection and Preservation: Any sample placed in an acid-preserved bottle must first be filtered through a 0.45 µm nominal pore size filter. If field filtering is not feasible, samples shall be collected in unpreserved containers and submitted to the laboratory within 24-hours with a request (on the chain-of-custody form) to immediately filter then preserve the sample.

SOURCE WATER MONITORING

The Discharger shall report, annually by September 30th of each year, the flow weighted annual average values for EC and TDS reported annually by water purveyors serving the cities of Selma, Kingsburg, and Fowler. The source water EC and TDS values shall be applicable for the calendar year beginning each January 1st immediately following the release of such annual reports by water purveyors.

PRETREATMENT MONITORING

Quarterly and annual pretreatment reports must be submitted in accordance with Provision E.7 of Standard Provisions and Reporting Requirements. The reports shall also describe progress towards correction of deficiencies noted during audit or pretreatment compliance inspections by the Board and/or EPA. Information required in the fourth quarterly report shall be included as part of the annual report. If none of the aforementioned conditions exist, a letter at the end of each quarter must be submitted, at a minimum, certifying that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter.

Signed copies of the reports shall also be submitted to the EPA Regional Administrator and the State Board at the following addresses, or as advised in writing subsequent to adoption of this Order:

Regional Administrator
U.S. EPA, Region 9
Water Management Division (W-5-2)
75 Hawthorne Street
San Francisco, CA 94105

Pretreatment Program Manager
Division of Water Quality
State Water Resources Control Board
P.O. Box 944213
Sacramento, CA 94244-2130

SLUDGE MONITORING

To ensure that discharges to the WWTF are not interfering with the treatment process, the Discharger shall collect a composite sample of sludge at least annually in accordance with EPA's *POTW SLUDGE SAMPLING AND ANALYSIS GUIDANCE DOCUMENT, AUGUST 1989,* and test for metals:

Arsenic	Copper	Nickel
Cadmium	Lead	Selenium
Molybdenum	Mercury	Zinc

Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated and of handling, application and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report. Prior to any disposal or land application of sewage sludge, or removal of sewage sludge from the WWTF, the monitoring and record keeping requirements of 40 CFR 503 shall be met.

DISPOSAL POND MONITORING

Permanent markers shall be placed in the disposal ponds with calibration indicating the water level at design capacity and available operational freeboard. The freeboard shall be monitored on all ponds to the nearest tenth of a foot. Disposal pond monitoring shall include at least the following:

Constituent	Units	Type of Sample	Frequency
Freeboard	Feet	Observation	Weekly
Dissolved Oxygen	mg/L	Grab[1]	Twice/Week[2]

[1] Samples shall be collected from opposite to the inlet of disposal ponds and analyzed for dissolved oxygen. Samples shall be collected between 0700 and 0900 hours. Time of sampling shall be reported.

[2] If results indicate a concentration of less than 1.0 mg/L, or if offensive odors are noted, the frequency of monitoring shall be increased as necessary to characterize the period of noncompliance.

In addition, the Discharger shall inspect the condition of disposal ponds once per week. A monthly summary submitted with self-monitoring reports may include photographs and shall include observations of whether weeds are developing in the water or along the bank, and their location; whether dead algae, vegetation, scum, or debris are accumulating on the pond surface and their location; whether burrowing animals or insects are present; and the color of the ponds (e.g., dark sparkling green, dull green, yellow, gray, tan, brown, etc.). If the Discharger finds itself in violation of Discharge Specifications B.5, B.6, B.7, B.8, B.10, B.12, or B.13, the Discharger shall briefly explain the action taken or to be taken to correct the violation. The Discharger shall certify in each November monitoring report that it is in compliance with Discharge Specification B.13.

GROUNDWATER MONITORING

Prior to collecting samples, the monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of the standing water within the well casing and screen, or additionally the filter pack pore volume.

At least monthly and concurrently with groundwater quality sampling, the Discharger shall measure the water level in each well. The Discharger shall report groundwater level data as groundwater depth (in feet and hundredths) and as groundwater surface elevation (in feet and hundredths above mean sea level). The horizontal geodetic location for each monitoring well shall be provided where the point of beginning shall be described by the California State Plane Coordinate System, 1983 datum.

In reporting the results of the first quarterly sampling event performed pursuant to this MRP, the Discharger shall include a detailed description of the procedures and techniques for: (a) sample collection, including purging techniques, sampling equipment, and decontamination of sampling equipment; (b) sample preservation and shipment; (c) analytical procedures; and (d) chain of custody control.

Samples shall be collected from approved monitoring wells and analyzed for the following:

Constituent	Units	Type of Sample	Frequency
EC	µmhos/cm	Grab	Quarterly[1]
TDS	mg/L	Grab	Quarterly[1]
Total Coliform Organisms	MPN/100 mL	Grab	Quarterly[1]
Total Organic Carbon	mg/L	Grab	Quarterly[1]
Ammonia **(as N)**	mg/L	Grab	Quarterly[1]
Nitrate **(as N)**	mg/L	Grab	Quarterly[1]
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly[1]
Total Nitrogen	mg/L	Calculated	Quarterly[1]
Total Organic Nitrogen **(as N)**	mg/L	Calculated	Quarterly[1]
General Minerals	mg/L	Grab	Quarterly[1]
Dissolved Oxygen	mg/L	Grab	Quarterly[1]
Oxidation-Reduction Potential	mV	Grab	Quarterly[1]
Metals	mg/L	Grab	Annually[2]

[1] January, April, July, and October
[2] October

REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring Reporting Program (MRP) and as required in the Standard Provisions and Reporting Requirements. All reports

submitted in response to this MRP shall comply with the signatory requirements in Standard Provisions, General Reporting Requirements B.3.

In each monitoring report, the Discharger shall discuss the compliance record for the reporting period. If violations have occurred during the reporting period, the report shall also discuss the corrective actions taken and/or planned to bring the discharge into full compliance with this Order. Monitoring data and/or discussions submitted concerning WWTF performance must also be signed and certified by the chief plant operator. When reports contain laboratory analyses performed by the Discharger and the chief plant operator is not in the direct line of supervision of the laboratory, reports must also be signed and certified by the chief of the laboratory.

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents or parameters, and the concentrations or measurements are readily discernible. The data shall be summarized in a manner that clearly illustrates whether the discharge complies with waste discharge requirements. If any pollutant is monitored at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.

Monthly monitoring reports shall be submitted to the Board by the **1st day of the second month** following sample collection, and include, at a minimum, monitoring data collected during the month (e.g., effluent pH and TSS). Quarterly monitoring reports shall be submitted by **1st day of second month after the calendar quarter.** Annual monitoring reports shall be submitted by **1 February of each year**.

The Discharger may also be requested to submit an annual report to the Board with tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing.

By **1 February of each year**, the Discharger shall submit a written report to the Executive Officer containing the following:

1. The names, titles, certificate grade, and general responsibilities of persons operating and maintaining the wastewater treatment facility (Standard Provision E.1).

2. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

3. A certified statement of when the flow meter and other monitoring instrument and devices were last calibrated (Standard Provision C.4).

4. A certified statement that the Operation & Maintenance Manual was reviewed within the last year as appropriate and been updated as necessary to reflect current treatment processes with appropriate procedures for troubleshooting.

5. The results of an annual evaluation conducted pursuant to Standard Provision E.4 and a figure depicting monthly average discharge flow for the past five years.

6. The most recent Annual Water Supply Report for the Cities of Selma, Kingsburg, and Fowler.

7. A summary of annual sludge monitoring data, including:

   a. Annual sludge production in dry tons and percent solids;

   b. A schematic diagram showing sludge handling facilities and solids flow diagram;

   c. A description of disposal and application methods, including the following information related to the disposal and application methods used at the WWTF. If more than one method is used, include the percentage of annual sludge production disposed of by each method.

      i) For **landfill disposal**, include: the Order numbers of WDRs that regulate the landfill(s) used, the present classifications of the landfill(s) used, and the names and locations of the facilities receiving sludge.

      ii) For **land application**, include: the locations of the site(s) and the Order numbers of any WDRs that regulate the site(s).

      iii) For **incineration**, include: the names and location of the site(s) where sludge incineration occurs, the Order numbers of WDRs that regulate the site(s), the disposal method of ash, and the names and locations of facilities receiving ash (if applicable).

      iv) For **composting**, include: the location of the site(s), and the Order numbers of any WDRs that regulate the site(s).

8. A summary of groundwater monitoring, including:

   a. Hydrographs showing the groundwater elevation in each approved monitoring well for the previous five calendar years or to the extent that such data is available, whichever is fewer. The hydrographs should show groundwater elevation with respect to the elevations of the top and bottom of the screened interval and be presented at a scale of values appropriate to show trends or variations in groundwater elevation.

   b. A description and graphical presentation of the gradient and direction of groundwater flow under the disposal ponds.

   c. Graphs of the laboratory analytical data for all samples taken from each approved well within at least the previous five calendar years or to the extent that such data are available, whichever is fewer. Each such graph shall plot the concentration of one or more waste constituents over time for a given monitoring well, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean

values. Separate graphs show hydrologic equipotential gradients and equal concentration gradients for evaluated constituents.

d. All monitoring analytical data obtained during the previous four quarterly reporting periods, presented in tabular form, as well as 3.5" computer diskettes (or submitted separately via e-mail), either in MS-DOS / ASCII format or in another file format acceptable to the Executive Officer (e.g., Microsoft Excel).

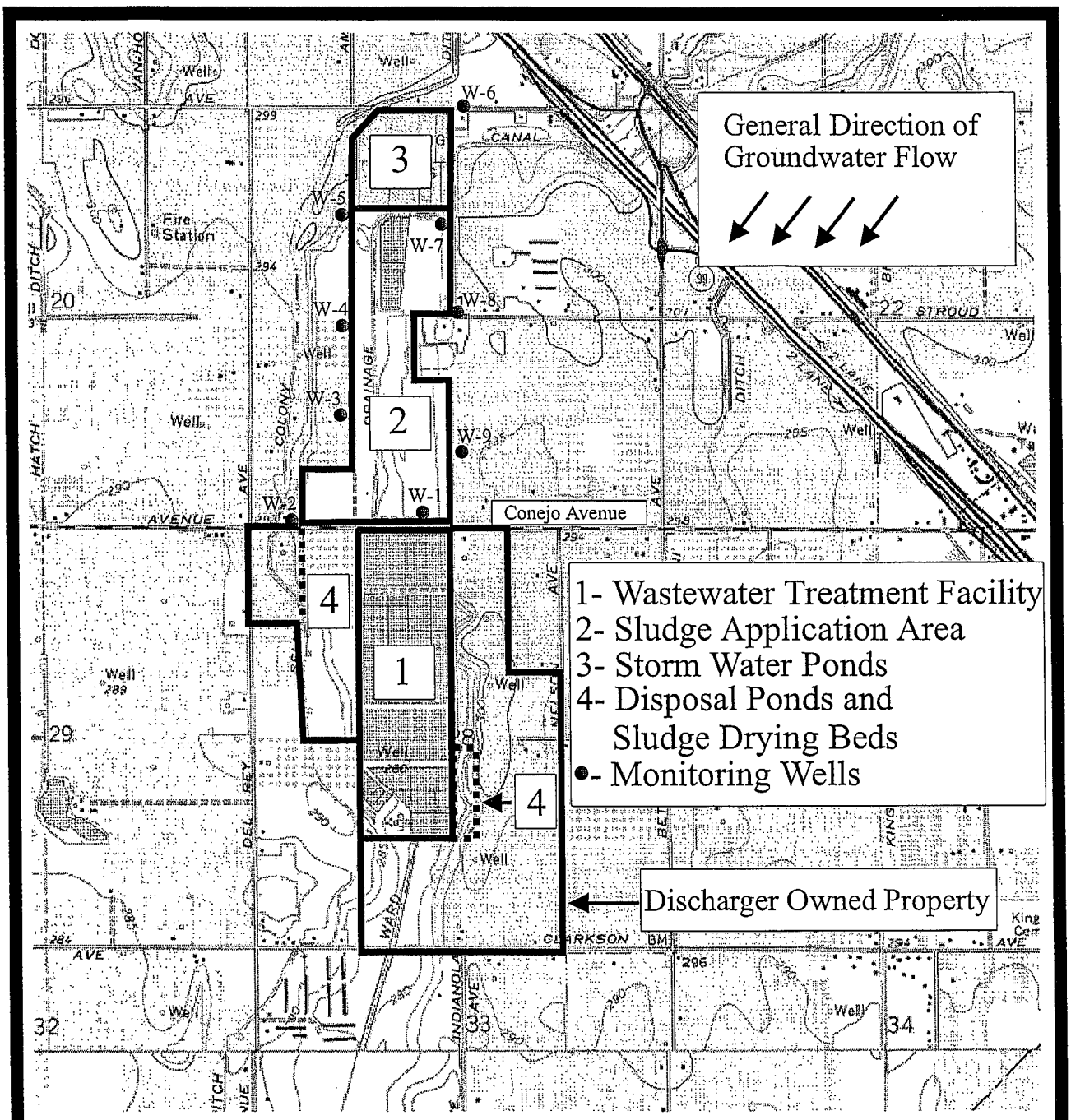
9. A comprehensive discussion of the compliance record for the previous year. If violations have occurred, the Annual Report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with this Order.

The Discharger shall implement the above monitoring program as of the date of this Order:

Ordered By: _____
for GARY M. CARLTON, Executive Officer

19 October 2001
(Date)

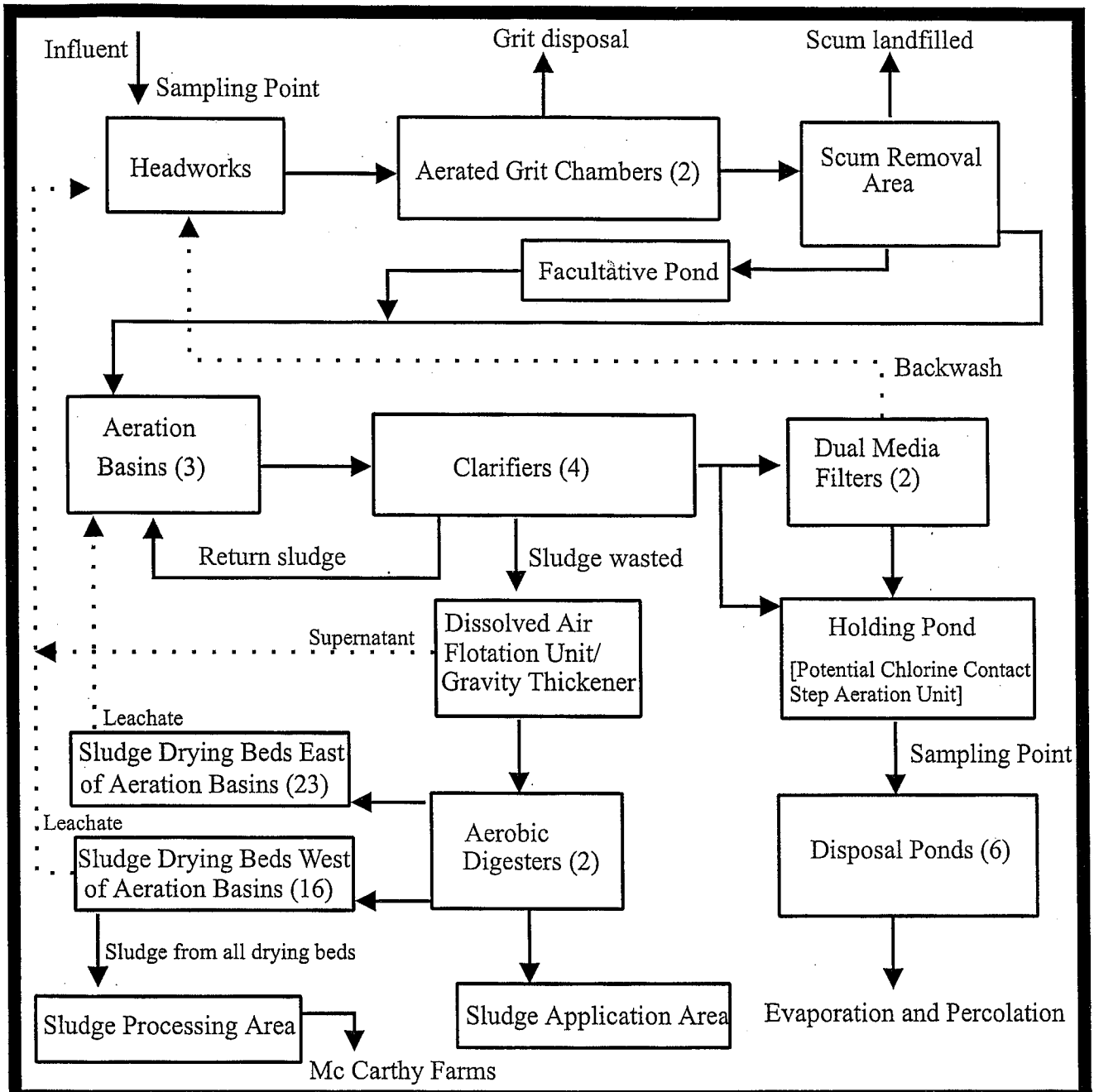
RAS/jlk:fmc:10/19/01 AMENDED



ATTACHMENT A
WASTE DISCHARGE REQUIREMENTS ORDER NO. 5-01-255
LOCATION MAP

SELMA-KINGSBURG-FOWLER CSD
WASTEWATER TREATMENT FACILITY, FRESNO COUNTY

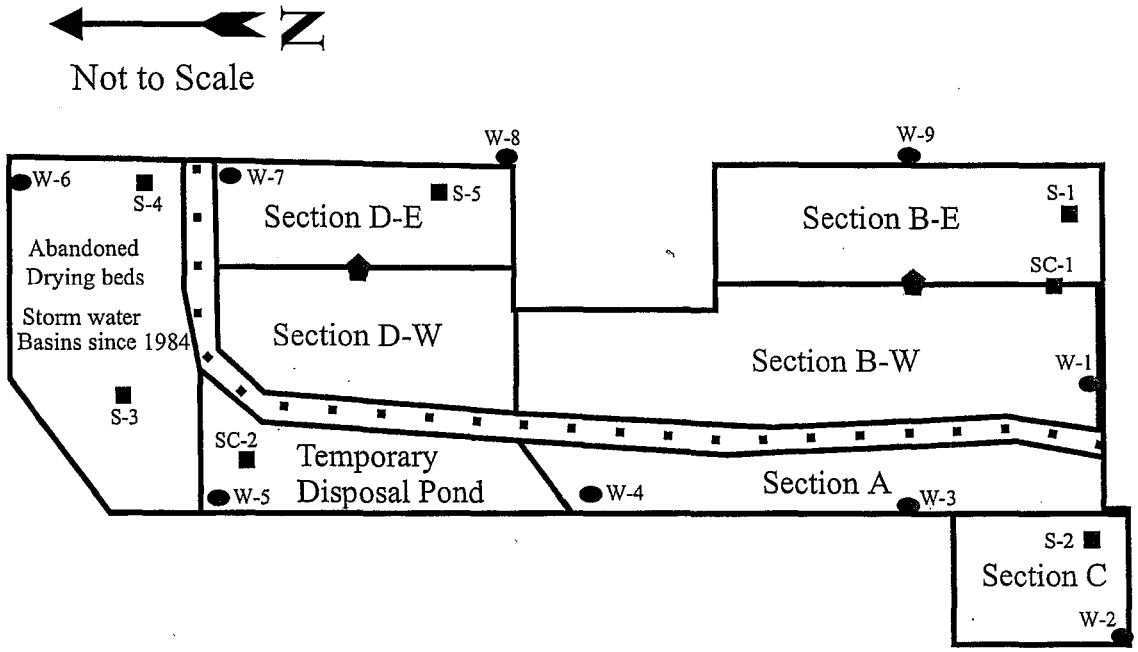
Sections 21 and 28, T16S, R22E, MDB&M
Selma 7.5 Min Quad Map



ATTACHMENT B
WASTE DISCHARGE REQUIREMENTS ORDER NO. 5-01-255

FLOW SCHEMATIC

SELMA-KINGSBURG-FOWLER CSD
WASTEWATER TREATMENT FACILITY, FRESNO COUNTY



ATTACHMENT C
WASTE DISCHARGE REQUIREMENTS ORDER NO. 5-01-255

SLUDGE APPLICATION AREA

SELMA-KINGSBURG-FOWLER CSD
WASTEWATER TREATMENT FACILITY, FRESNO COUNTY

WASTE DISCHARGE REQUIREMENTS ORDER NO. 5-01-255
FOR
SELMA-KINGSBURG-FOWLER COUNTY SANITATION DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

ATTACHMENT D
INFORMATION NEEDS FOR SLUDGE MANAGEMENT PLAN

A. Wastewater Treatment Facility (WWTF)

1. Describe treatment processes at the wastewater treatment facility.
2. List significant industrial users (SIUs) that discharge to the wastewater treatment facility and describe how SIUs affect sludge production, sludge handling, and biosolids disposal.
3. Indicate whether the WWTF has an adopted source control ordinance or a pretreatment program, and if the latter whether the program is approved by the Board.
4. Indicate whether WWTF accepts septage and, if so, describe septage handling operation facilities.
5. Provide a WWTF site map showing:
   a. Existing sludge handling facilities (e.g., sludge drying beds and sludge storage areas);
   b. Abandoned sludge handling facilities (if applicable); and
   c. Location of groundwater monitoring wells, if any, and groundwater gradient.

B. Sludge Production

1. Provide a schematic diagram showing solids flow and sludge handling operations; include, where applicable, supernatant flow and handling operations.
2. Specify the quantity of sludge expected to annually accumulate in each wastewater treatment process, how it is quantified, and the expected removal frequency.
3. For sludge handling facilities with sludge drying beds:
   a. Describe number and size of sludge drying beds;
   b. Describe sludge drying bed construction (e.g., liner, leachate collection system);
   c. If sludge drying beds are not lined, thoroughly describe measures taken to ensure that area groundwater is not adversely affected by sludge drying operations; and
   d. Indicate the expected frequency with which sludge will be applied to and removed from sludge drying beds.
4. Describe how biosolids are transferred to onsite biosolids storage facility (if applicable). If biosolids are removed directly from sludge drying beds, provide a plan that indicates when during the year you expect to dispose of biosolids and explain that whoever is responsible for disposing of your biosolids will be able to remove and dispose of it at this time.

C. Biosolids Characterization

1. Describe proposed sampling procedures by indicating number of samples, sample locations, and sample composition. For reference consult *POTW Sludge Sampling an Analysis Guidance Document*, published by the EPA Publication No. 833-B-89-100.
2. Describe the methods proposed to meet the necessary levels of pathogen reduction (i.e., Class A or B according to 40 CFR 503.32) for the proposed method of sludge disposal.
3. Describe the methods proposed to meet vector reduction requirements, in accordance with 40 CFR Part 503.33.

D. Biosolids Storage

1. If on-site biosolids storage is used,
   a. Describe:
      i. Size of biosolids storage area
      ii. How frequently it will be used (emergency basis only or routine use)
      iii. Typical storage duration
      iv. Leachate controls
      v. Erosion controls
      vi. Run-on/runoff controls
   b. Indicate measures that will be taken to ensure that area groundwater is not adversely affected by the biosolids storage facility.
   c. For biosolids storage facilities that contain biosolids between 1 October and 30 April, describe how facilities are designed and maintained to prevent washout or inundation from a storm or flood with a return frequency of 100 years.
   d. Provide a map of showing setback distances from (where applicable)
      i. Property lines
      ii. Domestic water supply wells
      iii. Non-Domestic water supply wells
      iv. Public roads and occupied onsite residences
      v. Surface waters, including wetlands, creeks, ponds, lakes, underground aqueducts, and marshes
      vi. Primary agricultural drainage ways
      vii. Occupied non-agricultural buildings and off-site residences
      viii. Primary tributary to a waterway or reservoir used for domestic water supply
      ix. Domestic surface water supply intake

E. Spill Response Plan

1. Emergency contacts and notification procedures
2. Personal protective equipment requirements
3. Response instructions for
   a. spill during biosolids transport
   b. storage facility failure
   c. when hazardous or other unauthorized material is found

F. Method of Disposal

1. Describe and provide the following information related to biosolids disposal method(s). If more than one method will be utilized, include the percentage of annual biosolids production expected to be disposed of by each method.

   a. Landfill Disposal

      i. Name(s) and location(s) of landfill(s).

      ii. Waste discharge requirements order numbers adopted by the Regional Board that regulate the landfill(s).

      iii. Present classification of the landfill(s).

      iv. Name and telephone number of the contact person at the landfill(s).

   b. Incineration

      i. Name(s) and location(s) of incineration site(s).

      ii. Waste discharge requirements order numbers adopted by the Regional Board that regulate the incineration site(s).

      iii. Method of disposal of ash from the incineration site(s).

      iv. Names and locations of facilities receiving ash from the incineration site(s), if applicable.

      v. Name and telephone number of the contact person at the incineration site(s).

   c. Composting

      i. Name(s) and location(s) of composting site(s).

      ii. Waste discharge requirements order numbers adopted by the Regional Board that regulate the composting site(s).

      iii. Name and telephone number of the contact person at the composting site(s).

   d. Land Application

i. Ownership of the site(s) where biosolids are applied.

ii. Assessor Parcel Numbers (APNs) of site(s) where biosolids are applied.

iii. Waste discharge requirements order numbers adopted by the Regional Board that regulate the biosolids application site(s).

WASTE DISCHARGE REQUIREMENTS ORDER NO.
FOR
SELMA-KINGSBURG-FOWLER COUNTY SANITATION DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

ATTACHMENT E
STANDARD MONITORING WELL PROVISIONS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing at least the information specified in this document. Wells may be installed after the executive officer's approval of the workplan. Upon installation of the monitoring wells, the Discharger shall submit a report of results, as described below. A registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California must sign all workplans and reports.

Monitoring Well Installation Workplan

A. General Information:
   Monitoring well locations and rationale
   Survey details
   Equipment decontamination procedures
   Health and safety plan
   Topographic map showing any existing monitoring wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details: describe drilling and logging methods

C. Monitoring Well Design:
   Casing diameter
   Borehole diameter
   Depth of surface seal
   Well construction materials
   Diagram of well construction
   Type of well cap
   Size of perforations and rationale
   Grain size of sand pack and rationale
   Thickness and position of bentonite seal and sand pack
   Depth of well, length and position of perforated interval

D. Well Development:
   Method of development to be used
   Method of determining when development is complete
   Method of development water disposal

E. Surveying Details: discuss how each well will be surveyed to a common reference point

F. Soil Sampling (if applicable):

Cuttings disposal method
Analyses to be run and methods
Sample collection and preservation method
Intervals at which soil samples are to be collected
Number of soil samples to be analyzed and rationale
Location of soil samples and rationale
QA/QC procedures

G. Well Sampling:
Minimum time after development before sampling (48 hours)
Well purging method and amount of purge water
Sample collection and preservation method
QA/QC procedures

H. Water Level Measurement:
The elevation reference point at each monitoring well shall be within 0.01 foot. Ground surface elevation at each monitoring well shall be within 0.1 foot. Method and time of water level measurement shall be specified.

I. Proposed time schedule for work.

Monitoring Well Installation Report of Results

A. Well Construction:
Number and depth of wells drilled
Date(s) wells drilled
Description of drilling and construction
Approximate locations relative to facility site(s)
A well construction diagram for each well must be included in the report, and should contain the following details:
Total depth drilled
Depth of open hole (same as total depth drilled if no caving occurs)
Footage of hole collapsed
Length of slotted casing installed
Depth of bottom of casing
Depth to top of sand pack
Thickness of sand pack
Depth to top of bentonite seal
Thickness of bentonite seal
Thickness of concrete grout
Boring diameter
Casing diameter

Casing material
Size of perforations
Number of bags of sand
Well elevation at top of casing
Depth to ground water
Date of water level measurement
Monitoring well number
Date drilled
Location

B. Well Development:

Date(s) of development of each well
Method of development
Volume of water purged from well
How well development completion was determined
Method of effluent disposal
Field notes from well development should be included in report.

C. Well Surveying: provide reference elevations for each well and surveyor's notes

D. Water Sampling:

Date(s) of sampling
How well was purged
How many well volumes purged
Levels of temperature, EC, and pH at stabilization
Sample collection, handling, and preservation methods
Sample identification
Analytical methods used
Laboratory analytical data sheets
Water level elevation(s)
Groundwater contour map

E. Soil Sampling (if applicable):

Date(s) of sampling
Sample collection, handling, and preservation method
Sample identification
Analytical methods used
Laboratory analytical data sheets

WASTE DISCHARGE REQUIREMENTS ORDER NO. 5-01-255
FOR
SELMA-KINGSBURG-FOWLER COUNTY SANITATION DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

ATTACHMENT E
STANDARD MONITORING WELL PROVISIONS

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   Monitoring well locations and rationale
   Survey details
   Equipment decontamination procedures
   Health and safety plan
   Topographic map showing any existing monitoring wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details: describe drilling and logging methods

C. Monitoring Well Design:
   Casing diameter
   Borehole diameter
   Depth of surface seal
   Well construction materials
   Diagram of well construction
   Type of well cap
   Size of perforations and rationale
   Grain size of sand pack and rationale
   Thickness and position of bentonite seal and sand pack
   Depth of well, length and position of perforated interval

D. Well Development:
   Method of development to be used
   Method of determining when development is complete
   Method of development water disposal

E. Surveying Details: discuss how each well will be surveyed to a common reference point

F. Soil Sampling (if applicable):
   Cuttings disposal method

Analyses to be run and methods
Sample collection and preservation method
Intervals at which soil samples are to be collected
Number of soil samples to be analyzed and rationale
Location of soil samples and rationale
QA/QC procedures

G. Well Sampling:
Minimum time after development before sampling (48 hours)
Well purging method and amount of purge water
Sample collection and preservation method
QA/QC procedures

H. Water Level Measurement:
The elevation reference point at each monitoring well shall be within 0.01 foot. Ground surface elevation at each monitoring well shall be within 0.1 foot. Method and time of water level measurement shall be specified.

I. Proposed time schedule for work.

Monitoring Well Installation Report of Results

A. Well Construction:
Number and depth of wells drilled
Date(s) wells drilled
Description of drilling and construction
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Thickness of bentonite seal
Thickness of concrete grout
Boring diameter
Casing diameter
Casing material
Size of perforations

Number of bags of sand
Well elevation at top of casing
Depth to ground water
Date of water level measurement
Monitoring well number
Date drilled
Location

B. Well Development:
Date(s) of development of each well
Method of development
Volume of water purged from well
How well development completion was determined
Method of effluent disposal
Field notes from well development should be included in report.

C. Well Surveying: provide reference elevations for each well and surveyor's notes

D. Water Sampling:
Date(s) of sampling
How well was purged
How many well volumes purged
Levels of temperature, EC, and pH at stabilization
Sample collection, handling, and preservation methods
Sample identification
Analytical methods used
Laboratory analytical data sheets
Water level elevation(s)
Groundwater contour map

E. Soil Sampling (if applicable):
Date(s) of sampling
Sample collection, handling, and preservation method
Sample identification
Analytical methods used
Laboratory analytical data sheets

INFORMATION SHEET

ORDER NO. 5-01-255
SELMA-KINGSBURG-FOWLER CSD WWTF
FRESNO COUNTY

Introduction

The Selma-Kingsburg-Fowler County Sanitation District (hereafter Discharger) owns and operates a Wastewater Treatment Facility (WWTF or Facility) and discharges undisinfected secondary-treated wastewater to evaporation/percolation ponds (hereafter disposal ponds). The WWTF is about two miles west of Kingsburg in Sections 21 and 28, T16S, R22E, MDB&M. The WWTF provides municipal and industrial sewerage service for the Cities of Selma, Kingsburg and Fowler and unincorporated County areas. Waste Discharge Requirements Order No. 82-008 for the Discharger currently prescribes the terms and conditions for the WWTF's discharge to disposal ponds.

The WWTF is an extended aeration activated sludge system that consists of three equalization basins, headworks, two aerated grit chambers, scum removal area, three aeration basins (two with surface aerators and one with diffuse aeration), four clarifiers, two dual media filters, a facultative pond, one dissolved air flotation thickener, one gravity thickener, two aerobic digesters, six disposal ponds, 39 paved sludge drying beds, a sludge processing and storage area, and an 84-acre sludge application area along with 180 acres of contiguous buffer zone property and 35 acres of storm water drainage ponds.

The Discharger changed from facultative treatment to an extended aeration mode of activated sludge after experiencing difficulties in treating seasonal industrial food-processing discharges in the late 1970s. When the Discharger changed its treatment process, it eliminated the need for the three equalization basins and the facultative pond, as originally designed. This reduced the design flow of the Facility from 8.0 to 6.5 mgd. In 1984, the Discharger completed a major, four-part plant upgrade construction project that increased capacity back to the original design flow of 8.0 mgd. The Discharger now uses equalization basins as contingency for short-term storage of influent that could result in pass-through or interference. The Discharger temporarily digests sludge in the facultative pond converted with floating mechanical aerators and in one of the aeration basins when aerobic digesters need to undergo maintenance.

The WWTF's process flow is as follows: Five Archimedes spiral screw pumps pump raw wastewater to the headworks. The Discharger measures wastewater flow with a parshall flume and collects influent samples after the comminutors. The Discharger has two comminutors, so it can always utilize one if clogging becomes problematic. From the headworks, wastewater is routed into two grit chambers. From the grit chambers, wastewater is routed into a scum collection area, where the Discharger skims off floatables and disposes of them in a landfill. From the scum collection area, the Discharger routes wastewater to one or more of the three aeration basins. From the aeration basins, the Discharger routes wastewater to one or more of the four clarifiers. From the clarifiers about 50 percent of the effluent is routed through two dual media filters that operate in parallel. The Discharger indicated that media filters probably have little effect on effluent quality, as it has not replaced the media in the filters since 1979. From the media filters or bypass of them, effluent is routed to a holding pond from which it is routed to disposal ponds. A flow process diagram of the Facility is shown in Attachment B, a part of the proposed Order.

Pretreatment

The Discharger's pretreatment program is regulated by Special Order No. 85-244, which requires the Discharger to implement the pretreatment regulations prescribed in 40 CFR 403. Pretreatment requirements specified in the proposed Order supercede the requirements in Special Order No. 85-244 for the Discharger. Twelve significant industrial users (SIUs) discharge to the WWTF. KES Kingsburg L.P. and Upright, Inc. are categorical industrial users, while the remaining ten (Bee Sweet Citrus, Inc., Boghosian Raisin Packing Company, Inc., Cantisano Foods, Inc., Del Monte Foods, International Raisins, Inc., Lion Dehydrator, Lion Raisins, National Raisin Company, Simonian Fruit Company, and Sun-Maid Growers) are non-categorical industrial users. Industrial flows account for about 20 percent of the wastewater discharged to SKF's Facility.

Sludge Management and Biosolids Application

From clarifiers the Discharger returns sludge to aeration basins as needed, or routes it to the dissolved air flotation thickener. The Discharger routes sludge from the dissolved air flotation thickener to one of the two aerobic digesters, and supernatant back to the headworks. From the aerobic digesters, the Discharger applies sludge to sludge drying beds at a solids level of about 2.5 percent. The Discharger uses 23 sludge drying beds east of the aeration basins totaling 5.1 acres, and 16 sludge drying beds west of the aeration basins totaling 5.5 acres. All sludge drying beds are asphalt-paved with underdrain piping systems. The Discharger collects leachate from the west beds and routes it to the headworks, while it routes leachate collected from the east beds to aeration basin No. 3. Due to the configuration of the piping system, the Discharger must route leachate to different areas in the treatment system. After about one month of drying the sludge, the Discharger transfers sludge from drying beds to a two-acre sludge processing area that is underlain by soil-cement or uses one or more sludge drying beds for storage. The Discharger continually mixes sludge in the sludge processing area to aid in the drying process. The Discharger contracts with a licensed biosolids applicator, currently McCarthy Farms to remove biosolids in the processing area for land application. The removal is done at least annually, usually in October.

Prior to the rainy season, the Discharger normally applies anaerobic digester sludge directly to the sludge application area to ensure that the aerobic digesters have adequate capacity for the winter months. Order No. 82-008 requires the Discharger to monitor sludge discharged to the sludge application area for volume and quality (i.e., nitrogen and metals), soils within the sludge application area for nitrogen and metals, and groundwater passing upgradient and downgradient of the sludge application area for waste constituents including nitrate and metals.

Water Recycling

Robert L. Dennis (hereafter User) submitted a Report of Water Reclamation, dated 21 March 1990, pursuant to section 13522.5 of the California Water Code. However, the User has yet to submit a Title 22 Engineering Report to the California Department of Health Services (DHS) pursuant to Title 22, California Code of Regulations, section 60323 (Title 22). Water Reclamation Requirements Order

No. 90-192 adopted by the Board on 22 June 1990 for the User prescribe the terms and conditions for the recycling of WWTF effluent on 25 acres of farmland just south of the WWTF. The User submitted an Irrigation Management Plan dated 24 September 1990 that indicated about 16 acres of orchard would receive effluent via flood irrigation. The Discharger has not discharged effluent to this farmland since April 1994. In 1998, the Discharger purchased 16.25 acres from the User. While effluent has not been recycled under the above permit since April 1994, the User and the Discharger both requested that Order No. 90-192 remain active in case they decide to resume water reclamation. Currently, the Discharger disposes most of its treated wastewater by evaporation or percolation. The Discharges disposes a small amount of treated wastewater by (1) irrigating crops in the sludge application area, (2) washdown within treatment plant, and (3) landscape irrigation at the WWTF.

Hydrology and Soils

Regional groundwater flows to the southwest and the depth of water occurs about 20 to 30 feet below ground surface, according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 1998. Predominately, the Discharger's source water is groundwater provided by the Cities of Fowler, Kingsburg, and Selma (through California Water Service Company). About five percent of source water originates from private wells, mostly from Lion Raisins, Inc. and Sun-Maid Growers of California, Inc. Annual Water Quality Reports in 1998 indicate an average EC (as µmhos/cm) in source water from the City of Fowler of 140, Kingsburg of 310, and Selma of 220.

Regional topography indicates a slight slope of about 1 foot per 1,400 feet toward the south. Surface water drains to the Ward Drainage Canal, which traverses the WWTF and sludge application area. The Ward Drainage Canal drains into Cole Slough, which eventually drains into the Kings River. According to the *Eastern Fresno Area Soil Survey*, conducted by the National Resource Conservation Service, and published in 1971, soils near the WWTF consist primarily of Delhi and Dello loamy sands. Delhi loamy sands are formed from wind deposits of sandy material. These soils are excessively drained, rapidly permeable, and coarse-textured. The Dello loamy sands are formed from wind deposits of sandy material when conditions result in poor drainage (e.g., high water table). When the water table rises substantially, ponds will from in some low-lying areas above these soils, but if the water table is low these soils will exhibit rapid permeabilities. High water tables used to exist near the WWTF, but have been lowered by local groundwater extraction for irrigation, according to KSA in 1991, the Discharger's consulting hydrogeologist.

The average annual evapotranspiration rate is about 62 inches, according to the California Irrigation Management Information System Reference Evapotranspiration map. The pan evaporation rate is typically the evapotranspiration rate divided by 0.7, which in this case would equate to about 89 inches/year. According to *Water in Environmental Planning*, by Thomas Dunne and Luna Leopold, the amount of evaporation from a small pond is typically about 90 percent of the pan evaporation rate. Under this methodology, the evaporation rate from disposal ponds would be about 80 inches/year (6.7 feet/year). Average annual precipitation is about 12 inches.

A water balance was performed to quantify the amount of effluent that might be percolating from disposal ponds. The average wastewater inflow to the Facility is about 2.9 mgd (3,270 acre-feet/year). The water balance used the five disposal ponds that comprise 105 acres, as the Discharger rarely uses the sixth disposal pond. To determine the amount of evaporation from the disposal ponds, an evaporation rate of 6.7 feet/year was used, which corresponds to about 700 acre-feet/year of effluent evaporating from the disposal ponds. As such, the remaining wastewater (2,570 acre-feet/year) will percolate to groundwater. Using a design total nitrogen concentration of 15 mg/L will result in an annual nitrogen loading of about 1,000 lbs/acre, if not attenuated in the soil profile, has a reasonable potential to degrade groundwater.

Local Land Use

The City of Kingsburg is about two miles east of the WWTF. Vie-Del Winery is about one mile north of the sludge application area and Sun-Maid Growers of California, Inc. is about one mile northeast of the sludge application area. Irrigated and fertilized commercial vineyards and orchards are found completely surrounding the Facility, for at least 0.5 miles in all directions. Within 60 feet of the Facility boundaries are the following: a turkey ranch to the south; an asphalt and concrete recycling facility with excavation activities to the southwest; and an abandon construction material landfill to the northeast. Approximately five miles to the north-northwest is the Selma Pressure Treating US EPA superfund cleanup site. Approximately, 7,500 feet to the southeast, at the corner of Clarkson Avenue and Highland Avenue (Highway 43) are the following: a regulatory-harvested eucalyptus grove and Rocha's Dairy and Farming.

Groundwater Monitoring

The Discharger monitors eleven domestic wells in the WWTF vicinity. Two domestic wells (DW-4 and DW-10) have consistently exhibited nitrate-nitrogen concentrations above the drinking water standard of 10 mg/L. Monitoring data from 1995 to 2000 indicates that DW-10 has exceeded this limit in all sampling events, while DW-4 has exceeded it about fifty percent of the time. DW-4 is expected to be upgradient of WWTF operations and DW-10, which is immediately adjacent to and downgradient of a poultry ranch, is expected to be downgradient. Self-monitoring data from 1995 through May 2000 characterize average and maximum concentrations of nitrate-nitrogen in domestic wells near the Facility as follows:

DW No.	Distance from Facility (ft)	Orientation	Nitrate-Nitrogen (mg/L) Average	Maximum
DW-1	600	West	4.5	9.0
DW-3	2500	East	1.0	2.2
DW-4	2500	East	10.1	13.8
DW-5	1000	West	4.2	8.1
DW-6	600	South	2.8	5.1
DW-8	7500	West-southwest	3.0	4.1
DW-9	4500	Southwest	5.9	10.2

DW No.	Distance from Facility (ft)	Orientation	Nitrate-Nitrogen (mg/L) Average	Maximum
DW-10	2000	Southwest	29.6	57.3
DW-11	< 50	Adjacent	5.5	8.9
DW-12	3500	West	4.4	7.4

The use of domestic wells to monitor the effect of WWTF operation on the uppermost aquifer is inadequate, as these wells are not constructed in a way that will yield conclusive results (e.g., the eleven domestic wells are typically perforated from 120 to 165 feet below ground surface). By letter dated 8 November 2000, the Board approved a proposal from the Discharger to install a groundwater monitoring network around its disposal ponds. This network will facilitate evaluation of the effect of WWTF's discharges on the uppermost layer of water representative of the uppermost aquifer. Unless groundwater monitoring results from this network show that the Discharger's activities have adversely affected groundwater quality, it is not appropriate to require the Discharger to continue monitoring groundwater quality in domestic wells.

Effluent Violations

A review of self-monitoring data from 1998 and 1999 indicates that the Discharger occasionally violated its effluent limitations for TSS, settleable solids, EC, and pH. At the time of each violation, the Discharger notified the Board in writing and promptly corrected the conditions causing the violation. The Discharger's effluent violations do not appear to be chronic.

Water Quality Control Plan for the Tulare Lake Basin

The Board adopted a Water Quality Control Plan for the Tulare Lake Basin, Second Edition (hereafter Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for waters of the Basin. The Basin Plan identifies beneficial uses of Valley Floor Waters (e.g., Cole Slough) as agricultural and industrial service and process supply, water contact and noncontact water recreation, warm freshwater habitat, wildlife habitat, groundwater recharge, and preservation of rare and endangered species. The Basin Plan identifies the beneficial uses of underlying groundwater as municipal, domestic, industrial process and service, and agricultural supply.

The Basin Plan indicates that degradation of groundwater in the Tulare Lake Basin by salts is unavoidable without a plan for removing the salts from the Basin. In the absence of a valley wide drain to carry salts out of the valley, the Basin Plan indicates that the only other solution is to manage the rate of degradation by minimizing the salt loads to groundwater. The Board implements this policy, in part, by prescribing effluent salinity limits in waste discharge requirements for all discharges to land in the Basin. The Basin Plan's discharge salinity limit consists of narrative and numerical limits:

> "The incremental increase in salts from use and treatment must be controlled to the extent possible. The maximum EC shall not exceed the EC of the source water plus 500 µmhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources."

Water in the Tulare Lake Basin is in short supply, requiring importation of surface waters from other parts of the State. The Basin Plan encourages reclamation on irrigated crops wherever feasible and indicates that where opportunities exist to replace uses of fresh water with reclaimed water, evaporation of reclaimable wastewater is not an acceptable permanent disposal method. Since the WWTF has a design flow above 1.0 mgd, the Basin Plan requires that the WWTF provide at least secondary treatment. Secondary treatment consists of 80 percent BOD and total suspended solids (TSS) removal or a monthly average effluent BOD and TSS concentration of not more than 40 mg/L each, whichever is more restrictive.

Antidegradation

The antidegradation directives of section 13000 of the California Water Code require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan (including by reference State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation" Policy).

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Board to evaluate that fully characterizes:

- all waste constituents to be discharged, the background quality of the uppermost layer of the uppermost aquifer
- the background quality of other waters that may be affected
- the underlying hydrogeologic conditions
- waste treatment and control measures
- how treatment and control measures are justified as best practicable treatment and control
- the extent the discharge will impact the quality of each aquifer
- the expected degradation compared to water quality objectives

In allowing a discharge, the Board must comply with CWC section 13263 in setting appropriate conditions. The Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and

factors that affect that capacity. The applicable beneficial uses (industrial, agricultural, and domestic supply in this instance), procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity are set forth in the Basin Plan.

This discharge has been occurring for years. Previous conditions of discharge have specified that no degradation is allowed. However, certain waste constituents in municipal wastewater are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater. Some degradation for certain constituents is consistent with maximum benefit to the people of California because the technology, energy, water recycling, and waste management advantages of municipal utility service to the State far outweigh the environmental impact damage of a community that would otherwise be reliant on numerous concentrated individual wastewater systems. Economic prosperity of valley communities is of maximum benefit to the people of California, and therefore is a sufficient reason to accommodate increases in wastewater discharge provided terms of reasonable degradation are defined and met. The proposed Order authorizes some degradation consistent with the maximum benefit to the people of the State.

Groundwater monitoring data at this site is insufficient to establish the most appropriate receiving water limits. In addition, as explained elsewhere in this information sheet, certain aspects of waste treatment and control practices may not have been met and, if not, and are unlikely to be justified as representative of BPTC. Reasonable time is necessary to gather specific information about the facility and the site to make informed, appropriate, long-term decisions. This proposed Order, therefore, establishes receiving water limitations to assure protection of the beneficial uses of waters of the State pending the completion of certain tasks and provides time schedules to complete specified tasks. The tasks provide that the Discharger is expected to identify, implement, and adhere to best practicable treatment and control as individual practices are reviewed and upgraded in this process. During this period, degradation may occur from certain constituents, but can never exceed water quality objectives (or background water quality should it exceed objectives) or cause nuisance.

Water quality objectives define the least stringent limits that could apply as water quality limitations for groundwater at this location, except where background quality unaffected by the discharge already exceeds the objective. The values below reflect water quality objectives that must be met to maintain specific beneficial uses of groundwater. Unless natural background for a constituent proves higher, the groundwater quality limit established in proposed Order is the most stringent of the values listed for the listed constituents.

Constituent	Units	Value	Beneficial Use	Criteria or Justification
Ammonia	mg/L	0.5	MUN[1]	Taste and Odor[2]
Boron	mg/L	0.7	AGR[3]	Boron sensitivity[4]
Chloride	mg/L	106	AGR[3]	Chloride sensitivity on certain crops irrigated via sprinklers[4]
		142	AGR[3]	Chloride sensitivity on certain crops[4]
		250	MUN[1]	Recommended Secondary MCL[5]
		500	MUN[1]	Upper Secondary MCL[5]

Constituent	Units	Value	Beneficial Use	Criteria or Justification
Conductivity (EC)	µmhos/cm	700	AGR[3]	Salt sensitivity[4]
		900	MUN[1]	Recommended Secondary MCL[5]
		1,600	MUN[1]	Upper Secondary MCL[5]
Iron	mg/L	0.3	MUN[1]	Secondary MCL[6]
Manganese	mg/L	0.05	MUN[1]	Secondary MCL[6]
Nitrate as N	mg/L	10	MUN[1]	Primary MCL[7]
Nitrite as N	mg/L	1	MUN[1]	Primary MCL[7]
pH	pH Units	6.5 to 8.5	MUN	Secondary MCL[8]
Sodium	mg/L	69	AGR[3]	Sodium sensitivity on certain crops[4]
Total Coliform Organisms	MPN/100 mL	2.2	MUN[1]	Basin Plan
Total Dissolved Solids	mg/L	450	AGR[3]	Salt sensitivity[4]
		500	MUN[1]	Recommended Secondary MCL[5]
		1,000	MUN[1]	Recommended Upper MCL[5]
Total Trihalomethanes	µg/L	100	MUN	MCL[9]
Chloroform	µg/L	1.1	MUN[1]	Narrative Toxicity Criteria[10]
Bromodichloromethane	µg/L	0.27	MUN[1]	Narrative Toxicity Criteria[10]
Dibromochloromethane	µg/L	0.37	MUN[1]	Narrative Toxicity Criteria[10]
Bromoform	µg/L	4.3	MUN[1]	Narrative Toxicity Criteria[10]

1 Municipal and domestic supply

2 Council of the European Union, On the Quality of Water Intended for Human Consumption, Council Directive 98/83/EC (3 November 1998).

3 Agricultural supply

4 Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)

5 Title 22, California Code of Regulations (CCR), section 64449, Table 64449-B

6 Title 22, CCR, section 64449, Table 64449-A

7 Title 22, CCR, section 64431, Table 64431-A

8 United States Environmental Protection Agency

9 Title 22, CCR, section 64439

10 California Environmental Protection Agency, Office of Environmental Health Hazard Assessment Cancer Potency Factor as a Drinking Water Level, *California Environmental Protection Agency Toxicity Criteria Database*

Municipal wastewater contains numerous dissolved inorganic waste constituents (i.e., salts, minerals) that together comprise total dissolved solids (TDS). Not every constituent is critical to a beneficial use. Constituents that are critical are individually listed. The cumulative impact from these other constituents, along with the cumulative affect of the constituents that are individually listed, can be effectively controlled using TDS as a generic indicator parameter. Most dissolved inorganic substances in water are in the ionized form and so contribute to a solution's ability to carry an electrical current, or its "electrical conductivity" (EC). EC varies both with the number and type of ions the solution contains and is strongly temperature dependent. It is standard practice to report a solution's EC at 25° Celsius

(this value is technically called "specific conductance"). Only ions can carry a current, however. Un-ionized species of weak acids or bases will not carry a current, nor will uncharged soluble organic materials, such as ethyl alcohol and glucose, even though these constituents comprise a portion of TDS. Although EC is affected by the nature of the various ions, their relative concentrations, and ionic strength of the water, EC measurements can give a practical estimate of the variations in a solution's dissolved mineral content. An empirical factor may be developed from simultaneous measurements of TDS and EC that allows for the rapid estimation of TDS from EC measurements.

Treatment Technology and Control

Given the character of municipal wastewater, secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents. Adding disinfection significantly reduces populations of pathogenic organisms, and reasonable soil infiltration rates and unsaturated soils can reduce them further. Total coliform, the indicator parameter for pathogenic organisms, should not be found in groundwater beneath a well-designed, well-operated facility. Municipal wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Degradation by nitrogen can be controlled by an appropriate secondary treatment system (e.g., oxidation ditch), tertiary treatment for nitrogen reduction, and agronomic reuse on harvested crops. The effectiveness varies, but generally best practicable treatment and control should be able to control nitrogen degradation at a concentration well below the water quality objectives.

Waste constituents that are forms of salinity pass through the treatment process and soil profile and effective control of long-term affects relies upon effective source control and pretreatment measures. In the best of circumstances, long-term land discharge of treated municipal wastewater will degrade groundwater with salt (as measured by TDS and EC) and the individual components of salts (e.g., sodium, chloride). Not all TDS constituents pass through the treatment process and soil profile in the same manner or rate. Chloride tends to pass through both rapidly to groundwater. As chloride concentrations in most groundwaters in the region are much lower than in treated municipal wastewater, chloride is a useful indicator parameter for evaluating the extent to which effluent reaches groundwater.

Other indicator constituents for monitoring for groundwater degradation due to recharged effluent include total coliform bacteria, ammonia, total nitrogen, and total trihalomethanes (when the effluent is chlorinated). Chlorine disinfection of effluent causes formation of trihalomethanes, which are priority pollutants. Treatment to reduce these in wastewater generally has not been performed, and little is known at this point on the typical impact on groundwater. Total trihalomethanes (TTHMs) are chlorinated organic materials that are toxic at low concentrations. Common TTHMs include bromoform, bromodichloromethane, dibromochloromethane, and chloroform. While the State drinking water regulations (i.e., Title 22, CCR, section 64439) establish a maximum contaminant level for TTHMs of 100 µg/L, the actual concentrations at which THMs components are considered "toxic" to humans are much lower (e.g., chloroform's human health toxicity limit is 1.1 µg/L). The Basin Plan

states that groundwaters "shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses."

Boron is another TDS constituent that may occur in wastewater in concentrations greater than groundwater depending on the source water, to the extent residents use cleaning products containing boron, and whether any industrial dischargers utilize boron (e.g., glass production, cosmetics). Still other constituents in treated municipal waste that may pass through the treatment process and the soil profile include recalcitrant organic compounds (e.g., ethylene glycol, or antifreeze), radionuclides, and pharmaceuticals. Hazardous compounds are not usually associated with domestic wastes and when present are reduced in the discharge to inconsequential concentrations through dilution with domestic waste, treatment, and the implementation of effective pretreatment programs.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (i.e., below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Discharge of residual sludge to land may also lead to increases in groundwater alkalinity and hardness to concentrations that impair the water's beneficial uses and contribute to an overall increase in TDS. Overloading is preventable and does not constitute BPTC as used in Resolution 68-16. Dissolved iron and manganese, along with elevated alkalinity, hardness and nitrogen concentrations, are useful indicators to determine whether components of the WWTF with high-strength waste constituents, such as sludge handling facilities, are ineffective in containing waste. Though iron and manganese limits are set at the water quality objective, groundwater pH is expected to remain the same as background.

Title 27

Title 27, CCR, section 20380 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for full containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, they have been conditionally exempted from Title 27, except for residual sludge and solid waste generated as part of the treatment process [section 20090(a) of Title 27]. The condition requires that the discharge not result in violation of any water quality objective in groundwater.

Treatment and storage facilities for sludge that are part of the WWTF are considered exempt from Title 27 under section 20090(a), under the condition that the facilities not result in a violation of any water quality objective. However, residual sludge (for the purposes of the proposed order, sludge that will not be subjected to further treatment by the WWTF) is not exempt from Title 27. Solid waste (e.g.,

grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

Accordingly, the municipal discharge of effluent and the operation of treatment or storage facilities associated with a municipal wastewater treatment plant can be allowed without requiring compliance with Title 27, but only if resulting degradation of groundwater is in accordance with the Basin Plan. This means, among other things, degradation of groundwater must be consistent with Resolution 68-16 and in no case greater than water quality objectives.

Proposed Order Terms and Conditions

As in other WDRs orders for municipal discharges recently adopted by the Board, the proposed Order implements a two-phased approach to setting final groundwater limitations. While the Board has determined that some degradation is in the public interest, it cannot yet determine how much due to incomplete data and evaluation of treatment and control measures. In Phase 1 of this 'implementation approach,' WDRs orders establish receiving water limitations that assure protection of the beneficial uses of groundwater pending the completion of certain tasks in accordance with a time schedule. In Phase 2, determination of site-specific groundwater limitations to be adopted in WDRs will depend upon the Board's evaluation of the results of the tasks. The numerical implementation of many Basin Plan narrative water quality objectives in Phase 1, in accord with the procedures prescribed in the Basin Plan, represents the threshold above which there will be adverse impacts on beneficial uses of groundwater (e.g., drinking water MCLs). Since the proposed Order implements existing water quality objectives, the Board is not required to undertake further consideration of the factors in Water Code section 13241, including economic considerations.

The proposed Order requires the Discharger to implement best practicable treatment and control for the subject wastewater and the Discharger must also ensure that the discharge does not create a condition of nuisance and maintains the highest water quality consistent with the maximum benefit to the people of the State. The current treatment process incorporates secondary treatment technology.

The effluent limits prescribed in the proposed Order for BOD_5, total suspended solids (TSS), settleable solids, and EC, are based on the Basin Plan. The proposed Order carries over the effluent limitations for BOD_5, TSS, settleable solids, and pH from the previous Order. The proposed Order also implements the Basin Plan salinity limitation by requiring the monthly average effluent EC to remain less than the flow-weighted average EC of the source water plus 500 µmhos/cm. While the proposed Order requires the Discharger to monitor source water EC, the existing Order does not. The proposed Order requires the Discharger to conduct a study that establishes appropriate groundwater limitations based on the factual circumstances of the discharge. In lieu of imposing an effluent chloride limitation that may not be protective of groundwater given the present information, Staff is recommending a limit be formulated and proposed for Board consideration after the Discharger completes its groundwater study. The proposed discharge specifications regarding dissolved oxygen and freeboard are consistent with Board policy for the prevention of nuisance conditions.

The Basin Plan requires municipal facilities discharging in excess of 1 mgd to provide removal of 80 percent or reduction to 40 mg/L, whichever is more restrictive, of both 5-day BOD and suspended solids. While the current Order prescribes a monthly average daily discharge limit of 40 mg/L for BOD and for TSS, it does not require 80 percent removal. The proposed Order's Discharge Specification B.15 implements the Basin Plan's 80 percent removal requirement. From January 1998 to December 1999, monthly average influent and effluent BOD and suspended solids concentrations indicate that percent removals average 99 percent for BOD and 96 percent for suspended solids.

The conditions for sludge, solid waste, and biosolids management proposed in the proposed Order are intended to assure that degradation resulting from the City's management of sludge is in accordance with the Basin Plan. The proposed Order requires that storage, use and disposal of biosolids comply with the self-implementing federal regulations of 40 CFR 503, which are subject to enforcement by the U.S. Environmental Protection Agency not the Board, and the Statewide General Order for the Discharge of Biosolids (Water Quality Order No. 2000-10-DWQ) (or any subsequent document which replaces Order No. 2000-10-DWQ).

The Discharger disposes of grit onsite in a manner that is inconsistent with Title 27. The proposed Order does not allow the Discharger to continue burying grit onsite, and requires that the Discharger conduct a study that determines the extent of past grit disposal and its possible affect on groundwater. The proposed Order also requires the Discharger to submit quarterly pretreatment reports, a feasibility study for recycling effluent; and technical reports regarding sludge management, groundwater monitoring, and the capacity of disposal ponds.

The proposed Order prescribes groundwater limitations that reflect numerical and narrative water quality objectives (WQOs) for groundwater established in the Basin Plan. The proposed Order requires the discharge not to cause or contribute to exceedances of the groundwater limitations. Designated beneficial uses of area groundwater include municipal (MUN) and agricultural (AGR) supply. The Basin Plan states that "[w]ater quality objectives apply to all waters within a surface or ground water resource for which beneficial uses have been designated, rather than at an intake, wellhead or other point of consumption." Groundwater WQOs include (1) chemical constituents (including pesticides and radioactivity), (3) salinity, (4) tastes and odors, and (5) toxicity. For groundwaters designated MUN, the Basin Plan establishes numerical WQOs for bacteria and chemical constituents. The latter consists of drinking water maximum contaminant levels (MCLs) in Title 22, sections 64431 (Inorganic Chemicals); 64431 (Fluoride); 64443 (Radioactivity) 64444 (Organic Chemicals); 64449 (Secondary MCLs – Consumer Acceptance Limits); and lead not to exceed 0.015 mg/L.

The total coliform organism limitation of nondetect in Groundwater Limitation D.1.a is necessary to ensure the Basin Plan's WQO for bacteria is not exceeded (i.e., the concentration of TCO over any 7-day period shall be less than 2.2/100 mL). Groundwater Limitation D.1.b prescribes a value of 10 mg/L as total nitrogen to ensure that groundwater nitrate levels will remain at or below the Title 22 primary drinking water MCL for nitrate (45 mg/L as nitrate or 10 mg/L as N). The limitations for chemical constituents prescribed in Groundwater Limitation D.1.c reflect the Title 22 drinking water MCLs.

Groundwater Limitation D.2 prescribes limits for boron, chloride, EC, sodium, and TDS to protect existing and future beneficial uses of area groundwater for agriculture. The majority of area agriculture water supply is currently delivered via flood irrigation. Accordingly, it may not be critical to maintain the low salt concentrations in agricultural supply required for sprinkler irrigation. The proposed Order requires the Discharger to conduct a BPTC evaluation of the discharge (including source control, pretreatment, and treatment). Once it completes its BPTC evaluation, the Discharger may, at its discretion, propose for Board consideration site-specific, constituent-specific limits for salinity constituents (e.g., chloride, EC, sodium, and TDS). In the next Order regulating the discharge, the Board will evaluate the Discharger's justification of BPTC implementation and its proposed groundwater salinity limitations. It is possible upon further documentation that the resulting degradation from salt can be found consistent with Resolution 68-16.

The last two groundwater limitations reflect narrative WQOs contained in the Basin Plan. Groundwater Limitation D.3 implements the Basin Plan's WQO for taste and odor. The taste threshold for ammonia, a waste constituent in municipal wastewater, is 0.5 mg/L. The limitation of 0.5 mg/L for ammonia ensures that this waste constituent will not adversely affect the beneficial use of area groundwater for human consumption. Lastly, Groundwater Limitation D.4 implements the Basin Plan's WQO for toxicity.

Monitoring Requirements

Section 13267 of the CWC authorizes the Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

The proposed Order contains influent and effluent monitoring of all constituents that required monitoring in the previous Order, with the addition of influent monitoring for settleable solids and effluent monitoring for total dissolved solids (TDS), ammonia, general minerals, and metals. The addition of influent settleable solids monitoring will enable a quick determination of the efficiency of the treatment process. The addition of effluent TDS, ammonia, general minerals, metals, and priority pollutant monitoring is to develop a more complete characterization of the discharge and its impact on groundwater. To determine whether the Discharger is in compliance with Discharge Specification B.3, it is required to submit on an annual basis the flow weighted average values for EC and TDS reported annually by water purveyors serving the cities of Selma, Kingsburg, and Fowler. To determine the efficiency of the Discharger's operation, the Discharger is required to monitor influent daily for pH and settleable solids; and twice/week for BOD_5 and TSS. In order to adequately characterize its wastewater effluent, the Discharger is required to monitor daily for pH and settleable solids; twice/week for TSS, EC, and BOD_5; twice/month for TDS, ammonia, TKN, nitrate-nitrogen; quarterly for general minerals; and annually for metals. To ensure that disposal ponds do not create nuisance conditions, the Discharger is required to monitor freeboard weekly and dissolved oxygen content twice/week.

The proposed Order requires the Discharger to collect a composite sample of sludge at least annually, in accordance with EPA's *POTW SLUDGE SAMPLING AND ANALYSIS GUIDANCE DOCUMENT, AUGUST 1989,* and test for arsenic, cadmium, molybdenum, copper, lead, mercury, nickel, selenium, and zinc. Further, the proposed Order requires that storage, use and disposal of biosolids comply with the self-implementing federal regulations of 40 CFR 503, which are subject to enforcement by the US Environmental Protection Agency not the Board, and the Statewide General Order for the Discharge of Biosolids (Water Quality Order No. 2000-10-DWQ) (or any subsequent document which replaces Order No. 2000-10-DWQ).

To determine if sludge handling facilities have a reasonable potential to degrade groundwater, the Discharger needs to install at least one well downgradient of sludge drying beds. The proposed Order requires the Discharger to monitor groundwater quarterly for EC, TDS, Total Coliform Organisms, total organic carbon, ammonia, nitrates, TKN, and general minerals in monitoring wells downgradient of its sludge drying beds and around its disposal ponds. The proposed Order also requires monitoring of groundwater dissolved oxygen and oxidation-reduction potential. These two parameters, which can be readily obtained through the use of hand-held probes during the time of sample collection, provide information to evaluate the extent to which microbial degradation of organic matter has created anoxic or anaerobic conditions (i.e., conditions of very low or no dissolved oxygen). Factual evidence of organic overloading would include the presence of total organic carbon and soluble manganese in extracted groundwater along with very low or no dissolved oxygen and nitrate, and oxidation-reduction potentials corresponding to manganese reduction. The proposed Order also requires the Discharger to monitor the above wells annually for metals. Further, the proposed Order requires the Discharger to monitor groundwater elevations monthly, as groundwater flow direction may be complicated by recharge of storm water retained in basins north of the sludge application area, conveyance of surface water through the Ward Drainage Canal, groundwater mounding from the disposal ponds, and groundwater pumping for irrigation.

The Title 27 zero leakage protection strategy relies heavily on extensive groundwater and unsaturated zone monitoring to increase a discharger's awareness of, and accountability for, compliance with the prescriptive and performance standards. With a high volume, concentrated, uncontained discharge to land, monitoring takes on even greater importance. The proposed Order includes monitoring of applied waste quality, application rates, and groundwater.

The proposed Order requires the Discharger to evaluate its groundwater monitoring network installed pursuant to Provision F.7 and expand it as necessary pursuant to the hydrolgeologic investigation conducted pursuant to Provision F.8. One or more wells will monitor the quality of groundwater unaffected by the discharge and serve as 'background.'

The proposed Order requires the Discharger to evaluate the uppermost aquifer for a representative zone or zones for evaluation of compliance with Groundwater Limitations. The approved representative zones of the aquifer will be identified in the hydrogeologic investigation described in Provision F.8. Wells must be installed to measure the quality of water within these zones for comparison with Groundwater Limitations as part of the proposed Order. The proposed Order provides a schedule for

providing the monitoring network, for these representative zones. Until the network is installed, the Board cannot adequately evaluate compliance with Groundwater Limitations. Use of groundwater monitoring wells installed pursuant to Provision F.7 will continue for the purposes of monitoring the effects of the discharge on the uppermost layer of groundwater until an alternate network suitable for evaluating the effectiveness of BPTC and compliance with Groundwater Limitations is approved by the Executive Officer in accord with the process outlined in the proposed Order.

The Discharger must monitor groundwater for constituents present in the discharge and capable of reaching groundwater and violating groundwater limitations if its treatment and control, and any dependency of the process on sustained environmental attenuation, proves inadequate. As some groundwater limitations are based on background water quality, it is essential that the Discharger utilize wells in a location that can provide groundwater quality representative of the discharge area but unaffected by both the discharge and other waste sources. The proposed Order requires the Discharger to utilize such well(s) and characterize background water quality over a one-year period of quarterly groundwater sampling events.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. However, information is presently insufficient to develop final effluent and groundwater limitations, so the proposed Order sets limitations for the interim while site-specific, constituent-specific limits are developed in conjunction with a BPTC evaluation, including source control and pretreatment. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the best means of assuring the highest water quality possible may that could involve substantial cost. It may be appropriate to reopen the Order if applicable laws and regulations change, but the mere possibility that such laws and regulations may change is not sufficient basis for reopening the Order. The CWC requires that waste discharge requirements implement all applicable requirements.

Several other more likely reasons for reconsidering terms of the Order exist, and the Order may be opened for this purpose at the Board's discretion. Procedures require periodic review of the effectiveness of requirements at a frequency proportional to the threat the discharge has to water quality. The Order will be reopened for consideration of BPTC and establishing final numeric groundwater limitations. It is also conceivable that monitoring compliance may identify a waste constituent, possibly a toxic waste constituent, that violates or threatens to violate groundwater limitations, establishing a need to consider an appropriate numeric effluent limit for that waste constituent.

RAS:JLK:10/19/01 AMENDED