CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0067

NPDES NO. CA0084948

WASTE DISCHARGE REQUIREMENTS FOR SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT LOWER NORTHWEST INTERCEPTOR CONSTRUCTION PROJECT SACRAMENTO AND YOLO COUNTIES

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

BACKGROUND

1. The Sacramento Regional County Sanitation District (hereafter Discharger or SRCSD) submitted a Report of Waste Discharge (ROWD), dated 21 November 2003, and applied for a permit to discharge construction dewatering wastes under the National Pollutant Discharge Elimination System (NPDES) from the Lower Northwest Interceptor (LNWI) construction project. Supplemental information to complete the ROWD was submitted on 10 February 2004, 19 February 2004, 20 February 2004, 27 February 2004, and 2 April 2004.

2. The LNWI is a sanitary sewer pipeline project that will convey wastewater from North Natomas in the northwestern portion of the SRCSD service area in Sacramento County and the City of West Sacramento in Yolo County to the Sacramento Regional Wastewater Treatment Plant in Elk Grove, Sacramento County. Maps showing the geographic location of the project are provided in Attachments 1 and 2, which are parts of this Order.

3. The LNWI will allow the City of West Sacramento to cease operation of its wastewater treatment plant discharge to the Sacramento River near Clarksburg.

4. The LNWI pipeline construction project will consist of nine major sub-projects that will be built by several different contractors. These sub-projects are identified as:

   New Natomas Pump Station
   Natomas Force Main
   Northern Sacramento River Crossing
   West Sacramento Force Main
   Southport Gravity Sewer
   South River Pump Station
   Yolo Force Main
   Southern Sacramento River Crossing
   Sacramento Force Main

5. Groundwater dewatering will be required along the length of the LNWI pipeline alignment because groundwater elevations are above the construction activity. The estimated dewatering volumes and the duration of construction are expected to exceed the conditions regulated by the Dewatering and Other Low Threat Discharges to Surface Waters General Order, Waste Discharge Requirements No. 5-00-175.

6. The ROWD and supplemental information describe the dewatering discharges as follows:

Outfall	Program Element	Discharge Location	Maximum Discharge Flow, mgd	Period of Discharge
1	New Natomas Pump Station	Sacramento River north of the I Street Bridge	6.0	16 months
2	Natomas Force Main	Reclamation District 1000 facilities	3.0	17 months
3	Northern Sacramento River Crossing Launching Shaft (North)	Natomas Mutual Water Company facilities	3.7	17 months
4	Northern Sacramento River Crossing Receiving Shaft (South)	Sacramento River north of the I Street Bridge	2.4	14 months
4	West Sacramento Force Main (north of Hwy 50)	Sacramento River north of the I Street Bridge	3.3	17 months
5	West Sacramento Force Main (south of Hwy 50)	Sacramento River south of the I Street Bridge	3.3	17 months
6	Southport Gravity Sewer	Sacramento River south of the I Street Bridge	18.8	17 months
6	South River Pump Station	Sacramento River south of the I Street Bridge	5.0	16 months

Outfall	Program Element	Discharge Location	Maximum Discharge Flow, mgd	Period of Discharge
6	Yolo Force Main	Sacramento River south of the I Street Bridge	8.0	17 months
6	Southern Sacramento River Crossing Receiving Shaft (West)	Sacramento River south of the I Street Bridge	1.7	14 months
7	Southern Sacramento River Crossing Launching Shaft (East)	Sacramento River south of the I Street Bridge	2.4	17 months
7	Sacramento Force Main	Sacramento River south of the I Street Bridge	6.0	17 months

7. For the purposes of this Order, the dewatering discharges are considered to be point sources. Discharge Outfalls 2 and 3 will move geographically in Reclamation District 1000 and Natomas Mutual Water Company facilities, respectively, as construction progresses.

8. The ROWD states that construction activities will be staggered so that some, but not all, of the sub-projects will be on-going in any given month. The maximum monthly discharge flow summed over active program elements will be 63.6 mgd, and the minimum monthly discharge flow summed over active program elements will be 10.2 mgd.

9. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified the discharges as a minor discharge.

WATER QUALITY CONTROL PLANS

10. The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento River and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. These waste discharge requirements implement the Basin Plan.

11. Basin Plan water quality objectives were established to protect the beneficial uses of surface water and groundwater, and include both numeric and narrative objectives for chemical constituents, toxicity, and taste and odor. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses or exceed the maximum contaminant levels (MCLs) specified in Title 22, California Code of Regulations (CCR), or exceed numerical water quality objectives

specified in Table III-1. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals or aquatic life. The taste and odor objective states that surface water and groundwater shall not contain taste or odor producing substances in concentrations that impart undesirable tastes or odors to water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect municipal or domestic drinking water supply, agricultural supply, or any other beneficial use.

Thermal Requirements for Discharges to the Delta

12. The State Water Resources Control Board (State Board) Water Quality Control Plan for Control of Temperatures in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan) is applicable to the direct and tributary discharges to the Sacramento-San Joaquin Delta (Delta). The northern legal boundary of the Delta is the I Street Bridge across the Sacramento River between Sacramento and West Sacramento. For purposes of the Thermal Plan, the direct and tributary discharges to the Delta from the LNWI project are considered to be New Discharges of Elevated Temperature Waste.

RECEIVING WATER BENEFICIAL USES

Reclamation District 1000 and the Natomas Water Company facilities

13. Outfalls 2 and 3 discharge to Reclamation Districts 1000 and the Natomas Mutual Water Company facilities, respectively. The Basin Plan on page II-2.00 states: "Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify beneficial uses for Reclamation District 1000 and the Natomas Water Company facilities, but the Basin Plan does identify present and potential uses for the Sacramento River north of the I Street Bridge, to which they are tributary.

The Basin Plan on page II-1.00 states: "Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…" and with respect to disposal of wastewaters states that "… disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses."

Table II-1 of the Basin Plan identifies the following beneficial uses for the Sacramento River north of the I Street Bridge: municipal and domestic supply; agricultural irrigation supply; water contact and non-contact water recreation; warm and cold freshwater habitat; migration of warm

and cold aquatic organisms; spawning, reproduction, and/or early development of warm and cold aquatic organisms; wildlife habitat; and navigation.

In reviewing whether the existing and/or potential uses of the Sacramento River apply to Reclamation District 1000 and the Natomas Mutual Water Company facilities, the Regional Board has considered the following facts:

a. *Municipal and Domestic Supply and Agricultural Supply*

Reclamation District 1000 and Natomas Mutual Water Company facilities discharge into the Sacramento River. The Regional Board is required to apply the beneficial uses of municipal and domestic supply to Reclamation District 1000 and Natomas Mutual Water Company facilities based on State Board Resolution No. 88-63, which was incorporated in the Basin Plan pursuant to Regional Board Resolution 89-056. Also, since Reclamation District 1000 and Natomas Mutual Water Company facilities are ephemeral streams, they likely provide groundwater recharge during periods of low flow. The groundwater is a source of drinking water.

b. *Water Contact and Non-contact Water Recreation and Esthetic Enjoyment*

The Regional Board finds that there is ready public access to Reclamation District 1000 and Natomas Mutual Water Company facilities and waters downstream of the discharge, exclusion of the public is unrealistic, and contact recreational activities currently exist. Prior to flowing into the Sacramento River, Reclamation District 1000 and Natomas Mutual Water Company facilities flow through areas of general public access. The Sacramento River offers many recreational opportunities. Wading, swimming, boating, and canoeing are common activities occurring within the Sacramento River.

c. *Groundwater Recharge*

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater, contributing to a source of municipal and domestic supply, agricultural supply and industrial water supply.

d. Freshwater Replenishment

During periods of hydraulic continuity with the Sacramento River, Reclamation District 1000 and Natomas Mutual Water Company facilities add to the water quantity and may impact the quality of water flowing downstream in the Sacramento River, depending on the magnitude of the flows in these facilities.

e. Preservation and Enhancement of Fish, Wildlife, and Other Aquatic Resources

Reclamation District 1000 and Natomas Mutual Water Company facilities flow to the Sacramento River. The California Department of Fish and Game (DFG) has verified that the fish species present in the Sacramento River are consistent with both cold and warm water fisheries and that there is a potential for anadromous fish migration necessitating cold water. The Basin Plan (Table II-1) designates the Sacramento River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Reclamation District 1000 and Natomas Mutual Water Company facilities.

Upon review of the flow conditions, habitat values, and beneficial uses of Reclamation District 1000 and Natomas Mutual Water Company facilities, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Sacramento River are applicable to Reclamation District 1000 and Natomas Mutual Water Company facilities.

The Regional Board also finds that based on the available information and on the Discharger's application, that Reclamation District 1000 and Natomas Mutual Water Company facilities are ephemeral streams. The ephemeral nature of Reclamation District 1000 and Natomas Mutual Water Company facilities means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. Although the discharges, at times, maintain the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, natural flows within Reclamation District 1000 and Natomas Mutual Water Company facilities help support the aquatic life. Both conditions may exist within a short time span, where Reclamation District 1000 and Natomas Mutual Water Company facilities would be dry without the discharge or other NPDES discharges, and periods when sufficient background flows provide hydraulic continuity with the Sacramento River. Dry conditions occur primarily in the summer months, but dry conditions may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect beneficial uses. Significant dilution may occur during and immediately following high rainfall events.

Sacramento River north of the I Street Bridge

14. Outfalls 1 and 4 discharge directly to the Sacramento River north of the I Street Bridge. Table II-1 of the Basin Plan identifies the following beneficial uses for the Sacramento River north of the I Street Bridge: municipal and domestic supply; agricultural irrigation and stock watering supply; industrial process and service supply; water contact and non-contact water recreation; warm and cold freshwater habitat; migration of warm and cold aquatic organisms; spawning, reproduction, and/or early development of warm and cold aquatic organisms; wildlife habitat; and navigation.

Sacramento River south of the I Street Bridge

15. Outfalls 5, 6, and 7 discharge directly to the Sacramento River south of the I Street Bridge. The Sacramento River south of the I Street Bridge is within the legal boundaries of the Delta. Table II-1 of the Basin Plan identifies the following beneficial uses of the Delta: municipal and domestic supply; agricultural irrigation and stock watering supply; industrial process and service supply; water contact and non-contact water recreation; warm and cold freshwater habitat; migration of warm and cold aquatic organisms; spawning, reproduction, and/or early development of warm aquatic organisms; wildlife habitat; and navigation.

Groundwater

16. The beneficial uses of the underlying ground water are municipal and domestic, industrial service, industrial process, and agricultural supply.

ANTIDEGRADATION / 303(d) LISTING

17. State Board Resolution No. 68-16 (hereafter Resolution 68-16) and 40 Code of Federal Regulations (CFR) Section 131.12 require the Regional 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 the 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 Regional Board's policies (e.g. violation of any water quality objective). Resolution 68-16 requires that the discharge be regulated to meet best practicable treatment or control to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the State be maintained.

18. With regards to surface water, the receiving water may temporarily exceed applicable water quality objectives for certain constituents as described in this Order. However, this Order requires the Discharger to meet requirements that will result in the use of best practicable treatment or control of the discharge and will result in compliance with water quality objectives. This Order requires compliance with technology-based standards and more stringent water quality-based standards. If the discharge maintains compliance with this Order, the impact on existing water quality will be insignificant.

19. On 4 February 2003, the State Board adopted the 2002 California 303(d) list of impaired water bodies. The listing for the Sacramento River from Knight's Landing to the Delta includes diazinon, mercury, and unknown toxicity. The listing for the eastern portion of the Delta waterways includes the organo-phosphate pesticides (diazinon and chlorpyrifos), organo-chlorine Group A pesticides (including the organo-chlorine pesticides DDT, endrin aldehyde, and lindane), electrical conductivity, mercury, and unknown toxicity. The listing for the western portion of the Delta waterways includes the organo-phosphate pesticides (diazinon and chlorpyrifos), organo-chlorine Group A pesticides (including the organo-chlorine pesticides

DDT, endrin aldehyde, and lindane), mercury, and unknown toxicity. These listings require review and assessment of effluent quality to determine if applicable effluent limitations are necessary. The USEPA requires the Regional Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant.

DILUTION

20. In determining whether a discharge has the reasonable potential to contribute to an in-stream excursion above water quality standards, the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. The available dilution may also be used to calculate protective effluent limitations by applying water quality criteria at the edge of the defined mixing zone. These calculations include receiving water constituent concentrations that are typically based on reasonable worst-case conditions for flow and concentration.

Discharges from Outfalls 2 and 3

If limited or no dilution is available, effluent limitations are set equal to the applicable water quality objectives or promulgated water quality criteria which are applied at the point of discharge so the discharge will not cause the receiving stream to exceed water quality objectives or promulgated criteria established to protect the beneficial uses. In situations where receiving water flows are substantially greater than effluent flows, dilution may be considered in establishing effluent limitations. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality objectives or criteria that are applied at the point of discharge such that the discharge will not cause or contribute to the receiving stream excursion above water quality objectives or promulgated criteria established to protect the beneficial uses. Outfalls 2 and 3 discharge to receiving waters with limited or no dilution, therefore, this permit contains effluent limitations for these discharges that are set equal to the applicable water quality objectives applied at the point of discharge.

Discharges from Outfalls 1, 4, 5, 6, and 7

The Basin Plan allows the Regional Board to designate mixing zones in receiving waters provided the Discharger demonstrates that the mixing zone will not adversely impact beneficial uses. Mixing zone analyses take into account consideration of the physical, chemical and biological characteristics of the discharge and the receiving waters, the life history of and behavior of organisms in the receiving stream and the desired uses of the waters. Mixing zones are limited to small zones of initial dilution in the immediate vicinity of the discharge. Initial dilution for the constituents of concern in the direct dewatering discharges to the Sacramento River from Outfalls 1, 4, 5, 6, and 7 has been evaluated without a detailed mixing zone analysis for the following reasons:

a. The dewatering discharges consist primarily of groundwater;

b. The Sacramento River flows are substantially higher than the discharge flows; and

c. The dewatering discharges are temporary, as the entire LNWI construction project is scheduled to be completed within three years of start of construction.

REASONABLE POTENTIAL

21. USEPA adopted the *National Toxics Rule* (NTR) on 22 December 1992, which was amended on 4 May 1995 and 9 November 1999, and the *California Toxics Rule* (CTR) on 18 May 2000, which was amended on 13 February 2001. These Rules contain water quality standards applicable to this discharge. The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP) on 2 March 2000, which contains policies and procedures for implementation of the NTR and the CTR.

22. Federal Regulations at 40 CFR Part 122.44 require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. Water quality standards include the National Toxics Rule criteria, the California Toxics Rule criteria, and the Basin Plan water quality objectives. 40 CFR Section 122.44(d) sets forth requirements that apply to the State to implement narrative water quality standards. 40 CFR Section 122.44(d)(vi)(A)-(C) requires the effluent limit to be based on one or more of three options, including using EPA's recommended water quality criteria, a proposed state criterion (i.e., water quality objective), or an explicit state policy interpreting its narrative water quality criteria (i.e., the Regional Board's "Policy for Application of Water Quality Objectives" in Chapter IV of the Basin Plan).

23. Results of a monitoring study to determine whether levels of NTR, CTR, or other pollutants in the proposed discharges have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or narrative objectives and CTR/NTR criteria, were submitted with the ROWD on 21 November 2003.

The Discharger provided monitoring data from five locations along the pipeline alignment that were considered to be representative of the groundwater quality that might be encountered during construction. The five sites were located in the following program elements: New Natomas Pump Station, Natomas Force Main, West Sacramento Force Main-North, West Sacramento Force Main-South, and South River Pump Station. Sampling results for detected constituents are contained in Attachment 3, a part of this Order. The New Natomas Pump Station water quality data is assumed to be reasonably representative of the water quality of the

discharges from Outfall 1. The Natomas Force Main water quality data is assumed to be reasonably representative of the water quality of the discharges from Outfalls 2 and 3. A blend of water quality data from the Natomas Force Main and the West Sacramento Force Main-North is assumed to be reasonably representative of the discharges from Outfall 4. The West Sacramento Force Main-South water quality data is assumed to be reasonably representative of the discharges from Outfall 5. The South River Pump Station water quality data is assumed to be reasonably representative of the discharges from Outfalls 6 and 7.

24. The reasonable potential analysis for chemical constituents to exceed water quality objectives/criteria was performed by comparing the water quality sampling data for each constituent for each outfall against the applicable water quality objectives/criteria; if an objective/criterion was exceeded, the discharge was determined to have reasonable potential to exceed a water quality objective/criterion for that constituent.

25. Groundwater should have minimal concentrations of biochemical oxygen demand (BOD), total suspended solids (TSS), and settleable solids (SS). Best practicable treatment or control technology can treat wastewater to concentrations of 10 mg/l for BOD and TSS, and 0.1 ml/l for SS. This Order requires the discharges from all outfalls to comply with effluent limitations for BOD, TSS and SS that are achievable with best practicable treatment or control.

Discharges to Ephemeral Streams (Outfalls 2 and 3)

26. Based on information submitted as part of the ROWD, the Regional Board finds that the discharges from Outfalls 2 and 3 have reasonable potential to cause or contribute to in-stream excursions above water quality standards for aluminum, arsenic, electrical conductivity (EC), manganese, methyl-tert-butyl ether (MTBE), and selenium. Effluent limitations for these constituents are included in this Order.

27. **Aluminum**
Based on information included in analytical laboratory results submitted by the Discharger, aluminum in the discharges from Outfalls 2 and 3 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative toxicity objective. The Basin Plan requires the Regional Board to consider information submitted by the Discharger and other interested parties, and numerical criteria and guidelines developed by other agencies and organizations, in determining what numeric limitations will properly implement the narrative toxicity objective. US EPA developed National Recommended Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for aluminum; 87 ug/l as a four-day average (chronic) and 750 ug/l as a one-hour average (acute). US EPA's 2002 National Recommended Water Quality Criteria summary document notes that these criteria were developed at low hardness values. It also states that aluminum is substantially less toxic at higher hardness, but the effects of hardness on the criteria are not well quantified at this time. Aluminum exists as aluminum silicate in suspended clay particles, which US EPA acknowledges might be less toxic than other forms of aluminum. Correspondence with US EPA indicates that the criterion is not

intended to apply to aluminum silicate particles. Therefore, a monitoring method that excludes clay particles is likely to be more appropriate. The use of acid-soluble analysis for compliance with the aluminum criterion appears to satisfy US EPA.

Available data in the Report of Waste Discharge indicates an effluent aluminum concentration of 180 ug/l is likely for discharges from Outfalls 2 and 3, which exceeds the chronic criteria. Applying 40 CFR section 122.44(d)(1)(vi)(B), effluent limitations for aluminum are included in this Order for Outfalls 2 and 3, and are based on US EPA's Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat and the Basin Plan narrative toxicity objective. The Discharger is unable to comply with the effluent limitations for aluminum without treatment.

28. **Arsenic**

Based on information included in analytical laboratory results submitted by the Discharger, arsenic in the discharge has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituents objective for Outfalls 2 and 3. The chemical constituents objective incorporates California MCLs as water quality objectives for waters designated as municipal or domestic supply and effectively prohibits chemical constituents in concentrations that adversely affect beneficial uses. The Basin Plan requires the Regional Board to consider information submitted by the Discharger and other interested parties, and numerical criteria and guidelines developed by other agencies and organizations, in determining what numeric limitation will properly implement the narrative objective for chemical constituents. In accordance with the Basin Plan, and the application of State Board Resolution 88-63, domestic and municipal uses (MUN) are designated to the receiving streams. The California primary MCL for arsenic is 50 ug/l. The US EPA has lowered the Federal primary MCL for arsenic to 10 ug/l. State and Federal Safe Drinking Water Acts require California MCLs to be at least as stringent as Federal MCLs. Therefore, California must lower its MCL to 10 ug/L or lower in the near future. Available data in the Report of Waste Discharge indicates an effluent arsenic concentration of 11 ug/l is likely for discharges from Outfalls 2 and 3.

The Federal Regulations at 40 CFR Section 122.44(d)(1)(vi)(A), allows the State to establish effluent limitations using an explicit state policy interpreting its narrative criterion. Therefore, use of the US EPA primary MCL is appropriate to implement the narrative chemical constituents objective. The Discharger is unable to comply with the effluent limitations for arsenic without treatment.

29. **Electrical Conductivity**

Based on information included in analytical laboratory results submitted by the Discharger, the discharges from Outfalls 2 and 3 have reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituents objective.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations are likely to be 1200 umhos/cm.

The Federal Regulations at 40 CFR Section 122.44(d)(1)(vi)(B) allows the State to establish effluent limitations using the agricultural water quality goals to implement the narrative chemical constituents objective. The discharges have reasonable potential to cause or contribute to exceedances of the Agricultural Water Quality Goal of 700 umhos/cm for EC. This Order includes effluent limitations for EC from Outfalls 2 and 3 to ensure that downstream beneficial uses are protected. The Discharger is unable to comply with the effluent limitations for EC without treatment.

30. **Manganese**
Based on information included in analytical laboratory results submitted by the Discharger, manganese in the discharges from Outfalls 2 and 3 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituents objective. The DHS adopted a secondary MCL for manganese of 50 ug/l. Available data in the Report of Waste Discharge indicates effluent manganese concentrations are likely to be 160 ug/l for Outfalls 2 and 3. Effluent limitations for manganese are included in this Order for Outfalls 2 and 3 based on the Basin Plan narrative chemical constituents objective and the DHS secondary MCL. The Discharger is unable to comply with the effluent limitations for manganese without treatment.

31. **Methyl-tert-butyl ether (MTBE)**
Based on information included in analytical laboratory reports submitted by the Discharger, MTBE in the discharges from Outfalls 2 and 3 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituents objective. The DHS adopted a primary MCL for MTBE of 13 ug/l and a secondary MCL for MTBE of 5 ug/l. Available data in the Report of Waste Discharge indicates the effluent MTBE concentration is likely to be 7.7 ug/l from Outfalls 2 and 3. Effluent limitations for MTBE are included in this Order for Outfalls 2 and 3 based on the Basin Plan chemical constituents objective and the DHS secondary MCL. The Discharger is unable to comply with the effluent limitations for MTBE without treatment.

32. **Selenium**
Based on information in analytical laboratory results submitted by the Discharger, the discharges from Outfalls 2 and 3 have reasonable potential to cause or contribute to an in-stream excursion above the NTR criteria for the protection of freshwater aquatic life for selenium. The chronic

criterion for selenium is 5.0 ug/l, expressed as total recoverable metal. Available data in the Report of Waste Discharge indicates the effluent selenium concentration is likely to be 8 ug/l for Outfalls 2 and 3. The effluent concentrations have exceeded the chronic criterion and the receiving waters are ephemeral; therefore, the NTR criteria must be met at the point of discharge. The Discharger is unable to comply with the effluent limitations for selenium without treatment.

Direct Discharges to the Sacramento River (Outfalls 1, 4, 5, 6, and 7)

33. Assimilative capacity for the direct discharges to the Sacramento River was evaluated as described in the Information Sheet using Sacramento River 1Q10, 7Q10, harmonic mean, and 30Q5 flows, which were obtained by running US EPA's DFLOW computer model with stream gauge information dated from October 1948 through September 2002 using USGS gauge number 1144750 located at the Freeport Bridge. The 1Q10, 7Q10, harmonic mean and 30Q5 flows obtained were 3729, 3968, 10,064 and 5026 mgd, respectively.

The background receiving water data used in the dilution analysis was obtained from SRCSD's Sacramento Regional Wastewater Treatment Plant SIP monitoring submittal, dated 27 February 2003, which contains monthly receiving water data at Freeport Bridge, including total recoverable metals, from December 2001 through November 2002. For manganese and iron, the dilution analysis was performed using the background dissolved metal concentration in the river. The dilution analysis predicts the resultant downstream Sacramento River receiving water concentrations after the effluent mixes with the background receiving water, and is described in more detail in the Information Sheet. Assimilative capacity was determined by comparing the calculated resultant downstream Sacramento River receiving water concentrations with the water quality objectives. US EPA's *NPDES Permit Writer's Manual*, EPA 833-B-96-003, recommends using the highest background river concentration in the dilution analysis.

Discharges from Outfall 1

34. Based on information included in analytical laboratory results submitted by the Discharger, EC in the discharge from Outfall 1 has reasonable potential to cause or contribute to excursions above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations from Outfall 1 are likely to be 890 umhos/cm.

The maximum background receiving water EC concentration was 680 umhos/cm. The dilution analysis for EC indicates the downstream receiving water EC concentration after complete mix of the effluent with the receiving water is 680 umhos/cm. Effluent limitations for EC from Outfall 1 are not included in this Order based on adequate receiving water assimilative capacity.

Discharges from Outfall 4

35. Based on information submitted as part of the ROWD, the Regional Board finds that the discharges from Outfall 4 have reasonable potential to cause or contribute to in-stream excursions above water quality standards for aluminum, arsenic, EC, iron, manganese, MTBE and selenium.

36. **Aluminum**
Based on information included in analytical laboratory results submitted by the Discharger, aluminum in the discharges from Outfall 4 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative toxicity objective prior to the consideration of dilution. The Basin Plan requires the Regional Board to consider information submitted by the Discharger and other interested parties, and numerical criteria and guidelines developed by other agencies and organizations, in determining what numeric limitations will properly implement the narrative toxicity objective. US EPA developed National Recommended Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for aluminum; 87 ug/l as a four-day average (chronic) and 750 ug/l as a one-hour average (acute). US EPA's 2002 National Recommended Water Quality Criteria summary document notes that these criteria were developed at low hardness values. It also states that aluminum is substantially less toxic at higher hardness, but the effects of hardness on the criteria are not well quantified at this time. Aluminum exists as aluminum silicate in suspended clay particles, which US EPA acknowledges might be less toxic than other forms of aluminum. Correspondence with US EPA indicates that the criterion is not intended to apply to aluminum silicate particles. Therefore, a monitoring method that excludes clay particles is likely to be more appropriate. The use of acid-soluble analysis for compliance with the aluminum criterion appears to satisfy US EPA.

Available data in the Report of Waste Discharge indicates the effluent aluminum concentration from Outfall 4 is likely to be between 180 ug/l to 900 ug/l, which exceeds the chronic criteria. The maximum background receiving water concentration of aluminum was 3000 ug/l. The dilution analysis for aluminum indicates the worst-case downstream receiving water concentration of aluminum after complete mix of the effluent with the receiving water is 3000 ug/l. Applying 40 CFR section 122.44(d)(1)(vi)(B), effluent limitations for aluminum are included in this Order for Outfall 4, and are based on US EPA's Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat and the Basin Plan narrative toxicity objective. The Discharger is unable to comply with the effluent limitations for aluminum without treatment.

37. **Arsenic**

Based on information included in analytical laboratory results submitted by the Discharger, arsenic in the discharge has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituents objective from Outfall 4 prior to the consideration of dilution. The chemical constituents objective incorporates California MCLs as water quality objectives for waters designated as municipal or domestic supply and effectively prohibits chemical constituents in concentrations that adversely affect beneficial uses. The Basin Plan requires the Regional Board to consider information submitted by the Discharger and other interested parties, and numerical criteria and guidelines developed by other agencies and organizations, in determining what numeric limitation will properly implement the narrative objective for chemical constituents. The beneficial uses of the Sacramento River include domestic and municipal uses (MUN). The California primary MCL for arsenic is 50 ug/l. The US EPA has lowered the Federal primary MCL for arsenic to 10 ug/l. State and Federal Safe Drinking Water Acts require California MCLs to be at least as stringent as Federal MCLs. Therefore, California must lower its MCL to 10 ug/l or lower in the near future. Available data in the Report of Waste Discharge indicates effluent arsenic concentrations between 11 ug/l and 15 ug/l are likely for discharges from Outfall 4.

The maximum background receiving water concentration of arsenic was 2.2 ug/l. The dilution analysis for arsenic indicates the downstream receiving water concentration of arsenic after complete mix of the effluent with the receiving water is 2.2 ug/l. Effluent limitations for arsenic from Outfall 4 are not included in this Order based on adequate receiving water assimilative capacity.

38. **Electrical Conductivity**

Based on information included in analytical laboratory results submitted by the Discharger, EC in the discharge from Outfall 4 has reasonable potential to cause or contribute to excursions above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations are likely to range between 1200 umhos/cm to 1500 umhos/cm from Outfall 4.

The maximum background receiving water EC concentration was 680 umhos/cm. The dilution analysis for EC indicates the downstream receiving water EC concentration after complete mix

of the effluent with the receiving water is 680 umhos/cm. Effluent limitations for EC from Outfall 4 are not included in this Order based on adequate receiving water assimilative capacity.

39. **Iron**

Based on information included in analytical laboratory results submitted by the Discharger, total concentrations of iron in the discharge from Outfall 4 has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan Sacramento River site specific objective of 300 ug/l for the dissolved fraction prior to the consideration of dilution. Available data in the Report of Waste Discharge indicates the effluent total recoverable iron concentrations are likely to range between 170 to 870 ug/l from Outfall 4.

Dilution for dissolved iron was evaluated using USGS NAWQA data from 1996-1998 for dissolved iron in the receiving water near the Freeport Bridge. The maximum background receiving water dissolved iron concentration was 48 ug/l. The dilution analysis for iron indicates the worst-case downstream receiving water concentration of iron after complete mix of the effluent with the receiving water is 50 ug/l. Effluent limitations for iron are not included in this Order for Outfall 4 based on adequate receiving water assimilative capacity.

40. **Manganese**

Based on information included in analytical laboratory results submitted by the Discharger, total concentrations of manganese in the discharges from Outfall 4 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan Sacramento River site specific objective of 50 ug/l for the dissolved fraction prior to the consideration of dilution. Available data in the Report of Waste Discharge indicates effluent total recoverable manganese concentrations are likely to range between 160 ug/l to 680 ug/l from Outfall 4.

Dilution for dissolved manganese was evaluated using USGS NAWQA data from 1996-1998 for dissolved manganese in the receiving water near the Freeport Bridge. The maximum background receiving water dissolved manganese concentration was 10 ug/l. The dilution analysis for manganese indicates the worst-case downstream receiving water concentration of manganese after complete mix of the effluent with the receiving water is 11 ug/l. Effluent limitations for manganese are not included in this Order for Outfall 4 based on adequate receiving water assimilative capacity.

41. **Methyl-tert-butyl ether (MTBE)**

Based on information included in analytical laboratory reports submitted by the Discharger, MTBE in the discharge from Outfall 4 has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution. The DHS adopted a primary MCL for MTBE of 13 ug/l and a secondary MCL for MTBE of 5 ug/l. Available data in the Report of Waste Discharge indicates the effluent MTBE concentration is likely to range between <0.5 ug/l to 7.7 ug/l from Outfall 4.

The maximum background receiving water concentration of MTBE was 1.9 ug/l. The dilution analysis for MTBE indicates the downstream receiving water concentration of MTBE after complete mix of the effluent with the receiving water is 1.9 ug/l. Effluent limitations for MTBE from Outfall 4 are not included in this Order based on adequate receiving water assimilative capacity.

42. **Selenium**
Based on information in analytical laboratory results submitted by the Discharger, the discharge from Outfall 4 has reasonable potential to cause or contribute to an in-stream excursion above the NTR criteria for the protection of freshwater aquatic life for selenium prior to the consideration of dilution. The chronic criterion for selenium is 5.0 ug/l, expressed as total recoverable metal. Available data in the Report of Waste Discharge indicates the effluent selenium concentrations are likely to range between 8 ug/l and 12 ug/l.

The maximum background receiving water concentration of selenium was less than 1.0 ug/l. The dilution analysis for selenium indicates the downstream receiving water concentration of selenium after complete mix of the effluent with the receiving water is less than 1.0 ug/l. Effluent limitations for selenium from Outfall 4 are not included in this Order based on adequate receiving water assimilative capacity.

Discharges from Outfall 5

43. Based on information submitted as part of the ROWD, the Regional Board finds that the discharges from Outfall 5 have reasonable potential to cause or contribute to in-stream excursions above water quality standards for EC and manganese.

44. **Electrical Conductivity**
Based on information included in analytical laboratory results submitted by the Discharger, EC in the discharge from Outfall 5 has reasonable potential to cause or contribute to excursions above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations are likely to be 900 umhos/cm from Outfall 5.

The maximum background receiving water EC concentration was 680 umhos/cm. The dilution analysis for EC indicates the downstream receiving water EC concentration after complete mix

of the effluent with the receiving water is 680 umhos/cm. Effluent limitations for EC from Outfall 5 are not included in this Order based on adequate receiving water assimilative capacity.

45. **Manganese**
Based on information included in analytical laboratory results submitted by the Discharger, total concentrations of manganese in the discharges from Outfall 5 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan Sacramento River site specific objective of 50 ug/l for the dissolved fraction prior to the consideration of dilution. Available data in the Report of Waste Discharge indicates effluent total recoverable manganese concentrations are likely to be 340 ug/l from Outfall 5.

Dilution for dissolved manganese was evaluated using USGS NAWQA data from 1996-1998 for dissolved manganese in the receiving water near the Freeport Bridge. The maximum background receiving water manganese concentration was 10 ug/l. The dilution analysis for manganese indicates the worst-case downstream receiving water concentration of manganese after complete mix of the effluent with the receiving water is 10 ug/l. Effluent limitations for manganese are not included in this Order for Outfall 5 based on adequate receiving water assimilative capacity.

Discharges from Outfalls 6, and 7

46. Based on information submitted as part of the ROWD, the Regional Board finds that the discharges from Outfalls 6, and 7 have reasonable potential to cause or contribute to in-stream excursions above water quality standards for EC, manganese, and sulfate.

47. **Electrical Conductivity and Sulfate**
Based on information included in analytical laboratory results submitted by the Discharger, EC in the discharges from Outfalls 6 and 7 have reasonable potential to cause or contribute to excursions above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations are likely to be 2300 umhos/cm from Outfalls 6 and 7. The maximum background receiving water EC concentration was 680 umhos/cm. The dilution analysis for EC indicates the worst-case downstream receiving water EC concentration after complete mix of the effluent with the receiving water is 694 umhos/cm. Effluent limitations for

EC from Outfalls 6 and 7 are not included in this Order based on adequate receiving water assimilative capacity.

Based on information included in analytical laboratory results submitted by the Discharger, sulfate in the discharges from Outfalls 6 and 7 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan chemical constituents objective. The DHS adopted a secondary MCL for sulfate, which includes a recommended level of 250 mg/l, an upper limit of 500 mg/l, and a short-term maximum of 600 mg/l. Available data in the Report of Waste Discharge indicates effluent sulfate concentrations are likely to be 280 mg/l from Outfalls 6 and 7. The maximum background receiving water concentration of sulfate was 12 mg/l. The dilution analysis for sulfate indicates the worst-case downstream receiving water concentration of sulfate after complete mix of the effluent with the receiving water is 14 mg/l. Effluent limitations for sulfate from Outfalls 6 and 7 are not included in this Order based on adequate receiving water assimilative capacity.

48. **Manganese**
Based on information included in analytical laboratory reports submitted by the Discharger, total concentrations of manganese in the discharges from Outfalls 6 and 7 have reasonable potential to cause or contribute to in-stream excursions above the Basin Plan Delta site-specific numeric objective of 50 ug/l for the dissolved fraction prior to the consideration of dilution. Available data in the Report of Waste Discharge indicates the effluent total recoverable manganese concentrations are likely to be 2600 ug/l from Outfalls 6 and 7.

Dilution for dissolved manganese was evaluated using USGS NAWQA data from 1996-1998 for dissolved manganese in the receiving water near the Freeport Bridge. The maximum background receiving water dissolved manganese concentration was 10 ug/l. The dilution analysis for manganese indicates the worst-case downstream receiving water concentration of manganese after complete mix of the effluent with the receiving water is 33 ug/l. Effluent limitations for manganese for Outfalls 6 and 7 are not included in this Order based on adequate receiving water assimilative capacity.

EFFLUENT LIMITATION DETERMINATION

49. Daily maximum and average monthly effluent limitations for all chemical constituents except for selenium were established using the statistical methods described in US EPA's Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001). The daily maximum and average monthly effluent limitations for selenium were established using the statistical methods described in the SIP. Effluent limit calculations are discussed in detail in the Information Sheet.

50. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304

(Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

51. The Discharger states that the individual construction contractors will provide the necessary treatment to comply with the effluent limitations prescribed in this Order. This Order contains a provision requiring that prior to commencement of construction, documentation shall be submitted describing the methods that will be used to comply with effluent limitations.

52. The Discharger is considering placing some of the dewatering discharges on land. This Order does not contain provisions for discharges to land. If the Discharger chooses land discharge for some or all of the effluent, the Discharger shall apply to the Regional Board for appropriate waste discharge requirement coverage.

53. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Relations Code Section 21000, et. Seq.), in accordance with Section 13389 of the California Water Code.

54. The Regional Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The Information Sheet and Attachments 1 through 7 are part of this Order.

55. The Regional 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.

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

57. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect immediately following permit adoption, provided EPA has no objections.

58. Any person adversely affected by this action of the Regional Board may petition the State Board to review the action. The petition must be received by the State Board Office of the Chief Counsel, P.O. Box 100, Sacramento, CA 95812-0100, within 30 days of the date the action was taken. Copies of the law and regulations applicable to filing petitions will be provided upon request.

IT IS HEREBY ORDERED that the Sacramento Regional County Sanitation District, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water

Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.

2. Neither the discharges nor their treatment shall create a condition of pollution or nuisance as defined in Section 13050 of the California Water Code.

3. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13 [See attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)].

B. Effluent Limitations:

1. Discharge flows shall not exceed the following:

Outfall	Maximum discharge flow, mgd
1	6.0
2	3.0
3	3.7
4	5.7
5	3.3
6	33.5
7	8.4

2. The following are applicable to all discharges:

   a. Discharges shall not contain chlorine in excess of 0.02 mg/l (instantaneous maximum).

   b. The discharges shall not have a pH less than 6.5 nor greater than 8.5.

   c. For discharges to the Delta, the maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20°F.

3. In addition to the effluent limitations contained in B.1 and B.2, effluent shall not exceed the limits specified below:

a. Outfall 1:

Constituents	Units	Monthly Average	Daily Maximum
BOD[1]	mg/l	10	30
	lb/day[2]	500	1502
Total Suspended Solids	mg/l	10	30
	lb/day[2]	500	1502
Settleable Solids	ml/l	---	0.1

[1] 5-day, 20° C biochemical oxygen demand
[2] Based upon: *x* mg/l x 8.345 x 6.0 mgd = *y* lb/day

b. Outfall 2:

Constituents	Units	Monthly Average	Daily Maximum
BOD[1]	mg/l	10	30
	lb/day[2]	250	751
Total Suspended Solids	mg/l	10	30
	lb/day[2]	250	751
Settleable Solids	ml/l	---	0.1
Aluminum [4]	ug/l	71	143
	lb/day[3]	1.7	3.6
Arsenic	ug/l	10	---
	lb/day[3]	0.25	---
Electrical Conductivity	umhos/cm	700	1022
Manganese	ug/l	50	---
	lb/day[3]	1.3	---
MTBE	ug/l	5	---
	lb/day[3]	0.1	---
Selenium	ug/l	4.1	8.2
	lb/day[3]	0.1	0.2

[1] 5-day, 20° C biochemical oxygen demand
[2] Based upon: *x* mg/l x 8.345 x 3.0 mgd = *y* lb/day
[3] Based upon: *x* ug/l x (1 mg/1000 ug) x 8.345 x 3.0 mgd = *y* lb/day
[4] Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

c. Outfall 3:

Constituents	Units	Monthly Average	Daily Maximum
BOD[1]	mg/l	10	30
	lb/day[2]	309	926
Total Suspended Solids	mg/l	10	30
	lb/day[2]	309	926
Settleable Solids	ml/l	---	0.1
Aluminum [4]	ug/l	71	143
	lb/day[3]	2.2	4.4
Arsenic	ug/l	10	---
	lb/day[3]	0.3	---
Electrical Conductivity	umhos/cm	700	1022
Manganese	ug/l	50	---
	lb/day[3]	1.5	---
MTBE	ug/l	5	---
	lb/day[3]	0.15	---
Selenium	ug/l	4.1	8.2
	lb/day[3]	0.13	0.25

[1] 5-day, 20° C biochemical oxygen demand
[2] Based upon: *x* mg/l x 8.345 x 3.7 mgd = *y* lb/day
[3] Based upon: *x* ug/l x (1 mg/1000 ug) x 8.345 x 3.7 mgd = *y* lb/day
[4] Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

d. Outfall 4:

Constituents	Units	Monthly Average	Daily Maximum
BOD[1]	mg/l	10	30
	lb/day[2]	475	1427
Total Suspended Solids	mg/l	10	30
	lb/day[2]	475	1427
Settleable Solids	ml/l	---	0.1
Aluminum [4]	ug/l	71	143
	lb/day[3]	3.4	6.8

[1] 5-day, 20° C biochemical oxygen demand
[2] Based upon: *x* mg/l x 8.345 x 5.7 mgd = *y* lb/day
[3] Based upon: *x* ug/l x (1 mg/1000 ug) x 8.345 x 5.7 mgd = *y* lb/day
[4] Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

e. Outfall 5:

Constituents	Units	Monthly Average	Daily Maximum
BOD[1]	mg/l	10	30
	lb/day[2]	275	826
Total Suspended Solids	mg/l	10	30
	lb/day[2]	275	826
Settleable Solids	ml/l	---	0.1

[1] 5-day, 20° C biochemical oxygen demand
[2] Based upon: *x* mg/l x 8.345 x 3.3 mgd = *y* lb/day

f. Outfall 6:

Constituents	Units	Monthly Average	Daily Maximum
BOD[1]	mg/l	10	30
	lb/day[2]	2796	8387
Total Suspended Solids	mg/l	10	30
	lb/day[2]	2796	8387
Settleable Solids	ml/l	---	0.1

[1] 5-day, 20° C biochemical oxygen demand
[2] Based upon: *x* mg/l x 8.345 x 33.5 mgd = *y* lb/day

g. Outfall 7:

Constituents	Units	Monthly Average	Daily Maximum
BOD[1]	mg/l	10	30
	lb/day[2]	701	2103
Total Suspended Solids	mg/l	10	30
	lb/day[2]	701	2103
Settleable Solids	ml/l	---	0.1

[1] 5-day, 20° C biochemical oxygen demand
[2] Based upon: *x* mg/l x 8.345 x 8.4 mgd = *y* lb/day

C. Solids Disposal:

1. Collected screenings, sludges and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and is consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.

2. Any proposed change in solids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and EPA Regional Administrator at least **90 days** in advance of the change.

D. Receiving Water Limitations:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/L (ppm). The monthly median of the mean daily dissolved oxygen concentration at this location shall not fall below 85 percent of saturation in the main water mass, and the 95th percentile concentration shall not fall below 75 percent of saturation.

2. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.

3. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.

4. Aesthetically undesirable discoloration.

5. Fungi, slimes, or other objectionable growths.

6. The turbidity to increase as follows:

   a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.

   b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

   c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.

   d. More than 10 percent where natural turbidity is greater than 100 NTUs.

7. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 pH units.

8. Deposition of material that causes nuisance or adversely affects beneficial uses.

9. The normal ambient temperature to increase more than 5°F.

10. In the Delta, the discharge shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of the river channel at any point.

11. In the Delta, the discharge shall not cause a surface temperature rise greater than 4°F above the natural temperature of the receiving water at any time or place.

12. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

13. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

14. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

15. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board, the State Water Resources Control Board, or the U.S. Environmental Protection Agency pursuant to the CWA and regulations adopted thereunder.

16. Taste or odor-producing substances to impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial use**.**

E. Provisions:

1. The Discharger shall obtain written agreements from all agencies planning to accept the dewatering discharges that the Discharger has permission to discharge construction dewatering water to their facilities. These agreements shall also state that the facilities have adequate conveyance capacity for the dewatering discharges, and that the discharges

will not cause the agencies to violate the terms of any NPDES permits or other applicable regulations.

2. Prior to commencement of dewatering discharges, the Discharger will submit documentation describing the treatment methods that will be used to achieve compliance with the effluent limitations contained in this Order.

3. If new information is received indicating that the circumstances under which direct dewatering discharges to the Sacramento River occur are different than as described in the Findings, this Order may be reopened to establish different effluent limitations for the direct discharges to the Sacramento River based on an evaluation of the new information.

4. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating and site management personnel shall be familiar with its contents.

5. The Discharger shall comply with Monitoring and Reporting Program No. R5-2004-0067, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

6. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."

7. This Order expires on **1 June 2009,** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.

8. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of or clearance from the State Board (Division of Water Rights).

9. In the event of any change in control or ownership of land or waste discharge facilities recently 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.

10. 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, address and telephone number of the persons responsible for contact with the Regional

Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 4 June 2004.

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0067

NPDES NO. CA0084948
FOR
SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT
LOWER NORTHWEST INTERCEPTOR CONSTRUCTION PROJECT
SACRAMENTO AND YOLO COUNTIES

This Monitoring and Reporting Program is issued pursuant to Water Code Section 13383. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program. Specific sample station locations shall be established under direction of the Regional Board's staff, and a description of the stations shall be attached to this Order.

EFFLUENT MONITORING

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall, and shall be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded.

Effluent monitoring from all discharges shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
20ºC BOD_5	mg/l, lb/day	Grab	Monthly
Suspended Solids	mg/l, lb/day	Grab	Monthly
Settleable Solids	ml/l	Grab	Monthly
Flow	mgd	Meter	Continuous
Temperature[1]	ºF	Grab	Monthly
pH[1]	pH Units	Grab	Monthly
Chlorine	mg/l	Grab	Monthly

[1] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained.

In addition to the monitoring described above, the following additional monitoring requirements are specified for individual outfalls:

Outfalls 2 and 3:

Constituent	Units	Type of Sample	Sampling Frequency
Aluminum[1]	ug/L, lb/day	Grab	Monthly
Arsenic [2]	ug/L, lb/day	Grab	Monthly
Electrical Conductivity[3]	umhos/cm	Grab	Monthly
Manganese [2]	ug/L, lb/day	Grab	Monthly
MTBE	ug/L, lb/day	Grab	Monthly
Selenium [2]	ug/L, lb/day	Grab	Monthly

[1] Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

[2] Total recoverable

[3] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained.

Outfall 4:

Constituent	Units	Type of Sample	Sampling Frequency
Aluminum[1]	ug/L, lb/day	Grab	Monthly

[1] Compliance can be demonstrated using either total, or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

Outfalls 6 and 7:

Constituent	Units	Type of Sample	Sampling Frequency
Electrical Conductivity[1]	umhos/cm	Grab	Monthly

[1] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents

listed above, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge.

RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Receiving water monitoring shall be monthly, and include at least the following:

Station	Description
R-1	50 feet upstream from the point of discharge
R-2	50 feet downstream from the point of discharge

Constituents	Units	Sampling Frequency
Temperature[1]	ºF	Monthly
pH[1]	pH Units	Monthly
Electrical Conductivity[1]	µmhos/cm	Monthly
Turbidity	NTU	Monthly

[1] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-1 and R-2. Attention shall be given to the presence or absence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life
e. Visible films, sheens or coatings
f. Fungi, slimes, or objectionable growths
g. Potential nuisance conditions

Notes on receiving water conditions shall be summarized in the monitoring report.

REPORTING

Discharger self-monitoring results shall be submitted to the Regional Board monthly. Monitoring results shall be submitted to the Regional Board by the **first day of the second month** following sample collection. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether

the discharge complies with waste discharge requirements. The highest daily maximum for the month, monthly and weekly averages, and medians should be determined and recorded.

If the Discharger monitors any pollutant 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.

Post-discharge reports shall be submitted after completion of each section of the project as identified in this Order. The reports shall include:

1. A statement that the construction of that section of the project was completed, and the date of completion.
2. Discussion of any deviations from the Report of Waste Discharge.
3. A discussion whether the discharge caused any discoloration or turbidity in the receiving water.
4. Identification and explanation of the causes of any violations of this Order.
5. Discussion of any corrective actions taken to comply with the General Order.
6. Identification and explanation of any complaints received regarding the discharge.

All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

RECORDS

Records of all monitoring information and copies of all reports required by this Order shall be retained for a period of at least five years from the date of the sample, observation, measurement, or report.

These records shall include:

1. The date, place, and time of site inspections, sampling, visual observation, and/or measurement;

2. The individual(s) who performed the site inspections, sampling, visual observations, and/or measurements;

3. Flow measurements or estimates (if required);

4. The date and time of analyses;

5. The laboratory or staff who performed the analyses.

The Discharger shall implement the above monitoring program on the first day of discharge.

Ordered By: THOMAS R. PINKOS, Executive Officer

4 June 2004
(Date)

INFORMATION SHEET
WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2004-0067
SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT
LOWER NORTHWEST INTERCEPTOR CONSTRUCTION PROJECT
SACRAMENTO AND YOLO COUNTIES

Project Description and Background

The Sacramento Regional County Sanitation District (hereafter Discharger or SRCSD) submitted a Report of Waste Discharge (ROWD), dated 21 November 2003, and applied for a permit to discharge construction dewatering wastes under the National Pollutant Discharge Elimination System (NPDES) from the Lower Northwest Interceptor (LNWI) construction project. Supplemental information to complete the ROWD was submitted on 10 February 2004, 19 February 2004, 20 February 2004, 27 February 2004, and 2 April 2004.

The LNWI is a sanitary sewer pipeline project that will convey wastewater from North Natomas in the northwestern portion of the SRCSD service area in Sacramento County and the City of West Sacramento in Yolo County to the Sacramento Regional Wastewater Treatment Plant in Elk Grove, Sacramento County. Maps showing the geographic location of the project are provided in Attachments 1 and 2, which are parts of this Order. The LNWI will allow the City of West Sacramento to cease operation of its wastewater treatment plant discharge to the Sacramento River near Clarksburg.

The LNWI pipeline construction project will consist of nine major sub-projects that will be built by several different contractors. These sub-projects are identified as:

New Natomas Pump Station (NNPS)
Natomas Force Main (NFM)
Northern Sacramento River Crossing (NSRC)
West Sacramento Force Main (WSFM)
Southport Gravity Sewer (SGS)
South River Pump Station (SRPS)
Yolo Force Main (YFM)
Southern Sacramento River Crossing (SSRC)
Sacramento Force Main (SFM)

Groundwater dewatering will be required along the length of the LNWI pipeline alignment because groundwater elevations are above the construction activity. The estimated dewatering volumes and the duration of construction are expected to exceed the conditions regulated by the Dewatering and Other Low Threat Discharges to Surface Waters General Order, Waste Discharge Requirements No. 5-00-175.

The ROWD and supplemental information describes the dewatering discharges as follows:

Outfall	Program Element	Discharge Location	Maximum Discharge Flow, mgd	Period of Discharge
1	New Natomas Pump Station	Sacramento River north of the I Street Bridge	6.0	16 months
2	Natomas Force Main	Reclamation District 1000 facilities	3.0	17 months
3	Northern Sacramento River Crossing Launching Shaft (North)	Natomas Mutual Water Company facilities	3.7	17 months
4	Northern Sacramento River Crossing Receiving Shaft (South)	Sacramento River north of the I Street Bridge	2.4	14 months
4	West Sacramento Force Main (north of Hwy 50)	Sacramento River north of the I Street Bridge	3.3	17 months
5	West Sacramento Force Main (south of Hwy 50)	Sacramento River south of the I Street Bridge	3.3	17 months
6	Southport Gravity Sewer	Sacramento River south of the I Street Bridge	18.8	17 months
6	South River Pump Station	Sacramento River south of the I Street Bridge	5.0	16 months
6	Yolo Force Main	Sacramento River south of the I Street Bridge	8.0	17 months
6	Southern Sacramento River Crossing Receiving Shaft (West)	Sacramento River south of the I Street Bridge	1.7	14 months
7	Southern Sacramento River Crossing Launching Shaft (East)	Sacramento River south of the I Street Bridge	2.4	17 months
7	Sacramento Force Main	Sacramento River south of the I Street Bridge	6.0	17 months

For the purposes of this Order, the dewatering discharges are considered to be point sources. Discharge Outfalls 2 and 3 will move geographically in Reclamation District 1000 and Natomas Mutual Water Company facilities, respectively, as construction progresses.

The ROWD states that construction activities will be staggered so that some, but not all, of the sub-projects will be on-going in any given month. The maximum monthly discharge flow summed over active program elements will be 63.6 mgd, and the minimum monthly discharge flow summed over active program elements will be 10.2 mgd.

WATER QUALITY CONTROL PLANS

The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento River and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. These waste discharge requirements implement the Basin Plan.

Basin Plan water quality objectives were established to protect the beneficial uses of surface water and groundwater, and include both numeric and narrative objectives for chemical constituents, toxicity, and taste and odor. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses or exceed the maximum contaminant levels (MCLs) specified in Title 22, California Code of Regulations (CCR), or exceed numerical water quality objectives specified in Table III-1. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The taste and odor objective states that surface water and groundwater shall not contain taste or odor producing substances in concentrations that impart undesirable tastes or odors to water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect municipal or domestic drinking water supply, agricultural supply, or any other beneficial use.

Thermal Requirements for Discharges to the Delta

The State Board *Water Quality Control Plan for Control of Temperatures in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan) is applicable to the direct and tributary discharges to the Sacramento-San Joaquin Delta (Delta). The northern legal boundary of the Delta is the I Street Bridge across the Sacramento River between Sacramento and West Sacramento. For purposes of the Thermal Plan, the direct and tributary discharges to the Delta from the LNWI project are considered to be New Discharges of Elevated Temperature Waste.

RECEIVING WATER BENEFICIAL USES

Reclamation District 1000 and Natomas Mutual Water Company facilities

Outfalls 2 and 3 discharge to Reclamation District 1000 and the Natomas Mutual Water Company facilities. The Basin Plan on page II-2.00 states: "Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify beneficial uses for Reclamation District 1000 and Natomas Mutual Water Company facilities, but the Basin Plan does identify present and potential uses for the Sacramento River north of the I Street Bridge, to which they are tributary.

The Basin Plan on page II-1.00 states: "Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…" and with respect to disposal of wastewaters states that "… disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses."

Table II-1 of the Basin Plan identifies the following beneficial uses for the Sacramento River north of the I Street Bridge: municipal and domestic supply; agricultural irrigation supply; water contact and non-contact water recreation; warm and cold freshwater habitat; migration of warm and cold aquatic organisms; spawning, reproduction, and/or early development of warm and cold aquatic organisms; wildlife habitat; and navigation.

In reviewing whether the existing and/or potential uses of the Sacramento River apply to Reclamation District 1000 and Natomas Mutual Water Company facilities, the Regional Board has considered the following facts:

a. Municipal and Domestic Supply and Agricultural Supply

Reclamation District 1000 and Natomas Mutual Water Company facilities discharge into the Sacramento River. The Regional Board is required to apply the beneficial uses of municipal and domestic supply to Reclamation District 1000 and Natomas Mutual Water Company facilities based on State Board Resolution No. 88-63, which was incorporated in the Basin Plan pursuant to Regional Board Resolution 89-056. Also, since Reclamation District 1000 and Natomas Mutual Water Company facilities are ephemeral streams, they likely provide groundwater recharge during periods of low flow. The groundwater is a source of drinking water.

b. Water Contact and Non-contact Water Recreation and Esthetic Enjoyment

The Regional Board finds that there is ready public access to Reclamation District 1000 and Natomas Mutual Water Company facilities and waters downstream of the discharge, exclusion of the public is unrealistic, and contact recreational activities currently exist. Prior to flowing into the Sacramento River, Reclamation District 1000 and Natomas Mutual Water Company facilities flow through areas of general public access. The Sacramento River offers many recreational

opportunities. Wading, swimming, boating, and canoeing are common activities occurring within the Sacramento River.

c. Groundwater Recharge

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater, contributing to a source of municipal and domestic supply, agricultural supply, and industrial water supply.

d. Freshwater Replenishment

During periods of hydraulic continuity with the Sacramento River, Reclamation District 1000 and Natomas Mutual Water Company facilities add to the water quantity and may impact the quality of water flowing downstream in the Sacramento River, depending on the magnitude of the flows in these facilities.

e. Preservation and Enhancement of Fish, Wildlife, and Other Aquatic Resources

Reclamation District 1000 and Natomas Mutual Water Company facilities flow to the Sacramento River. The California Department of Fish and Game (DFG) has verified that the fish species present in the Sacramento River are consistent with both cold and warm water fisheries and that there is a potential for anadromous fish migration necessitating cold water. The Basin Plan (Table II-1) designates the Sacramento River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Reclamation District 1000 and Natomas Mutual Water Company facilities.

Upon review of the flow conditions, habitat values, and beneficial uses of Reclamation District 1000 and Natomas Mutual Water Company facilities, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Sacramento River are applicable to Reclamation District 1000 and Natomas Mutual Water Company facilities.

The Regional Board also finds that based on the available information and on the Discharger's application, that Reclamation District 1000 and Natomas Mutual Water Company facilities are ephemeral streams. The ephemeral nature of Reclamation District 1000 and Natomas Mutual Water Company facilities means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. Although the discharges, at times, maintain the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, natural flows within Reclamation District 1000 and Natomas Mutual Water Company facilities help support the aquatic life. Both conditions may exist within a short time span, where Reclamation District 1000 and Natomas Mutual Water Company facilities would be dry without the discharge or other NPDES discharges, and periods when sufficient background flows provide hydraulic continuity with the Sacramento River. Dry conditions occur primarily in the summer months, but dry conditions may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect

beneficial uses. Significant dilution may occur during and immediately following high rainfall events.

Sacramento River north of the I Street Bridge

Outfalls 1 and 4 discharge directly to the Sacramento River north of the I Street Bridge. Table II-1 of the Basin Plan identifies the following beneficial uses for the Sacramento River north of the I Street Bridge: municipal and domestic supply; agricultural irrigation and stock watering supply; industrial process and service supply; water contact and non-contact water recreation; warm and cold freshwater habitat; migration of warm and cold aquatic organisms; spawning, reproduction, and/or early development of warm and cold aquatic organisms; wildlife habitat; and navigation.

Sacramento River south of the I Street Bridge

Outfalls 5, 6, and 7 discharge directly to the Sacramento River south of the I Street Bridge. The Sacramento River south of the I Street Bridge is within the legal boundaries of the Delta. Table II-1 of the Basin Plan identifies the following beneficial uses of the Delta: municipal and domestic supply; agricultural irrigation and stock watering supply; industrial process and service supply; water contact and non-contact water recreation; warm and cold freshwater habitat; migration of warm and cold aquatic organisms; spawning, reproduction, and/or early development of warm aquatic organisms; wildlife habitat; and navigation.

Groundwater

The beneficial uses of the underlying ground water are municipal and domestic, industrial service, industrial process, and agricultural supply.

ANTIDEGRADATION / 303(d) LISTING

State Board Resolution No. 68-16 (hereafter Resolution 68-16) and 40 Code of Federal Regulations (CFR) Section 131.12 require the Regional 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 the 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 Regional Board's policies (e.g., violation of any water quality objective). Resolution 68-16 requires that the discharge be regulated to meet best practicable treatment or control to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the State be maintained.

With regards to surface water, the receiving water may temporarily exceed applicable water quality objectives for certain constituents as described in this Order. However, this Order requires the Discharger to meet requirements that will result in the use of best practicable treatment or control of the discharge and will result in compliance with water quality objectives. This Order requires compliance with technology-based standards and more stringent water

quality-based standards. If the discharge maintains compliance with this Order, the impact on existing water quality will be insignificant.

On 4 February 2003, the State Board adopted the 2002 California 303(d) list of impaired water bodies. The listing for the Sacramento River from Knight's Landing to the Delta includes diazinon, mercury, and unknown toxicity. The listing for the eastern portion of the Delta waterways includes the organo-phosphate pesticides (diazinon and chlorpyrifos), organo-chlorine Group A pesticides (including the organo-chlorine pesticides DDT, endrin aldehyde, and lindane), electrical conductivity, mercury, and unknown toxicity. The listing for the western portion of the Delta waterways includes the organo-phosphate pesticides (diazinon and chlorpyrifos), organo-chlorine Group A pesticides (including the organo-chlorine pesticides DDT, endrin aldehyde, and lindane), mercury, and unknown toxicity. These listings require review and assessment of effluent quality to determine if applicable effluent limitations are necessary. The USEPA requires the Regional Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant.

DILUTION

In determining whether a discharge has the reasonable potential to contribute to an in-stream excursion above water quality standards, the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. The available dilution may also be used to calculate protective effluent limitations by applying water quality criteria at the edge of the defined mixing zone. These calculations include receiving water constituent concentrations that are typically based on reasonable worst-case conditions for flow and concentration.

Discharges from Outfalls 2 and 3

If limited or no dilution is available, effluent limitations are set equal to the applicable water quality objectives or promulgated water quality criteria which are applied at the point of discharge so the discharge will not cause the receiving stream to exceed water quality objectives or promulgated criteria established to protect the beneficial uses. In situations where receiving water flows are substantially greater than effluent flows, dilution may be considered in establishing effluent limitations. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality objectives or criteria that are applied at the point of discharge such that the discharge will not cause or contribute to the receiving stream excursion above water quality objectives or promulgated criteria established to protect the beneficial uses. Outfalls 2 and 3 discharge to receiving waters with limited or no dilution, therefore, this permit contains effluent limitations for these discharges that are set equal to the applicable water quality objectives applied at the point of discharge.

Discharges from Outfalls 1, 4, 5, 6 and 7

The Basin Plan allows the Regional Board to designate mixing zones in receiving waters provided the Discharger demonstrates that the mixing zone will not adversely impact beneficial uses. Mixing zone analyses take into account consideration of the physical, chemical and biological characteristics of the discharge and the receiving waters, the life history of and behavior of organisms in the receiving stream and the desired uses of the waters. Mixing zones are limited to small zones of initial dilution in the immediate vicinity of the discharge. Initial dilution for the constituents of concern in the direct dewatering discharges to the Sacramento River from Outfalls 1, 4, 5, 6, and 7 has been evaluated without a detailed mixing zone analysis for the following reasons:

a. The dewatering discharges consist primarily of groundwater;

b. The Sacramento River flows are substantially higher than the discharge flows; and

c. The dewatering discharges are temporary, as the entire LNWI construction project is scheduled to be completed within three years of start of construction.

REASONABLE POTENTIAL

USEPA adopted the *National Toxics Rule* (NTR) on 22 December 1992, which was amended on 4 May 1995 and 9 November 1999, and the *California Toxics Rule* (CTR) on 18 May 2000, which was amended on 13 February 2001. These Rules contain water quality standards applicable to this discharge. The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP) on 2 March 2000, which contains policies and procedures for implementation of the NTR and the CTR.

Federal Regulations at 40 CFR Part 122.44 require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. Water quality standards include the National Toxics Rule criteria, the California Toxics Rule criteria, and the Basin Plan water quality objectives. 40 CFR Section 122.44(d) sets forth requirements that apply to the State to implement narrative water quality standards. 40 CFR Section 122.44(d)(vi)(A)-(C) requires the effluent limit to be based on one or more of three options, including using EPA's recommended water quality criteria, a proposed state criterion (i.e., water quality objective), or an explicit state policy interpreting its narrative water quality criteria (i.e., the Regional Board's "Policy for Application of Water Quality Objectives" in Chapter IV of the Basin Plan).

Results of a monitoring study to determine whether levels of NTR, CTR, or other pollutants in the proposed discharges have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or

narrative objectives and CTR/NTR criteria, were submitted with the ROWD on 21 November 2003.

The Discharger provided monitoring data from five locations along the pipeline alignment that were considered to be representative of the groundwater quality that might be encountered during construction. The five sites were located in the following program elements: New Natomas Pump Station, Natomas Force Main, West Sacramento Force Main-North, West Sacramento Force Main-South, and South River Pump Station. Sampling results for detected constituents are contained in Attachment 3, a part of this Order. The New Natomas Pump Station water quality data is assumed to be reasonably representative of the water quality of the discharges from Outfall 1. The Natomas Force Main water quality data is assumed to be reasonably representative of the water quality of the discharges from Outfalls 2 and 3. A blend of water quality data from the Natomas Force Main and the West Sacramento Force Main-North is assumed to be reasonably representative of the discharges from Outfall 4. The West Sacramento Force Main-South water quality data is assumed to be reasonably representative of the discharges from Outfall 5. The South River Pump Station water quality data is assumed to be reasonably representative of the discharges from Outfalls 6 and 7.

The reasonable potential analysis for chemical constituents to exceed water quality objectives/criteria was performed by comparing the water quality sampling data for each constituent for each outfall against the applicable water quality objectives/criteria; if an objective/criterion was exceeded, the discharge was determined to have reasonable potential to exceed a water quality objective/criterion for that constituent.

Groundwater should have minimal concentrations of biochemical oxygen demand (BOD), total suspended solids (TSS), and settleable solids (SS). Best practicable treatment or control technology can treat wastewater to concentrations of 10 mg/l for BOD and TSS, and 0.1 ml/l for SS. This Order requires the discharges from all of the outfalls to comply with effluent limitations for BOD, TSS and SS that are achievable with best practicable treatment or control.

Discharges to Ephemeral Streams (Outfalls 2 and 3)

Based on information submitted as part of the ROWD, the Regional Board finds that the discharges from Outfalls 2 and 3 have reasonable potential to cause or contribute to in-stream excursions above water quality standards for aluminum, arsenic, electrical conductivity (EC), manganese, methyl-tert-butyl ether (MTBE), and selenium. Effluent limitations for these constituents are included in this Order.

Aluminum
Based on information included in analytical laboratory results submitted by the Discharger, aluminum in the discharges from Outfalls 2 and 3 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative toxicity objective. The Basin Plan requires the Regional Board to consider information submitted by the Discharger and other interested parties, and numerical criteria and guidelines developed by other agencies and organizations, in determining what numeric limitations will properly implement the narrative

toxicity objective. US EPA developed National Recommended Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for aluminum; 87 ug/l as a four-day average (chronic) and 750 ug/l as a one-hour average (acute). US EPA's 2002 National Recommended Water Quality Criteria summary document notes that these criteria were developed at low hardness values. It also states that aluminum is substantially less toxic at higher hardness, but the effects of hardness on the criteria are not well quantified at this time. Aluminum exists as aluminum silicate in suspended clay particles, which US EPA acknowledges might be less toxic than other forms of aluminum. Correspondence with US EPA indicates that the criterion is not intended to apply to aluminum silicate particles. Therefore, a monitoring method that excludes clay particles is likely to be more appropriate. The use of acid-soluble analysis for compliance with the aluminum criterion appears to satisfy US EPA.

Available data in the Report of Waste Discharge indicates an effluent aluminum concentration of 180 ug/l is likely for discharges from Outfalls 2 and 3, which exceeds the chronic criteria. Applying 40 CFR section 122.44(d)(1)(vi)(B), effluent limitations for aluminum are included in this Order for Outfalls 2 and 3 and are based on US EPA's Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat and the Basin Plan narrative toxicity objective. The Discharger is unable to comply with the effluent limitations for aluminum without treatment.

Arsenic
Based on information included in analytical laboratory results submitted by the Discharger, arsenic in the discharge has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituent objective for Outfalls 2 and 3. The chemical constituents objective incorporates California MCLs as water quality objectives for waters designated as municipal or domestic supply and effectively prohibits chemical constituents in concentrations that adversely affect beneficial uses. The Basin Plan requires the Regional Board to consider information submitted by the Discharger and other interested parties, and numerical criteria and guidelines developed by other agencies and organizations, in determining what numeric limitation will properly implement the narrative objective for chemical constituents. In accordance with the Basin Plan, and the application of State Board Resolution 88-63, domestic and municipal uses (MUN) are designated to the receiving stream. The California primary MCL for arsenic is 50 ug/l. The US EPA has lowered the Federal primary MCL for arsenic to 10 ug/l. State and Federal Safe Drinking Water Acts require California MCLs to be at least as stringent as Federal MCLs. Therefore, California must lower its MCL to 10 ug/L or lower in the near future. Available data in the Report of Waste Discharge indicates an effluent arsenic concentration of 11 ug/l is likely for discharges from Outfalls 2 and 3.

The Federal Regulations at 40 CFR Section 122.44(d)(1)(vi)(A), allows the State to establish effluent limitations using an explicit state policy interpreting its narrative criterion. Therefore, use of the US EPA primary MCL is appropriate to implement the narrative chemical constituents objective. The Discharger is unable to comply with the effluent limitations for arsenic without treatment.

Electrical Conductivity
Based on information included in analytical laboratory results submitted by the Discharger, the discharges from Outfalls 2 and 3 have reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituents objective.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which include a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations are likely to be 1200 umhos/cm.

The Federal Regulations at 40 CFR Section 122.44(d)(i)(vi)(B) allow the State to establish effluent limitations using the agricultural water quality goals to implement the narrative chemical constituents objective. The discharges have reasonable potential to cause or contribute to exceedances of the Agricultural Water Quality Goal of 700 umhos/cm for EC. This Order includes effluent limitations for EC from Outfalls 2 and 3 to ensure that downstream beneficial uses are protected. The Discharger is unable to comply with the effluent limitations for EC without treatment.

Manganese
Based on information included in analytical laboratory results submitted by the Discharger, manganese in the discharges from Outfalls 2 and 3 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituent objective. The DHS adopted a secondary MCL for manganese of 50 ug/l. Available data in the Report of Waste Discharge indicates effluent manganese concentrations are likely to be 160 ug/l for Outfalls 2 and 3. Effluent limitations for manganese are included in this Order for Outfalls 2 and 3 based on the Basin Plan narrative chemical constituents objective and the DHS secondary MCL. The Discharger is unable to comply with the effluent limitations for manganese without treatment.

Methyl-tert-butyl ether (MTBE)
Based on information included in analytical laboratory reports submitted by the Discharger, MTBE in the discharges from Outfalls 2 and 3 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituents objective. The DHS adopted a primary MCL for MTBE of 13 ug/l, and a secondary MCL for MTBE of 5 ug/l. Available data in the Report of Waste Discharge indicates the effluent MTBE concentration is likely to be 7.7 ug/l from Outfalls 2 and 3. Effluent limitations for MTBE are included in this Order for Outfalls 2 and 3 based on the Basin Plan narrative chemical constituents objective and the DHS secondary MCL. The Discharger is unable to comply with the effluent limitations for MTBE without treatment.

Selenium
Based on information in analytical laboratory results submitted by the Discharger, the discharges from Outfalls 2 and 3 have reasonable potential to cause or contribute to an in-stream excursion above the NTR criteria for the protection of freshwater aquatic life for selenium. The chronic criterion for selenium is 5.0 ug/l, expressed as total recoverable metal. Available data in the Report of Waste Discharge indicates the effluent selenium concentration is likely to be 8 ug/l for Outfalls 2 and 3. The effluent concentrations have exceeded the chronic criterion and the receiving waters are ephemeral; therefore, the NTR criteria must be met at the point of discharge. The Discharger is unable to comply with the effluent limitations for selenium without treatment.

Direct Discharges to the Sacramento River (Outfalls 1, 4, 5, 6, and 7)

Assimilative capacity for the direct discharges to the Sacramento River was evaluated using Sacramento River 1Q10, 7Q10, harmonic mean, and 30Q5 flows, which were obtained by running US EPA's DFLOW computer model with stream gauge information dated from October 1948 through September 2002 using USGS gauge number 1144750 located at the Freeport Bridge. The 1Q10, 7Q10, harmonic mean and 30Q5 flows obtained were 3729, 3968, 10,064 and 5026 mgd, respectively.

The background receiving water data used in the dilution analysis was obtained from SRCSD's Sacramento Regional Wastewater Treatment Plant SIP monitoring submittal, dated 27 February 2003, which contains monthly receiving water data at Freeport Bridge, including total recoverable metals, from December 2001 through November 2002. For manganese and iron, the dilution analysis was performed using the background dissolved metal concentration in the river. The dilution analysis predicts the resultant downstream Sacramento River receiving water concentrations after the effluent mixes with the background receiving water,

Assimilative capacity was determined by comparing the calculated resultant downstream Sacramento River receiving water concentrations with the water quality objectives. Downstream receiving water concentrations after the effluent completely mixes with the Sacramento River were calculated with the following equation:

$$C_{receiving\ water} = [(Q_{discharge})(C_{discharge}) + (Q_{river})(C_{river})] / (Q_{discharge} + Q_{river})$$

US EPA's *NPDES Permit Writer's Manual*, EPA 833-B-96-003, recommends using the highest background river concentration, C_{river}, in this analysis. The resultant downstream receiving water concentrations, $C_{receiving\ water}$, of the constituents of concern after complete mix with the Sacramento River are summarized in Attachments 5 and 6.

Discharges from Outfall 1

Based on information included in analytical laboratory results submitted by the Discharger, EC in the discharge from Outfall 1 has reasonable potential to cause or contribute to excursions

above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations from Outfall 1 are likely to be 890 umhos/cm.

The maximum background receiving water EC concentration was 680 umhos/cm. The dilution analysis for EC indicates the downstream receiving water EC concentration after complete mix of the effluent with the receiving water is 680 umhos/cm. Effluent limitations for EC from Outfall 1 are not included in this Order based on adequate receiving water assimilative capacity.

Discharges from Outfall 4

Based on information submitted as part of the ROWD, the Regional Board finds that the discharges from Outfall 4 have reasonable potential to cause or contribute to in-stream excursions above water quality standards for aluminum, arsenic, EC, iron, manganese, MTBE, and selenium.

Aluminum
Based on information included in analytical laboratory results submitted by the Discharger, aluminum in the discharges from Outfall 4 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative toxicity objective prior to the consideration of dilution. The Basin Plan requires the Regional Board to consider information submitted by the Discharger and other interested parties, and numerical criteria and guidelines developed by other agencies and organizations, in determining what numeric limitations will properly implement the narrative toxicity objective. US EPA developed National Recommended Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for aluminum; 87 ug/l as a four-day average (chronic) and 750 ug/l as a one-hour average (acute). US EPA's 2002 National Recommended Water Quality Criteria summary document notes that these criteria were developed at low hardness values. It also states that aluminum is substantially less toxic at higher hardness, but the effects of hardness on the criteria are not well quantified at this time. Aluminum exists as aluminum silicate in suspended clay particles, which US EPA acknowledges might be less toxic than other forms of aluminum. Correspondence with US EPA indicates that the criterion is not intended to apply to aluminum silicate particles. Therefore, a monitoring method that excludes clay particles is likely to be more appropriate. The use of acid-soluble analysis for compliance with the aluminum criterion appears to satisfy US EPA.

Available data in the Report of Waste Discharge indicates the effluent aluminum concentration is likely to be between 180 ug/l to 900 ug/l for discharges from Outfall 4, which exceed the chronic

criteria. The maximum background receiving water concentration of aluminum was 3000 ug/l. The dilution analysis for aluminum indicates the worst-case downstream receiving water concentration of aluminum after complete mix of the effluent with the receiving water is 3000 ug/l. Applying 40 CFR section 122.44(d)(1)(vi)(B), effluent limitations for aluminum are included in this Order for Outfall 4 and are based on US EPA's Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat and the Basin Plan narrative toxicity objective. The Discharger is unable to comply with the effluent limitations for aluminum without treatment.

Arsenic
Based on information included in analytical laboratory results submitted by the Discharger, arsenic in the discharge has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan narrative chemical constituents objective from Outfall 4 prior to the consideration of dilution. The chemical constituents objective incorporates California MCLs as water quality objectives for waters designated as municipal or domestic supply and effectively prohibits chemical constituents in concentrations that adversely affect beneficial uses. The Basin Plan requires the Regional Board to consider information submitted by the Discharger and other interested parties, and numerical criteria and guidelines developed by other agencies and organizations, in determining what numeric limitation will properly implement the narrative objective for chemical constituents. The beneficial uses of the Sacramento River include domestic and municipal uses (MUN). The California primary MCL for arsenic is 50 ug/l. The US EPA has lowered the federal primary MCL for arsenic to 10 ug/l. State and federal Safe Drinking Water Acts require state MCLs to be at least as stringent as Federal MCLs. Therefore, California must lower its MCL to 10 ug/l or lower in the near future. Available data in the Report of Waste Discharge indicates effluent arsenic concentrations between 11 ug/l and 15 ug/l are likely for discharges from Outfall 4.

The maximum background receiving water concentration of arsenic was 2.2 ug/l. The dilution analysis for arsenic indicates the downstream receiving water concentration of arsenic after complete mix of the effluent with the receiving water is 2.2 ug/l. Effluent limitations for arsenic from Outfall 4 are not included in this Order based on adequate receiving water assimilative capacity.

Electrical Conductivity
Based on information included in analytical laboratory results submitted by the Discharger, EC in the discharge from Outfall 4 has reasonable potential to cause or contribute to excursions above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water

remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations are likely to range between 1200 umhos/cm to 1500 umhos/cm from Outfall 4.

The maximum background receiving water EC concentration was 680 umhos/cm. The dilution analysis for EC indicates the downstream receiving water EC concentration after complete mix of the effluent with the receiving water is 680 umhos/cm. Effluent limitations for EC from Outfall 4 are not included in this Order based on adequate receiving water assimilative capacity.

Iron
Based on information included in analytical laboratory results submitted by the Discharger, total concentrations of iron in the discharge from Outfall 4 has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan Sacramento River site specific objective of 300 ug/l for the dissolved fraction prior to the consideration of dilution. Available data in the Report of Waste Discharge indicates the effluent total recoverable iron concentrations are likely to range between 170 ug/l to 870 ug/l from Outfall 4.

Dilution for dissolved iron was evaluated using USGS NAWQA data from 1996-1998 for dissolved iron in the receiving water near the Freeport Bridge. The maximum background receiving water dissolved iron concentration was 48 ug/l. The dilution analysis for iron indicates the worst-case downstream receiving water concentration of iron after complete mix of the effluent with the receiving water is 50 ug/l. Effluent limitations for iron are not included in this Order for Outfall 4 based on adequate receiving water assimilative capacity.

Manganese
Based on information included in analytical laboratory results submitted by the Discharger, total concentrations of manganese in the discharges from Outfall 4 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan Sacramento River site specific objective of 50 ug/l for the dissolved fraction prior to the consideration of dilution. Available data in the Report of Waste Discharge indicates effluent total recoverable manganese concentrations are likely to range between 160 ug/l to 680 ug/l from Outfall 4.

Dilution for dissolved manganese was evaluated using USGS NAWQA data from 1996-1998 for dissolved manganese in the receiving water near the Freeport Bridge. The maximum background receiving water dissolved manganese concentration was 10 ug/l. The dilution analysis for manganese indicates the worst-case downstream receiving water concentration of manganese after complete mix of the effluent with the receiving water is 11 ug/l. Effluent limitations for manganese are not included in this Order for Outfall 4 based on adequate receiving water assimilative capacity.

Methyl-tert-butyl ether (MTBE)
Based on information included in analytical laboratory reports submitted by the Discharger, MTBE in the discharge from Outfall 4 has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution. The DHS adopted a primary MCL for MTBE of 13 ug/l and a

secondary MCL for MTBE of 5 ug/l. Available data in the Report of Waste Discharge indicates the effluent MTBE concentration is likely to range between <0.5 ug/l to 7.7 ug/l from Outfall 4.

The maximum background receiving water concentration of MTBE was 1.9 ug/l. The dilution analysis for MTBE indicates the downstream receiving water concentration of MTBE after complete mix of the effluent with the receiving water is 1.9 ug/l. Effluent limitations for MTBE from Outfall 4 are not included in this Order based on adequate receiving water assimilative capacity.

Selenium
Based on information in analytical laboratory results submitted by the Discharger, the discharges from Outfall 4 have reasonable potential to cause or contribute to in-stream excursions above the NTR criteria for the protection of freshwater aquatic life for selenium prior to the consideration of dilution. The chronic criterion for selenium is 5.0 ug/l, expressed as total recoverable metal. Available data in the Report of Waste Discharge indicates the effluent selenium concentrations are likely to range between 8 ug/l and 12 ug/l.

The maximum background receiving water concentration of selenium was less than 1.0 ug/l. The dilution analysis for selenium indicates the downstream receiving water concentration of selenium after complete mix of the effluent with the receiving water is less than 1.0 ug/l. Effluent limitations for selenium from Outfall 4 are not included in this Order based on adequate receiving water assimilative capacity.

Discharges from Outfall 5

Based on information submitted as part of the ROWD, the Regional Board finds that the discharges from Outfall 5 have reasonable potential to cause or contribute to in-stream excursions above water quality standards for EC and manganese.

Electrical Conductivity
Based on information included in analytical laboratory results submitted by the Discharger, EC in the discharge from Outfall 5 has reasonable potential to cause or contribute to excursions above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations are likely to be 900 umhos/cm from Outfall 5.

The maximum background receiving water EC concentration was 680 umhos/cm. The dilution analysis for EC indicates the downstream receiving water EC concentration after complete mix of the effluent with the receiving water is 680 umhos/cm. Effluent limitations for EC from Outfall 5 are not included in this Order based on adequate receiving water assimilative capacity.

Manganese
Based on information included in analytical laboratory results submitted by the Discharger, total concentrations of manganese in the discharges from Outfall 5 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan Sacramento River site specific objective of 50 ug/l for the dissolved fraction prior to the consideration of dilution. Available data in the Report of Waste Discharge indicates effluent total recoverable manganese concentrations are likely to be 340 ug/l from Outfall 5.

Dilution for dissolved manganese was evaluated using USGS NAWQA data from 1996-1998 for dissolved manganese in the receiving water near the Freeport Bridge. The maximum background receiving water manganese concentration was 10 ug/l. The dilution analysis for manganese indicates the worst-case downstream receiving water concentration of manganese after complete mix of the effluent with the receiving water is 10 ug/l. Effluent limitations for manganese are not included in this Order for Outfall 5 based on adequate receiving water assimilative capacity.

Discharges from Outfalls 6 and 7

Based on information submitted as part of the ROWD, the Regional Board finds that the discharges from Outfalls 6 and 7 have reasonable potential to cause or contribute to in-stream excursions above water quality standards for EC, manganese, and sulfate.

Electrical Conductivity and Sulfate
Based on information included in analytical laboratory results submitted by the Discharger, EC in the discharges from Outfalls 6 and 7 have reasonable potential to cause or contribute to excursions above the Basin Plan narrative chemical constituents objective prior to the consideration of dilution.

The State of California Department of Health Services (DHS) has adopted a secondary MCL for EC to protect drinking water supplies, which includes a recommended level of 900 umhos/cm, an upper limit of 1600 umhos/cm, and a short-term maximum of 2200 umhos/cm. Available literature (Ayers and Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations, Irrigation and Drainage Paper No. 29, Rev. 1, 1985) indicates that sensitive crops (agricultural uses) will be protected from salt damage if the EC of irrigation water remains below 700 umhos/cm. Available data in the Report of Waste Discharge indicates effluent EC concentrations are likely to be 2300 umhos/cm from Outfalls 6 and 7. The maximum background receiving water EC concentration was 680 umhos/cm. The dilution analysis for EC indicates the worst-case downstream receiving water EC concentration after complete mix of the effluent with the receiving water is 694 umhos/cm. Since this is a short-

term discharge, effluent limitations for EC from Outfalls 6 and 7 are not included in this Order based on adequate receiving water assimilative capacity. However, since the discharges may cause increases in downstream receiving water EC concentrations, it is appropriate to require monitoring to assure that effluent concentrations are not higher than was predicted. Therefore, the Monitoring and Reporting Program requires the Discharger to monitor for EC in the discharges from Outfalls 6 and 7.

Based on information included in analytical laboratory results submitted by the Discharger, sulfate in the discharges from Outfalls 6 and 7 has reasonable potential to cause or contribute to in-stream excursions above the Basin Plan chemical constituents objective. The DHS adopted a secondary MCL for sulfate, which includes a recommended level of 250 mg/l, an upper limit of 500 mg/l, and a short-term maximum of 600 mg/l. Available data in the Report of Waste Discharge indicates effluent sulfate concentrations are likely to be 280 mg/l from Outfalls 6 and 7. The maximum background receiving water concentration of sulfate was 12 mg/l. The dilution analysis for sulfate indicates the worst-case downstream receiving water concentration of sulfate after complete mix of the effluent with the receiving water is 14 ug/l. Effluent limitations for sulfate from Outfalls 6 and 7 are not included in this Order based on adequate receiving water assimilative capacity.

Manganese
Based on information included in analytical laboratory reports submitted by the Discharger, total concentrations of manganese in the discharges from Outfalls 6 and 7 have reasonable potential to cause or contribute to in-stream excursions above the Basin Plan Delta site-specific numeric objective of 50 ug/l for the dissolved fraction prior to the consideration of dilution. Available data in the Report of Waste Discharge indicates the effluent total recoverable manganese concentrations are likely to be 2600 ug/l from Outfalls 6 and 7.

Dilution for dissolved manganese was evaluated using USGS NAWQA data from 1996-1998 for dissolved manganese in the receiving water near the Freeport Bridge. The maximum background receiving water dissolved manganese concentration was 10 ug/l. The dilution analysis for manganese indicates the worst-case downstream receiving water concentration of manganese after complete mix of the effluent with the receiving water is 33 ug/l. Effluent limitations for manganese for Outfalls 6 and 7 are not included in this Order based on adequate receiving water assimilative capacity.

Effluent limitation calculations

Effluent limitations for all constituents except for selenium were obtained using the statistical methods described in EPA's Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001). For human health protection, the average monthly limit (AML) was set equal to the water quality criteria. The maximum daily limit (MDL) was statistically calculated from the average monthly limit using the 99th percentile for the maximum daily limit, and the 95th percentile for the average monthly limit. For chronic aquatic life protection, the long-term average (LTA) was calculated from the water quality criteria using a CV of 0.6 and the 99th percentile. The maximum daily limit was statistically calculated from the long-term

average using a CV of 0.6 and the 99th percentile. The average monthly limit was statistically calculated from the long-term average using a CV of 0.6 and the 95th percentile. The effluent limitation calculations are contained in Attachment 7.

Effluent limitations for selenium were calculated using the methods described in the SIP. The ECA was set equal to the chronic criteria of 5.0 ug/l. The chronic multiplier of 0.527 (CV=0.6, 99th percentile) was used to calculate the LTA. The AMEL was calculated using the LTA and the AMEL multiplier with a CV of 0.6. The MDEL was calculated using the LTA and the MDEL multiplier with a CV of 0.6.

The Discharger cannot comply with the effluent limitations without treatment. The Discharger states that the individual construction contractors will provide the necessary treatment to comply with the effluent limitations. This permit contains a provision requiring the Discharger to submit, prior to commencement of dewatering operations, documentation describing the methods of treatment that will be used to achieve compliance with the effluent limitations.

The Discharger is considering placing some of the dewatering discharges on land. If the Discharger chooses this option, the Discharger shall apply to the Regional Board for waste discharge requirements, or a waiver if appropriate.

Attachment 1. Location of Lower Northwest Interceptor Project

Attachment 2. Lower Northwest Interceptor Construction Dewatering Discharge Locations
Due to its large file size, this map is located in the Adobe Acrobat file *LNWI Figure 2.pdf*

Attachment 3. Summary of Effluent Water Quality Data for LNWI Construction Dewatering Project

Applicable Outfalls		1	2, 3, 4	4	5	6, 7
Constituent	**Units**					
Arsenic,	ug/l	8.8	11	15	7.2	6.9
Selenium,	ug/l	0.8	8	12	1	0.98
Aluminum	ug/l	20	180	900	20	60
Barium	ug/l	110	110	120	98	240
Iron	ug/l	<50	170	870	<50	<50
Manganese	ug/l	<5	160	680	340	2600
MTBE	ug/l	<0.5	7.7	<0.5	<0.5	<0.5
Sulfate	mg/l	54	110	84	66	280
EC	umhos/cm	890	1200	1500	900	2300

All metals are expressed as total recoverable.

Attachment 4. Sacramento River Background Water Quality Data
SRWTP SIP Monitoring Data at Freeport Bridge
December 2001 – November 2002

Sample Date	Aluminum ug/l	Arsenic ug/l	Barium ug/l	EC umhos/cm	MTBE ug/l	Selenium ug/l	Sulfate mg/l
12/6/01	3000	2.2	DNQ	120	ND	ND	120
1/10/02	2000	2.0	DNQ	150	ND	ND	4.7
2/21/02	190	1.3	25	680	1.9	DNQ	
3/12/02	720	1.3	31	140	ND	DNQ	6
4/18/02	170	1.7	26	210	0.5	DNQ	5.5
5/23/02	300	1.8	34	170	DNQ	DNQ	110
6/11/02	83	1.8	24	140	0.7	DNQ	6.5
7/24/02	99	1.4	18	130	1.0	ND	5.9
8/29/02	87	2.0	30	200	1.2	ND	10
9/25/02	100	1.4	21	140	1.9	ND	5.3
10/24/02	75	1.4	21	140	1.4	DNQ	4.6
11/14/02	600	2.2	40	190	ND	ND	ND
Max	3000	2.2	40	680	1.9	ND	12

Note: All metals are expressed as total recoverable.

Attachment 5

Dilution Analysis of Direct Discharges to the Sacramento River North of the I Street Bridge (Resultant Receiving Water Concentrations After Complete Mix)

Outfall 1 (Effluent Flow = 6.0 mgd)

River Flow	EC, umhos/cm
1Q10	680
7Q10	680
Harmonic Mean	680
30Q5	680
WQ Objective	700 (Ag WQ)

Outfall 4 (Effluent Flow = 5.7 mgd)

River Flow	Arsenic ug/l	Aluminum ug/l	EC umhos/cm	Iron ug/l	Manganese ug/l	MTBE ug/l	Selenium ug/l
1Q10	2.2	2997	681	50	11	1.9	<1
7Q10	2.2	2997	681	50	11	1.9	<1
Harmonic Mean	2.2	2999	680	50	10	1.9	<1
30Q5	2.2	2999	680	50	10	1.9	<1
WQ Objective	10 (US EPA 1 MCL)	87 (NAWQC)	700 (Ag WQ)	300 (Sac River)	50 (Sac River)	5.0 (DHS 2 MCL)	5.0 (NTR)

Attachment 6
Dilution Analysis of Direct Discharges to the Sacramento River
South of the I Street Bridge
(Resultant Receiving Water Concentrations After Complete Mix)

Outfall 5 (Effluent Flow = 3.3 mgd)

River Flow	EC, umhos/cm	Manganese, ug/l
1Q10	680	10
7Q10	680	10
Harmonic Mean	680	10
30Q5	680	10
WQ Objective	700 (Ag WQ)	50 (Sac River)

Outfall 6 (Effluent Flow = 33.5 mgd)

River Flow	EC, umhos/cm	Manganese, ug/l	Sulfate, ug/l
1Q10	694	33	14
7Q10	694	32	14
Harmonic Mean	685	19	13
30Q5	691	27	14
WQ Objective	700 (Ag WQ)	50 (Delta)	280 (DHS 2 MCL)

Outfall 7 (Effluent Flow = 8.4 mgd)

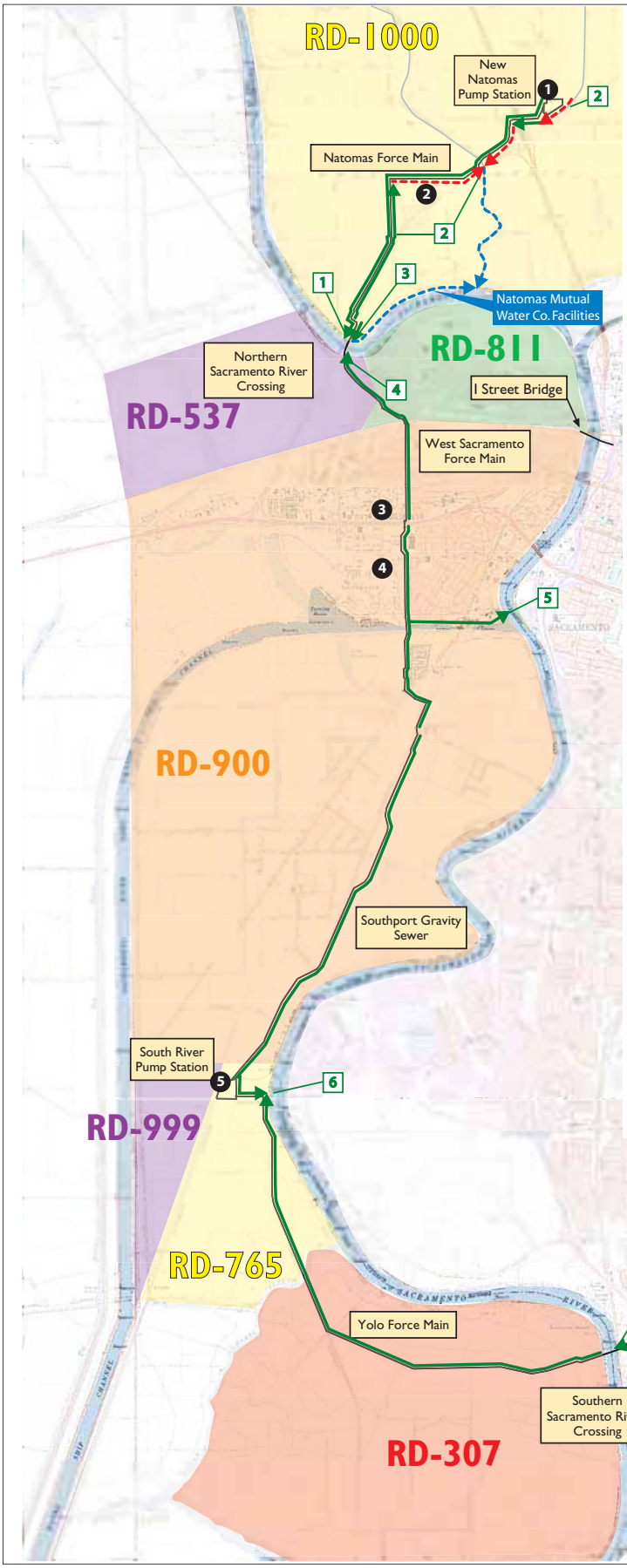
River Flow	EC, umhos/cm	Manganese, ug/l	Sulfate, ug/l
1Q10	683	16	13
7Q10	683	16	13
Harmonic Mean	681	12	12
30Q5	682	14	12
WQ Objective	700 (Ag WQ)	50 (Delta)	280 (DHS 2 MCL)

Attachment 7. Effluent Limitation Calculations, TSD method

Outfall No.	Constituent	Units	WLA	LTA	AML	MDL
2, 3	Aluminum	ug/l	87	46	71	143
	Arsenic	ug/l	10	--	10	--
	EC	umhos/cm	700	--	700	1022
	Manganese	ug/l	50	--	50	73
	MTBE	ug/l	5	--	5	7
4	Aluminum	ug/l	87	46	71	143

Dewatering Discharge Summary

Proposed Discharge Locations with Estimated Volume and Duration for Dewatering
Lower Northwest Interceptor Program



GUIDE

Project Name Name of Discharge Facility	Discharge Location	Discharge Rate (mgd)	Discharge Duration (months)	Apply Sample Results
New Natomas Pump Station				
Sacramento River north of I St. Bridge	1	6.0	16	1
Natomas Force Main				
RD 1000 Facilities	2	3.0	17	2
Northern Sacramento River Crossing				
Launching Shaft (North)				
Natomas Mutual Water Co. Facilities	3	3.7	17	2
Receiving Shaft (South)				
Sacramento River north of I St. Bridge	4	2.4	14	2
West Sacramento Force Main				
North of Hwy. 50 / Bus. 80				
Sacramento River north of I St. Bridge	4	3.3	17	3
South of Hwy. 50 / Bus. 80				
Sacramento River south of I St. Bridge	5	3.3	17	4
Southport Gravity Sewer				
Sacramento River south of I St. Bridge	6	18.8	17	5
South River Pump Station				
Sacramento River south of I St. Bridge	6	5.0	16	5
Yolo Force Main				
Sacramento River south of I St. Bridge	6	8.0	17	5
Southern Sacramento River Crossing				
Receiving Shaft (West)				
Sacramento River south of I St. Bridge	6	1.7	14	5
Launching Shaft (East)				
Sacramento River south of I St. Bridge	7	2.4	17	5
Sacramento Force Main				
Sacramento River south of I St. Bridge	7	6.0	17	5

LEGEND

RD	Reclamation District
mgd	Millions of gallons per day
———	Lower Northwest Interceptor alignment
- - - →	Dewatering discharge to adjacent open channel. No set discharge location.
- - -	Open channel path from discharge location to major surface water body.
——→	Dewatering discharge (piped) to an approximated discharge location.
1 thru 5	Groundwater sample locations (collected on September 23 and 24, 2003)
1 thru 7	Dewatering discharge locations.

Scale: 1 in = 5000 ft

April 2, 2004