CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0045

WASTE DISCHARGE REQUIREMENTS

FOR

CITY OF LATHROP AND CALIFIA LLC
WASTEWATER TREATMENT FACILITY
SAN JOAQUIN COUNTY

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

1. On 7 July 2004, the City of Lathrop and Califia LLC submitted a Report of Waste Discharge (RWD) for a wastewater treatment facility to treat and dispose of domestic wastewater generated in new residential developments in the City of Lathrop. Additional information was received from the Discharger on 2 December 2004.

2. The City of Lathrop and Califia LLC are hereafter jointly referred to as "Discharger."

3. The wastewater treatment facility (WWTF) includes the Membrane Bioreactor (MBR) wastewater treatment plant, the wastewater collection system, the recycled water storage ponds, the recycled water delivery system, and all the designated land application areas. The general location of the facility is shown on Attachment A, which is attached hereto and made part of this Order by reference.

4. The WWTF is a new wastewater treatment facility. It is located adjacent to the existing City of Lathrop Crossroads wastewater treatment facility, but the two systems will not share equipment or storage ponds with the exception of sludge dewatering equipment. The Crossroads treatment plant is regulated by Waste Discharge Requirements (WDRs) Order No. 5-01-251.

5. The wastewater treatment plant is at 19094 Christopher Way, Lathrop, in Section 35, T1S, R6E and Section 2, T2S, R6E, MDB&M. The City of Lathrop owns the mechanical treatment system and the land where it is located. The treatment plant site plan is shown on Attachment B, which is attached hereto and made part of this Order by reference. Califia LLC owns land application areas located on River Islands.

6. The Discharger has requested a two-phase development of land application areas for the disposal of recycled water. Areas presently owned by the City of Lathrop are included in Phase I. The Phase II land application areas are identified in this Order. Discharge to Phase II lands will be allowed once the City provides documentation of a long-term lease arrangement between the City and Califia LLC, completes improvements, and obtains written authorization by the Executive Officer to proceed.

Proposed Facility and Discharge

7. The wastewater treatment system is being constructed to treat wastewater from three new residential and commercial developments. The developments are named River Islands, Lathrop Station, and Mossdale Landing. The developments will be constructed in phases; the initial development will produce approximately 750,000 gallons per day (gpd) of domestic wastewater from approximately 1,482 low, medium, and high-density residences and commercial development. Additional wastewater treatment and disposal facilities and/or expansion of the proposed WWTF may be designed and permitted under a separate permitting process.

8. The Dischargers have previously stated that, as development increases, they expect to obtain an NPDES permit to allow recycled water discharge to surface waters. Issuance of this Order for a discharge of recycled water to land in no way guarantees that the Dischargers will obtain an NPDES permit. In addition, issuance of this Order does not guarantee a future increase in the volume of recycled water discharged to land beyond 750,000 gpd.

9. Because construction of these developments is not complete, no site-specific data on wastewater quality is available. Based on wastewater generated in the existing residential development north of Louise Avenue within the City of Lathrop (which is treated by the City of Manteca wastewater system), the raw wastewater characteristics anticipated are presented below:

Constituent	Units	Average
Biochemical Oxygen Demand	mg/L	330
Total Suspended Solids	mg/L	330
Total Kjeldahl Nitrogen	mg/L	36
Total Dissolved Solids	mg/L	525[1]

[1] Total Dissolved Solids estimate based on municipal supply plus 200 mg/L. Municipal supply data from Table 5, November 2004 RWD prepared by RMC, Appendix 2, Groundwater Assessment Report 11/29/04, prepared by Hydrofocus.

10. While the wastewater plant's treatment capacity is designed to be 750,000 gpd not all of the recycled water storage and land application facilities will be constructed in Phase I. The RWD presents wastewater treatment, storage, and disposal capacity for a flow rate of 278,000 gpd in Phase I. However, all land application areas identified in the Phase I water balance are not acceptable for wastewater application. Approximately 24.7 acres were removed from land application use. Therefore, this Order allows an initial flow rate of 187,600 gpd (upon submittal of a report documenting that sufficient storage ponds and land application areas have been prepared), and allows a flow increase to 750,000 gpd upon submittal of a second report documenting that the remaining facilities have been constructed and the Executive Officer allows discharge to proceed. Exclusion of land areas in the Phase I development does not prohibit further consideration of the land areas if technical reports can demonstrate the land areas are acceptable and groundwater quality will be protected.

11. The treatment plant will provide tertiary treatment and disinfection using a membrane bioreactor system. The treatment system consists of flow measurement, screening, grit removal, flow

equalization, membrane bioreactors, and chlorine disinfection. The mechanical treatment portion of the WWTF is designed for an average dry weather flow capacity of 750,000 gpd.

12. Screenings and grit removed from the wastewater will be dewatered and sent to a dumpster, prior to being hauled off-site to the local landfill for disposal. Waste Activated Sludge (WAS) will be stored in a WAS Storage Tank and dewatered using a belt filter press. Dewatered sludge will be hauled for subsequent land application at Brisco Enterprises of Merced under Waste Discharge Requirements Order No. 94-030. A process flow schematic is presented on Attachment C, which is attached hereto and made part of this Order by reference.

13. Effluent will be disinfected using a 12-percent sodium hypochlorite solution in a chlorine contact tank that will provide more than 90 minutes of modal detention time. Sodium hypochlorite will be stored in two 5,000-gallon tanks. Two metering pumps (one operating and one backup) will provide for chemical disinfection; a third dosing pump will supply sodium hypochlorite for membrane cleaning and Clean in Place (CIP) use.

14. Treated wastewater will be discharged to Pond No. 3, which provides approximately 33.4 ac•ft of storage, or Pond No. E, which will provide approximately 104.9 ac•ft of storage. Pond No. 3 will be constructed for use in Phase I; Pond No. E will be constructed for use in Phase II of the development. Both ponds will be located at the MBR wastewater treatment plant.

15. The system manufacturer recommends a membrane maintenance cleaning procedure every one to two weeks. During maintenance cleaning, a timed backwash is initiated and a concentration of sodium hypochlorite (approximately 200 mg/L) is injected into the membrane fibers. The membranes are allowed to soak for 15 minutes and then another timed backwashing with solution is performed. The membrane maintenance cleaning operation consists of three cycles of backwashing/soaking and requires a total of about 18 gallons of sodium hypochlorite.

16. A more through CIP procedure is performed when flow through the membranes begins to become restricted due to membrane fouling. The operation will typically be needed once every three to six months and the length of the chemical clean cycle lasts from three to six hours. The chlorine concentration required for a membrane CIP operation is 1,000 mg/L and each procedure uses a total of approximately 74 gallons of sodium hydroxide solution. The waste sodium hydroxide solution will be pumped back into the plant for subsequent treatment over a one-day period. The Discharger has estimated the resulting TDS concentration increase is approximately 9.7 mg/L at a flow rate of 750,000 gpd.

17. A 950,000 gallon Flow Equalization Tank will provide short-term emergency retention. Waste in the tank will be automatically returned to the treatment system as capacity becomes available.

18. Standby equipment at the facility includes redundant pumping and storage. The RWD states that all pumps, valves, instruments, and alarms will be monitored by a SCADA system. Standby power has been designed to provide continuous treatment during a power outage. In the event that monitoring instrumentation detects an increase in turbidity that may indicate a leak within the membrane systems, the filtrate pumps will be automatically de-energized, stopping the discharge. Influent

wastewater will be directed into the storage tank while the operators determine the source of the elevated turbidity.

19. Stormwater that falls on the treatment plant will be collected and directed into an on-site stormwater retention pond.

20. The Discharger estimates the quality of the effluent will be as described below:

Constituent	Units	Monthly Average	Daily Maximum
BOD	mg/L	<10	<20
TSS	mg/L	<10	--
Turbidity	NTU	--	<0.2
TKN	mg/L	<10	<10
TCO	MPN/100 mL	<2.2	--
pH	Std. Unit	6.5-8.5	--

BOD denotes Biochemical Oxygen Demand. TSS denotes Total Suspended Solids. TKN denotes Total Kjeldahl Nitrogen. TCO denotes Total Coliform Organisms. NTU denotes Nephelometric Turbidity Units. MPN denotes Most Probable Number.

Recycled Water Discharge

21. Treated recycled water will be stored in lined storage ponds and applied to cropped land application areas. Land application areas consist of landscaped areas, turf areas, and fodder crop areas.

22. Disinfected effluent will be discharged from the wastewater treatment plant for storage in Pond No. 3 and/or Pond No. E (both of which are located next to the MBR treatment plant). Pond No. 3 will be constructed in Phase I, is designed to provide a storage capacity of 33.4 ac•ft (10.88 million gallons), and will be lined with 40-mil high-density polyethylene. Pond No. E will be constructed in Phase II, is designed to provide a storage capacity of 104.9 ac•ft (34.19 million gallons), and will be lined with a 40-mil high-density polyethylene.

23. The Discharger will construct additional recycled water storage ponds that will be used to store recycled water between irrigation applications. Ponds A, B, and C will be constructed in Mossdale Village for Phase I; Pond D will be constructed near the Reiter land application area in Phase II. All the ponds will be lined with a 40-mil high-density polyethylene to minimize percolation.

24. The storage ponds will be used to store treated recycled water when not irrigating; the locations of each are presented on Attachments D.1, D.2, and D.3. The table below presents a listing of all the recycled water storage ponds.

Pond Name	Capacity (acre•feet)	Phase
Pond A	125.4	I
Pond B	47.0	I
Pond C	64.5	I
Pond 3	33.4	I
Phase 1 Total	**278.4**	

Pond Name	Capacity (acre•feet)	Phase
Pond D	103.7	II
Pond E	104.9	II
Phase 2 Total	**208.6**	
Total	**487.0**	

25. Effluent will be applied by drip irrigation, flood irrigation, or sprinklers at agronomic rates for both nitrogen and water application. Irrigation tailwater will be controlled through such measures as perimeter berms, grading the area to prevent off-site drainage, and/or management controls. Because the RWD does not describe specific management practices for each area that will receive recycled water, this Order does not allow recycled water to be applied to any area until the Executive Officer approves a Recycled Water Application Plan for that area.

26. The Phase I water balance demonstrates hydraulic capacity for a wastewater flow rate of 278,000 gpd; however, less land application area is available than assumed in the water balance. The Phase II water balance demonstrates hydraulic capacity for a wastewater flow rate of 750,000 gpd. Neither water balance includes recycled water application during the months November to February when precipitation exceeds evapotranspiration. However, if conditions in the land application areas comply with this Order, then irrigation during winter months is permissible.

27. The recycled water land application areas are located on numerous parcels. The RWD identifies approximately 69 acres of land application areas available for Phase I recycled water application. However, as described in the "Groundwater Considerations" section, all the proposed areas are not available for Phase I wastewater application due to underlying groundwater quality. Attachments E.1, E.2, and E.3 present the acceptable area for recycled water application. A total of 24.7 acres were determined to be unacceptable for Phase I wastewater application; therefore, the proposed wastewater flow rate was reduced by a proportional amount to 187,600 gpd. The proposed land application areas and their status for Phase I wastewater application are presented below:

PHASE I LAND APPLICATION AREAS

App Area No.	Total Area (acres)	Irrigated Area (acres)	Land Use	Irrigation Type	Location	Owner	CEQA	WW App Acceptable?
1	18.08	16.94	Ag Field	Crop - Rye Grass	Reiter	PUH	Reiter Neg Dec	No
2	3.36	3.36	Park	Turf Grass	River Park North	City	UDC	Yes
3	0.21	0.21	Parkway	Turf, Trees	Grass Valley	City	UDC	Yes
4	0.05	0.05	Median	Trees, Shrubs	Hidden Cove	City	UDC	Yes
5	0.74	0.74	Parkway	Turf, Trees	Grass Valley	City	UDC	Yes
6	0.05	0.05	Median	Trees, Shrubs	Marsh Road	City	UDC	Yes
7	0.45	0.45	Parkway	Turf, Trees	Barbara Terry	City	UDC	Yes
8	0.04	0.04	Median	Trees, Shrubs	McKee Blvd.	City	UDC	Yes
9	0.29	0.29	Parkway	Turf, Trees	Barbara Terry	City	UDC	Yes
10	0.26	0.26	Parkway	Turf, Trees	Barbara Terry	City	UDC	Yes
11	0.10	0.10	Parkway	Turf, Trees	Barbara Terry	City	UDC	Yes
12	0.23	0.23	Parkway	Turf, Trees	McKee Blvd.	City	UDC	Yes

PHASE I LAND APPLICATION AREAS

App Area No.	Total Area (acres)	Irrigated Area (acres)	Land Use	Irrigation Type	Location	Owner	CEQA	WW App Acceptable?
13	0.14	0.14	Parkway	Turf, Trees	McKee Blvd.	City	UDC	Yes
14	0.04	0.04	Median	Trees, Shrubs	McKee Blvd.	City	UDC	Yes
15	0.91	0.91	Parkway	Turf, Trees	River Islands Pkwy.	City	UDC	Yes
16	0.40	0.40	Median	Trees, Shrubs	River Islands Pkwy.	City	UDC	Yes
17	13.40	12.27	Ag Field	Crop - Rye Grass	Village 1A	City	UDC	Yes
18	0.75	0.75	Park	Turf Grass	The Green	City	UDC	Yes
19	0.32	0.32	Parkway	Turf, Trees	McKee Blvd.	City	UDC	Yes
20	0.34	0.34	Parkway	Turf, Trees	McKee Blvd.	City	UDC	Yes
21	0.10	0.10	Median	Trees, Shrubs	McKee Blvd.	City	UDC	Yes
22	0.09	0.09	Median	Trees, Shrubs	McKee Blvd.	City	UDC	Yes
23	0.04	0.04	Median	Trees, Shrubs	Village Ave.	City	UDC	Yes
24	1.05	1.05	Park	Turf Grass	Mossdale Commons	City	UDC	Yes
25	0.06	0.06	Median	Trees, Shrubs	Village Ave.	City	UDC	Yes
26	0.03	0.03	Median	Trees, Shrubs	Village Ave.	City	UDC	Yes
30a	0.10	0.10	Median	Trees, Shrubs	Towne Centre	City	UDC	Yes
30b	0.10	0.10	Median	Trees, Shrubs	Towne Centre	City	UDC	Yes
31	0.09	0.09	Parkway	Turf, Trees	McKee Blvd.	City	UDC	Yes
32	0.37	0.37	Parkway	Turf, Trees	School Parkway	City	UDC	No
33	0.28	0.28	Parkway	Turf, Trees	Golden Spike	City	UDC	Yes
34	0.18	0.18	Median	Trees, Shrubs	Golden Spike	City	UDC	No
36	0.31	0.31	Parkway	Turf, Trees	Brookhurst	City	UDC	Yes
37	5.50	5.50	Pond Berm	Shrubs	Harris	City	UDC	Partial
40	2.10	2.10	Pond Berm	Shrubs	Lathrop Associates	WPH	MLE	No
50	12.40	11.52	Ag Field	Crop - Rye Grass	Service Commercial	Pulte	MLE	Yes
52a	4.82	4.51	Ag Field	Crop - Rye Grass	Service Commercial	TCN	MLE	Yes
52b	4.82	4.51	Ag Field	Crop - Rye Grass	Azevedo SC	Azevedo	V&A	Yes
Total		**69**						

UDC denotes Mossdale Landing Urban Design Concept EIR, MLE denotes Mossdale Landing East EIR, V&A denotes Expansion of Mossdale Landing Recycled Water Disposal Fields (Vallentyne and Azevedo Properties).

28. Phase II land application areas will be developed in the future. Because the Discharger must collect additional information to support use of the proposed Phase II land application areas, staff has not determined if wastewater application is acceptable or not at this time. That determination will be made upon the submittal of the *Recycled Water Expansion Report* described in Provision G.1.h. The Discharger has identified the following land areas that are anticipated to be used for recycled water application:

PHASE II LAND APPLICATION AREAS

App Area No.	Total Area (acres)	Irrigated Area (acres)	Description	Irrigation Type	Location	CEQA
38	4.60	2.30	Park	Turf Grass	River Park South	UDC
39	8.98	8.27	Ag Field	Crop - Rye Grass	Lathrop Assoc.	MLE
42	12.70	11.95	Ag Field	Crop - Rye Grass	Vallentyne	V&A
43	3.00	3.00	Pond Berm	Shrubs	Sutherland	NUR
44	1.20	0.99	Ag Field	Crop - Rye Grass	Quierolo South	MLS
45	8.36	7.62	Ag Field	Crop - Rye Grass	Quierolo South	MLS
62	5.90	4.85	Ag Field	Crop - Rye Grass	Vallentyne Comm.	V&A
63	98.8	94.7	Ag Field	Crop - Rye Grass	N. River Islands	WRP-1
64	39.2	35.5	Ag Field	Crop - Rye Grass	N. River Islands	WRP-1
65	13.7	11.2	Ag Field	Crop - Rye Grass	SW River Islands	River Is. Add to WRP-1
66	14	12.6	Ag Field	Crop - Rye Grass	SW River Islands	River Is. Add to WRP-1
67	54.7	49.9	Ag Field	Crop - Rye Grass	SW River Islands	River Is. Add to WRP-1
68	55.30	50.70	Ag Field	Crop - Rye Grass	SW River Islands	River Is. Add to WRP-1
Total		**294**				

UDC denotes Mossdale Landing Urban Design Concept EIR, MLE denotes Mossdale Landing East EIR, MLS denotes Mossdale Landing South, NUR denotes Burisso Recycled Water Storage Ponds, V&A denotes Expansion of Mossdale Landing Recycled Water Disposal Fields (Vallentyne and Azevedo Properties), WRP-1 denotes Lathrop Water Recycling Plant No. 1, Phase 1 Expansion, and River Is. Add to WRP-1 denotes River Islands Disposal Fields Expansion.

29. All the land application areas are located on Attachments D.1, D.2, and D.3.

Wastewater Collection System

30. The wastewater collection system will be equipped with two new sewer pumping stations. One will be located in Mossdale Landing, the second will be located in River Islands. Each of the force mains will be equipped with a spill detection system and electrical generators capable of operating all the pumps. Spill detection consists of flow meters at the pumping stations and the treatment facility. If flow differential is measured, the operator will be notified to respond.

31. At the Mossdale Landing pumping station, wastewater will be conveyed from the lift station to the MBR treatment plant via 8-inch and 12-inch diameter force mains located within the right-of-way of existing or planned roadways and under Interstate Highway 5. The pumping station is designed for a peak wet weather flow rate of 2.3 mgd.

32. At the River Island pumping station, wastewater will be conveyed from the lift station to the MBR treatment plant via 12-inch diameter force main under the San Joaquin River and Interstate Highway 5. The pumping station is designed for a peak wet weather flow rate of 0.48 mgd.

33. The sanitary sewer system collects wastewater and consists of sewer pipes, manholes, and/or other conveyance system elements and directs the raw sewage to the treatment facility. A “sanitary sewer overflow” is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the treatment facility. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system

and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.

34. For the proposed facility, any sanitary sewer overflows would consist of varying mixtures of domestic and commercial wastewater, depending on land uses in the sewage collection system. The chief causes of sanitary sewer overflows include grease blockages, root blockages, debris blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, storm or groundwater inflow/infiltration, lack of capacity, and/or contractor caused blockages.

35. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen demanding organic compounds, oil and grease, and other pollutants. Sanitary sewer overflows can cause temporary exceedences of applicable water quality objectives, pose a threat to public health, adversely affect aquatic life, and impair the public recreational use and aesthetic enjoyment of surface waters in the area.

36. The Discharger is expected to take all necessary steps to adequately maintain, operate, and prevent discharges from its sanitary sewer collection system. This Order requires the Discharger to prepare and implement a *Sanitary Sewer Operation, Maintenance, Overflow Prevention, and Response Plan*.

Site-Specific Conditions

37. Annual precipitation in the vicinity averages approximately 13.31 inches. The mean pan evaporation rate is approximately 50.8 inches per year. With the exception of the River Islands land application areas, all portions of the facility are outside the 100-year flood zone. For a period of time Califia LLC land application areas located on River Islands may be within the 100-year flood zone. Currently 50-year levees protect the River Island land application areas. The Discharger states that ultimately, 200-year levees will be constructed when development occurs.

38. The facility lies within the San Joaquin Delta Hydrologic Unit Area No. 544.00, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

39. Based on the National Resource Conservation Service soil survey, the soils in the proposed land application areas are sandy to silty clay loams. Published infiltration rates for the soils range from 0.06 to 6.0 in/hr.

Groundwater Considerations

40. Groundwater currently used for municipal supply typically is drawn from wells that penetrate the Laguna Formation (approximately 150 to 1,000 ft. bgs).

41. Except for the Reiter land application area, the Discharger initiated groundwater investigations without first consulting Regional Board staff. Groundwater monitoring wells were installed without submitting workplans or sampling plans and therefore, significant data gaps exist concerning groundwater elevation, flow direction, and quality. In addition, several consultants performed the work for the Discharger and no standardized approach was implemented.

42. A number of the groundwater monitoring wells have been damaged by construction activities and must be located and properly destroyed. In addition, as the development progresses, some wells may prove to be unnecessary and/or in the way of construction activities. Staff anticipates that a number of the wells must be properly destroyed or relocated during development of the groundwater monitoring network.

43. The Discharger submitted a 20 December 2004 *Monitoring Well Abandonment Procedures* letter report, prepared by Kleinfelder. The report recommends destruction of eight wells that have been damaged and are not serviceable. The wells will be drilled out and the borings filled with neat cement under the supervision of the San Joaquin County Environmental Health Department. The wells proposed for destruction are TMW-1, TMW-7, TMW-9, TMW-10, LMW-2, LMW-3, LMW-5, LMW-6, P-7, and P-8.

44. Depth to groundwater varies depending on location, season, and local influences such as irrigation practices, groundwater extraction, the presence and stage of surface water bodies. The area of development covered by this order can be divided into three subareas: River Islands, Mossdale, and the Reiter land application area. River Islands is bounded to the north and west by Old River, to the east by the San Joaquin River, and to the south by Paradise Cut. The Mossdale area is bounded to the west by the San Joaquin River. The Reiter land application area is located approximately two miles east of Mossdale and is less influenced by surface water bodies; however, an unlined irrigation canal exists approximately 500 feet to the east.

45. A damaged stormwater drainage pipe is locally dewatering the area and thereby controlling groundwater flow near the southern portion of the Mossdale area. The broken pipe is located on the east side of Highway 5 and its location is shown on Attachment D.1. The damaged pipe is near recycled water storage ponds and land application areas and therefore could allow more rapid transport of wastewater contaminants to surface water bodies and must be repaired. The Discharger has committed to repairing the damaged pipe by June 2008. Therefore, the repair will be completed before groundwater originating in the land application areas/wastewater ponds could migrate to the drainage pipe.

46. The following table presents a summary of the monitoring wells that have been installed to date:

Well Name	Location	Dia. (in.)	Depth (ft.)	Screen Int. (ft. bgs)	Permit	Cons. Log	Boring Log	Status
TMW-1	Mossdale	2	20	5-20	yes	no	yes	Destroyed
TMW-3	Mossdale	2	20	5-20	yes	no	yes	Functional, Dry 9/27/04
TMW-5	Mossdale	2	20	5-20	yes	no	yes	Functional
TMW-6	Mossdale	2	20	5-20	yes	no	yes	Functional
TMW-7	Mossdale	2	20	5-20	yes	no	yes	Destroyed
TMW-8	Mossdale	2	20	5-20	yes	yes	yes	Functional
TMW-9	Mossdale	2	20	5-20	yes	yes	yes	Destroyed
TMW-10	Mossdale	2	20	5-20	yes	yes	yes	Destroyed
LMW-1	Mossdale	2	20	5-20	yes	no	no	Damaged but functional
LMW-2	Mossdale	2	20	5-20	no	no	no	Destroyed
LMW-3	Mossdale	2	20	5-20	no	no	no	Destroyed

Well Name	Location	Dia. (in.)	Depth (ft.)	Screen Int. (ft. bgs)	Permit	Cons. Log	Boring Log	Status
LMW-4	Mossdale	2	20	5-20	no	no	no	Located in Discharge Pond
LMW-5	Mossdale	2	20	5-20	no	no	no	Destroyed
LMW-6	Mossdale	2	20	5-20	no	no	no	Destroyed
P-1	Mossdale	1	15	5-15	yes	no	no	Functional
P-2	Mossdale	1	15	5-15	yes	no	no	Functional
P-3	Mossdale	1	15	5-15	yes	no	no	Functional, Dry 9/27/04
P-4	Mossdale	1	19.5	9.5-19.5	yes	no	no	Functional
P-5	Mossdale	1	20	10-20	yes	no	no	Functional
P-6	Mossdale	1	15	5-15	yes	no	no	Functional
P-7	Mossdale	2	20	10-20	no	no	no	Destroyed
P-8	Mossdale	2	20	10-20	no	no	no	Destroyed
MW-1	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-2	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-3	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-4	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-5	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-6	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-7	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-8	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-9	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-10	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-11	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-12	River Is.	2	21.5	5-20	yes	yes	yes	Functional
MW-18	River Is.	1	19.58	NR	no	no	no	Functional
MW-20	River Is.	NA	14.6	NR	no	no	no	Functional
RMW-1	Reiter	2	30	15-30	yes	yes	yes	Functional
RMW-2	Reiter	2	30	15-30	yes	yes	yes	Functional
RMW-3	Reiter	2	30	15-30	yes	yes	yes	Functional

NA denotes Not Available

47. To characterize groundwater quality, the Discharger sampled existing groundwater monitoring wells and performed 40 direct push boreholes to collect soil and groundwater samples. The locations of the wells and direct push sample locations are presented on Attachments E.1, E.2, and E.3. The direct push boreholes samples were collected between 15 and 17 November 2004, and were typically collected from a depth of 13 to 20 feet bgs. The direct push groundwater sample data is presented below:

Sample Name	Sample Location	TDS mg/L	Cl mg/L	Na mg/L	TN as N mg/L	TKN mg/L	pH S.U.	THMs µg/L
RIHP-1	River Islands	840	310	120	ND (1.0)	0.56	6.7	NR
RIHP-2	River Islands	1,300	580	150	ND (1.0)	0.56	6.5	NR
RIHP-3	River Islands	2,100	810	360	ND (1.0)	ND (0.5)	6.7	NR
RIHP-4	River Islands	1,200	490	150	ND (1.0)	2	6.4	NR
RIHP-5	River Islands	2,100	780	380	ND (1.0)	ND (0.5)	6.8	NR
RIHP-6	River Islands	1,600	650	110	ND (1.0)	ND (0.5)	7.3	NR

Sample Name	Sample Location	TDS mg/L	Cl mg/L	Na mg/L	TN as N mg/L	TKN mg/L	pH S.U.	THMs µg/L
RIHP-7	River Islands	2,200	900	240	ND (1.0)	0.84	6.9	NR
RIHP-8	River Islands	1,300	460	520	ND (1.0)	ND (0.5)	7.3	NR
RIHP-9	River Islands	4,200	510	190	2.7	0.56	6.8	NR
RIHP-10	River Islands	2,400	870	350	ND (1.0)	ND (0.5)	7.4	NR
GP1	Mossdale	1,400	400	380	ND (1.0)	0.56	7.6	NR
GP2	Mossdale	940	310	200	ND (1.0)	ND (0.5)	7.3	NR
GP3	Mossdale	2,000	570	510	6.8	ND (0.5)	7.5	NR
GP4	Mossdale	2,800	820	920	3.4	ND (0.5)	8.0	NR
GP5	Mossdale	1,500	500	230	1.1	1.4	7.1	NR
GP6	Mossdale	2,800	900	980	29	ND (0.5)	8.5	NR
GP7	Mossdale	1,800	430	530	22	ND (0.5)	8.2	NR
GP8	Mossdale	2,400	360	780	25	ND (0.5)	8.4	NR
GP9	Mossdale	5,900	3500	1500	ND (1.0)	ND (0.5)	7.6	NR
GP10	Mossdale	2,300	550	710	28	ND (0.5)	7.7	NR
GP11	Mossdale	2,300	570	810	3.7	ND (0.5)	8.1	NR
GP12	Mossdale	1,900	480	300	38	ND (0.5)	7.1	NR
GP13	Mossdale	2,100	1,000	350	ND (10)	ND (0.5)	7.3	NR
GP14	Mossdale	5,000	2,700	1,200	ND (10)	ND (0.5)	7.2	NR
GP15	Mossdale	1,500	660	230	ND (1.0)	ND (0.5)	7.1	NR
GP16	Mossdale	1,600	700	240	ND (1.0)	ND (0.5)	7.0	NR
GP17	Mossdale	1,000	330	130	ND (1.0)	ND (0.5)	7.5	NR
GP18	Mossdale	860	210	190	ND (1.0)	ND (0.5)	7.3	NR
GP19	Mossdale	290	69	66	ND (1.0)	ND (0.5)	7.5	NR
GP20	Mossdale	360	86	62	ND (1.0)	ND (0.5)	7.3	NR
GP21	Mossdale	890	280	110	ND (1.0)	ND (0.5)	7.5	NR
GP22	Mossdale	1,000	360	150	ND (1.0)	ND (0.5)	7.2	NR
GP23	Mossdale	660	190	91	ND (1.0)	ND (0.5)	7.3	NR
GP24	Mossdale	810	230	160	ND (1.0)	ND (0.5)	7.6	NR
GP25	Mossdale	740	160	130	ND (1.0)	ND (0.5)	7.3	NR
GP26	Mossdale	390	110	72	ND (1.0)	0.56	6.9	NR
GP27	Mossdale	360	76	78	ND (1.0)	ND (0.5)	7.1	NR
GP28	Mossdale	360	84	45	ND (1.0)	ND (0.5)	6.9	NR
GP29	Mossdale	610	230	71	ND (1.0)	1.4	6.7	NR
GP30	Mossdale	340	73	56	ND (1.0)	ND (0.5)	7.1	NR

TDS denotes Total Dissolved Solids. Cl denotes Chloride. Na denotes Sodium. TN denotes Total Nitrogen. THMs denotes Trihalomethanes. NR denotes Not Reported. ND denotes Not Detected (detection limit in parentheses).

48. To characterize groundwater quality the Discharger sampled existing groundwater monitoring wells. The locations of the wells presented on Attachments E.1, E.2, and E.3. Most of the sample data were collected on 27 September 2004. If the well wasn't sampled on that date, the last sampling event for the well is presented.

Well	Location	Date	TDS mg/l	Cl mg/l	Na mg/l	NO_3 as N mg/l	TKN mg/l	pH S.U.	THMs µg/l
MW-1	River Is.	9/27/04	900	NR	181	NR	ND	6.6	ND
MW-3	River Is.	9/27/04	2,300	NR	445	6.8	0.56	6.0	ND
MW-4	River Is.	9/27/04	NR	NR	318	NR	NR	NR	NR
MW-5	River Is.	9/27/04	1,200	NR	196	6.3	0.56	6.8	ND
MW-6	River Is.	9/27/04	920	190	178	ND	ND	7.1	ND
MW-10	River Is.	9/27/04	500	87	90.4	0.32	ND	7.4	ND
MW-11	River Is.	9/27/04	1,100	420	204	ND	0.56	6.8	ND
MW-12	River Is.	9/27/04	1,400	560	223	ND	ND	6.9	ND
LMW-1	Mossdale	9/27/04	4,300	NR	1,500	16	0.56	7.6	ND (0.05)
LMW-2	Mossdale	2/11/01	1,100	230	230	23	NR	7.9	NR
LMW-3	Mossdale	2/11/01	3,000	1,200	740	ND (2.5)	NR	7.6	NR
LMW-4	Mossdale	4/1/04	2,800	NR	810	2	0.66	7.5	NR
LMW-5	Mossdale	4/1/04	2,000	NR	340	ND	N.D.	7.2	NR
LMW-6	Mossdale	12/12/00	1,600	700	240	ND (0.3)	NR	7.0	NR
TMW-1	Mossdale	2/27/01	2,000	610	304	NR	NR	7.7	NR
TMW-3	Mossdale	4/1/04	990	NR	190	24	ND	7.5	NR
TMW-5	Mossdale	9/27/04	1,000	NR	140	0.66	ND (0.5)	7.1	ND (0.5)
TMW-6	Mossdale	9/27/04	1,900	NR	350	ND (1)	0.84	6.8	ND (0.5)
TMW-7	Mossdale	2/27/01	2,110	373	694	NR	NR	8.3	ND (0.5)
TMW-8	Mossdale	9/27/04	1,100	NR	170	15	ND (0.5)	7.0	ND (0.5)
TMW-9	Mossdale	4/2/04	1,500	NR	490	NR	ND	7.3	NR
TMW-10	Mossdale	4/2/04	550	NR	230	NR	1.6	7.3	NR
P1	Mossdale	9/27/04	2,300	NR	500	31	ND(0.5)	7.2	ND (0.5)
P2	Mossdale	9/27/04	2,100	NR	590	6	0.56	7.4	ND (0.5)
P4	Mossdale	9/27/04	1,000	NR	170	NA	0.56	7.0	ND (0.5)
P5	Mossdale	9/27/04	740	NR	110	1.7	0.56	7.4	ND (0.5)
P6	Mossdale	9/27/04	520	NR	95	ND (0.23)	ND (0.5)	7.0	ND (0.5)
P7	Mossdale	4/2/04	400	NR	63	NA	2.6	7.0	NA
RMW-1	Reiter	9/27/04	540	NR	170	5.9	ND (0.5)	7.6	ND (0.5)
RMW-2	Reiter	9/27/04	1,400	NR	410	9.8	0.56	7.6	ND (0.5)
RMW-3	Reiter	9/27/04	920	NR	230	22	ND (0.5)	7.5	ND (0.5)

TDS denotes Total Dissolved Solids. Cl denotes Chlorine. Na denotes Sodium. NO_3 as N denotes Nitrate as Nitrogen. TKN denotes Total Kjeldahl Nitrogen. THMs denotes Trihalomethanes.

49. To protect groundwater quality, the Discharger has stated that it will limit application of recycled water to areas where TDS groundwater concentrations exceed 1,000 mg/L. The Discharger may perform additional studies and submit technical reports to support revisions to the areas where wastewater can be applied.

50. The RWD states the following about groundwater conditions at the River Islands area:

    a. Groundwater is typically observed within 12 feet of the ground surface and varies seasonally, rising to within two-feet of the ground surface during late spring/summer, and declining to a depth of 8 to 12 feet during fall/winter/early spring. The groundwater flows from the north to the southwest (from the San Joaquin River to Paradise Cut).

b. Groundwater quality generally exceeds the TDS Water Quality Objective (WQO) across the island. Water quality is best in the northeast (approximately 900 mg/L) and degrades towards the southwest (approximately 2,000 mg/L). Nitrogen compounds in most groundwater samples were below the detection limit.

c. The Discharger has proposed that acceptable recycled water application areas in Phase I be limited to areas located where underlying groundwater contains at least 1,000 mg/L of TDS. Finding No. 27 indicates the acceptability of Phase I land application areas proposed in the RWD. Attachment E.2 presents TDS groundwater quality data and acceptable locations for wastewater application. Determination of acceptable areas for Phase II will be based on further evaluation of groundwater and recycled water quality. Use of Phase II land application areas listed in Finding No. 28 may not be allowed based on groundwater quality data and application criteria.

51. The RWD states the following about groundwater conditions at the Mossdale area:

a. Groundwater is typically observed within 5-10 feet of the ground surface and varies seasonally, rising to less than 5-feet of the ground surface. Groundwater elevation is influenced by the nearby river stage and also dewatering activities. Dewatering is performed for construction activities and is also occurring as a result of the broken stormwater pipe located east of the Mossdale area. In the northern portion of Mossdale, groundwater flows to the southwest, toward the San Joaquin River. Groundwater flow direction in the southern portion of Mossdale is controlled by dewatering activities.

b. Groundwater quality generally exceeds the TDS WQO but several direct push grab groundwater samples contained TDS concentrations less than the WQO. The better quality groundwater is located in the southern portion of the Mossdale area and may be the result of dilution caused by dewatering. Water quality is worst in the northeast (approximately 5,000 mg/L) and improves towards the southwest (approximately 1,000 mg/L). Nitrogen compounds in most groundwater samples were variable with most sample concentrations below 10 mg/L as nitrogen but some concentrations above 30 mg/L.

c. The Discharger has proposed that acceptable recycled water application areas in Phase I be limited to areas located where underlying groundwater contains at least 1,000 mg/L of TDS. Attachment E.1 presents TDS groundwater quality data and acceptable locations for wastewater application. Finding No. 27 indicates the acceptability of land application areas proposed in the RWD. Determination of acceptable areas for Phase II will be based on further evaluation of groundwater and recycled water quality. Use of Phase II land application areas listed in Finding No. 28 may not be allowed based on groundwater quality data and application criteria.

52. The RWD states the following about groundwater conditions at the Reiter land application area:

a. Groundwater is typically observed 15 to 20 feet below the ground surface. The groundwater flows to the west towards the San Joaquin River. A South San Joaquin Irrigation District unlined canal exists approximately 500 feet east of the land application area.

b. Groundwater quality exceeds the TDS Water Quality Objective (WQO) across the property. Based on a groundwater sample event using the existing groundwater monitoring wells and grab groundwater samples collected the week of 24 January 2005, groundwater quality is less than 1,000 mg/L across the property. Water quality is best in the east (approximately 500 mg/L) and degrades towards the west (approximately 700 to 900 mg/L). Nitrogen compounds two of the three groundwater wells at the property exceed 10 mg/L and concentration trends increase from east to west.

c. The Discharger has proposed that acceptable recycled water application areas in Phase I be limited to areas located where underlying groundwater contains at least 1,000 mg/L of TDS. Therefore, none of the area is considered acceptable for wastewater application. Finding No. 27 indicates the acceptability of land application areas proposed in the RWD. Determination of acceptable areas for Phase II will be based on further evaluation of groundwater and recycled water quality. Use of Phase II land application areas listed in Finding No. 28 may not be allowed based on groundwater quality data and application criteria.

53. The monitoring network is not adequate to evaluate groundwater quality at all storage and/or application areas. Therefore, it is appropriate that the Discharger install additional groundwater monitoring wells, continue groundwater monitoring, and complete a technical analysis of groundwater monitoring data to determine final background concentrations. To characterize groundwater quality at the sites most likely to impact groundwater quality based on the volume of recycled water that will be applied to land or because recycled water will be stored in a pond, staff has selected the following land application areas and/or recycled water storage ponds for groundwater monitoring.

Item to be Monitored[1]	Location	Development Phase
Land Application Areas Nos. 2, 17, 18, 24, 52a, 52b	Mossdale	I
Ponds Nos. A, B, and C	Mossdale	I
Land Application Area No. 1	Reiter	II
Pond No. 3	MBR Facility	I
Land Application Areas Nos. 63, 64, 65, 66, 67, 68	River Islands	II
Pond No. D	Reiter	II
Pond No. E	MBR Facility	II

[1] Inclusion of land application areas in this table does not indicate the land area is acceptable for wastewater application.

54. The RWD indicates that applied recycled water that percolates below the root zone is anticipated to contain a TDS concentration of 1,496 mg/L and predicts a reduction of the TDS concentration due to soil and chemical reactions in the subsurface to approximately 958 mg/L through mineral precipitation, ion exchange, and other attenuation processes. To protect groundwater quality in Phase I, the Discharger is limiting application of recycled water to areas where TDS groundwater concentrations exceed 1,000 mg/L.

55. The RWD presents a discussion of nitrogen compounds contained in applied recycled water. Approximately 85 to 90 percent of the applied nitrogen is expected to be taken up by crops. Denitrification and/or conversion to relatively stable organic nitrogen compounds is anticipated to occur. Although not described in the RWD, denitrification in the recycled water storage ponds is also expected, further reducing the amount of applied nitrogen. Groundwater beneath land application areas is not anticipated to be degraded by nitrogen compounds as a result of the wastewater application.

Groundwater Degradation

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

57. Some degradation of groundwater beneath the WWTF is consistent with Resolution 68-16 provided that:

    a. The degradation is confined within a specified boundary;

    b. The Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating Best Practicable Treatment and Control (BPTC) measures;

    c. The degradation is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order; and

    d. The degradation does not result in water quality less than that prescribed in the Basin Plan.

58. Some degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of California. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. Degradation of groundwater by constituents (e.g., toxic chemicals) other than those specified in the groundwater limitations in this Order, and by constituents that can be effectively removed by conventional treatment (e.g., total coliform bacteria) is prohibited. When allowed, the degree of degradation permitted depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and most stringent water quality objective, source control measures, waste constituent treatability).

Treatment and Control Practices

59. The Discharger will provide treatment and control of the discharge that incorporates:

    a. Use of a low salinity, low hardness water supply to the extent possible;

b. Metal, concrete and/or plastic treatment structures that provide complete containment during wastewater treatment;
c. Alarm and automatic flow diversion systems to prevent system bypass or overflow;
d. Effluent storage pond liner systems consisting of 40-mil high density polyethylene;
e. Disinfection of treated effluent;
f. Recycled water application at agronomic application rates;
g. Appropriate biosolids storage and disposal practices;
h. An operation and maintenance (O&M) manual; and
i. Certified operators to assure proper operation and maintenance.

60. The WWTF design and effluent recycling program incorporate numerous BPTC measures. In order to determine compliance with Resolution No. 68-16 it is appropriate to establish a schedule for installation and sampling of additional groundwater monitoring wells and to formally determine background groundwater concentrations for selected constituents. Groundwater monitoring is presently insufficient to determine true background conditions at land application and recycled water storage ponds located across a large area. In addition, the wells were installed and sampled without submittal of a workplan and/or sampling and analysis plan. As a result, some of the available data from the groundwater monitoring wells may be unreliable. The Discharger has voluntarily limited recycled water application to areas with groundwater TDS concentrations above 1,000 mg/L. If groundwater is degraded or there is evidence that the discharge may cause degradation, then the Discharger will be required to evaluate and implement additional BPTC measures for each conveyance, treatment, storage, and disposal component of the system. Completion of these tasks will ensure that BPTC and the highest water quality consistent with the maximum benefit to the people of the state will be achieved.

61. This Order establishes interim groundwater limitations for the WWTF that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order contains tasks for assuring that BPTC and the highest water quality consistent with the maximum benefit to the people of the state will be achieved. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16. Based on the results of the scheduled tasks, the Regional Board may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution 68-16.

Basin Plan, Beneficial Uses, and Regulatory Considerations

62. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Board. These requirements implement the Basin Plan.

63. The beneficial uses of the San Joaquin River (within the Sacramento San Joaquin Delta Hydrologic Area) are municipal and domestic supply; agricultural supply; industrial process supply; industrial

service supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; wildlife habitat; and navigation.

64. The Basin Plan designates the beneficial uses of underlying groundwaters as municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

65. The Basin Plan encourages water recycling.

66. The Basin Plan establishes numerical and narrative water quality objectives for surface water and groundwater within the basin. Numerical and narrative water quality objectives are maximum limits directly applicable to the protection of designated beneficial uses of the water unless higher levels are the result of factors that cannot be reasonably controlled or are not subject to the authority of the State and Regional Water Boards. The Basin Plan requires that the Regional Board, on a case-by-case basis, follow specified procedures to determine maximum numerical limitations that apply the narrative objectives when it adopts waste discharge requirements.

67. The Basin Plan specifies a numerical water quality objective for ground waters for Bacteria that states, in part, the following:

> *"The following objectives apply to all ground waters of the Sacramento and San Joaquin River Basins, as the objectives are relevant to the protection of designated beneficial uses."*
>
> ***"Bacteria***
> *In ground waters used for domestic or municipal supply (MUN), the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100mL."*

Groundwater, as described in the Basin Plan (page I-1.00), includes all subsurface waters that occur in fully saturated zones and fractures within soils and other geologic formations.

68. The Regional Board applies the bacteria objective to all groundwaters designated as municipal or domestic supply (MUN), not just those waters currently used for MUN. This interpretation is consistent with the California Water Code (CWC) and the Basin Plan. The Regional Board has consistently interpreted the objective to apply to groundwater designated for MUN. The Regional Board has a long-standing pattern and practice of adopting WDRs that reflect this interpretation. The following excerpts from the Basin Plan clearly support the plain meaning of the Basin Plan as well as the Regional Board's established pattern and practice:

    a. The introductory paragraph on Water Quality Objectives for Ground Waters (page III-9.00 of the Basin Plan) states: *"The following objectives apply to all ground waters of the Sacramento and San Joaquin River Basins, as the objectives are relevant to the protection of designated beneficial uses."*

    b. The Policy for Application of Water Quality Objectives (page IV-16.00) states: *"Water quality objectives apply to all waters within a surface water or ground water resource for which*

beneficial uses have been designated, rather than at intake, wellhead, or other point of consumption." Consistent with the CWC and the Basin Plan, the Regional Board applies the bacteria objective to all groundwaters designated as municipal or domestic supply (MUN), not just those waters currently used for MUN.

c. State Board Resolution No. 88-63 (Adoption of Policy Entitled "Sources of Drinking Water") defines all groundwaters of the State to be suitable or potentially suitable for MUN uses, and states that they should be designated as MUN in Basin Plans unless at least one the following three criteria are satisfied:

- The total dissolved solids concentration of the resource exceeds 3,000 mg/L (5,000 µmhos/cm, electrical conductivity) and it is not reasonably expected by the Regional Board to supply a public water system, or

- There is contamination, either by natural processes or human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or

- The water source does not provide sufficient water to supply a single well capable of producing an average sustained yield of 200 gallons per day.

Accordingly, the Regional Board designated all groundwaters of the basins as suitable or potentially suitable for MUN in the Basin Plan (pages II-2.00 and -3.00). The Regional Board can only "de-designate" beneficial uses of a particular water resource through amendment of the Basin Plan.

69. State Board Order No. WQO-2003-0014 upheld the Regional Board's interpretation of the Basin Plan with respect to implementation of the bacteria objective, stating: *"The Basin Plan contains a water quality objective for bacteria that applies to groundwater that states: 'In groundwaters used for domestic or municipal supply (MUN) the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 mL.' Since the groundwater is designated for municipal or domestic supply, a groundwater limitation for coliform of less than 2.2MPN/100 mL is appropriate."*

70. The Basin Plan includes a water quality objective for Chemical Constituents that, at a minimum, requires waters designated as domestic or municipal supply to meet the maximum contaminant levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) of Section 64449, and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that that the Regional Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

71. The Basin Plan contains narrative water quality objectives for Chemical Constituents, Tastes and Odors, and Toxicity. The Toxicity objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. The Chemical Constituents objective requires that groundwater "shall not contain chemical constituents in concentrations that adversely affect beneficial uses." The Tastes and Odors objective requires that groundwater "shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses." Chapter IV, Implementation, of the Basin Plan contains the "Policy for Application of Water Quality Objectives." This Policy specifies, in part, that compliance with narrative water quality objectives may be evaluated considering numerical criteria and guidelines developed and/or published by other agencies and organizations.

72. CWC Section 13241 requires the Regional Board to consider various factors, including economic considerations, when adopting water quality objectives into its Basin Plan. CWC Section 13263 requires the Regional Board to address the factors in Section 13241 in adopting waste discharge requirements. The State Board, however, has held that a Regional Board need not specifically address the Section 13241 factors when implementing existing water quality objectives in waste discharge requirements because the factors were already considered in adopting water quality objectives. The interim groundwater limitations apply already-adopted water quality objectives in the manner prescribed by the Basin Plan. No additional analysis of Section 13241 factors is required.

73. Under the "Antidegradation" section, the attached Information Sheet lists the various waste constituents identified thus far as fitting the restriction of Finding No. 70 and 71, along with limits of each constituent necessary to maintain beneficial uses known to be adversely affected at certain concentrations of the waste constituent in groundwater. The listing identifies the constituent, the beneficial use and its associated limit, as well as the technical reference for the limit. Some limits become less restrictive when the water supply is limited to certain applications of a beneficial use, but that requires additional factual information. Interim groundwater limitations for each constituent reflect the most restrictive listed limit for the waste constituent, except if natural background quality is greater, in which case background becomes the interim limitation.

Water Recycling

74. State Board Resolution No. 77-1, *Policy with Respect to Water Recycling in California*, encourages recycling projects that replace or supplement the use of fresh water, and *The Water Recycling Law* (CWC sections 13500-13529.4) declares that utilization of recycled water is of primary interest to the people of the State in meeting future water needs.

75. The California Department of Health Services (DHS) has established statewide water recycling criteria in Title 22, CCR, Section 60301 et. seq. (hereafter Title 22). The Discharger will treat the wastewater to tertiary standards and disinfect the effluent per Title 22 requirements.

76. A 1988 Memorandum of Understanding between DHS and the State Board on the use of recycled water establishes basic principles relative to the two agencies and the regional boards. The Memorandum allocates primary areas of responsibility and authority between the agencies and

provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to use of recycled water.

77. DHS requires that the American Water Works Association (AWWA) *Guidelines for Distribution of Non-Potable Water* and *Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water* be implemented in design and construction of recycling equipment. The guidelines require installation of purple pipe, adequate signs, and adequate separation between the recycled water lines and domestic water lines and sewer lines. The Discharger proposes to fully comply with these requirements with the exception of the pipe installation addressed in the 9 February 2005 DHS letter titled, *Recycled Water Main & Sanitary Sewer Force Main Separation Requirements, and as approved by DHS.*

78. Section 60323(a) of Title 22 states that no person shall produce or supply recycled water for direct reuse from a proposed water recycling plant unless an engineering report is submitted for review and approval by DHS and the Regional Board. Irrigation of fodder crops, as well as irrigation of turf grass at parks and schools, is considered a beneficial reuse. The Discharger submitted a Revised Title 22 Engineering Report to DHS in November 2004. DHS provided comments on the revised Title 22 Report on 3 December 2004, and those comments are addressed in these WDRs.

Other Regulatory Considerations

79. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in 40 CFR 503, *Standard for the Use or Disposal of Sewage Sludge,* which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria.

80. The Regional Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Regional Board is not the implementing agency for 40 CFR 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the EPA. The RWD states all biosolids will be hauled to a separate permitted facility.

81. The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of stormwater associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers.

82. A number of Environmental Impact Reports (EIRs) and addendum to EIRs have been prepared for this project. They have been adopted by Lathrop City Council, in accordance with the California Environmental Quality Act (CCR, Title 14, Section 15261 et. seq.). The proposed wastewater treatment and disposal system is consistent with the project as analyzed in the EIRs when mitigation measures are implemented. Mitigation measures are discussed in the following findings. The CEQA documents and Notice of Determination date are presented in the table below:

Title	Notice of Determination	City Council Resolution(s)	Mitigation Monitoring Prog	Mitigated Negative Dec	Mitigation Measures

Title	Notice of Determination	City Council Resolution(s)	Mitigation Monitoring Prog	Mitigated Negative Dec	Mitigation Measures
Final EIR, Mossdale Landing Urban Design Concept	N/A	N/A	N/A	N/A	See Finding 83 a
Final Subsequent EIR, River Islands at Lathrop Project	1/29/03	03-1383, 03-1384, 03-1385, 03-1386, 03-1387	Yes	N/A	See Finding 83 b
Final Supplemental EIR, Mossdale Landing East	3/3/04	04-1618	Yes	N/A	See Finding 83 c
Final EIR, Lathrop Water Recycling Plant No. 1, Phase 1 Expansion	3/14/04	03-1407	Yes	N/A	See Finding 83 d
Reiter Property Recycled Water Disposal Field Relocation	6/23/04	04-1698	N/A	Yes	See Finding 83 e
Final EIR, Lathrop Water, Wastewater, and Recycled Water Master Plan	7/11/04	01-1104, 01-1105	Yes	N/A	See Finding 83 f
Final EIR, Mossdale Landing South	9/23/04	04-1749, 04-1750, 04-1752	Yes	N/A	See Finding 83 g
Addendum to the EIR for the Lathrop Water Recycling Plant No. 1, Phase 1 Expansion Project		04-1781	Yes		See Finding 83 h
Addendum to the EIR for the Lathrop Water Recycling Plant No. 1, Phase 1 Expansion Project, Expansion of Mossdale Landing Recycled Water Disposal Fields	11/16/04	04-1781	N/A	N/A	See Finding 83 i
Nurisso Recycled Water Storage Ponds	Resolution 11/30/04	04-1788	N/A	N/A	See Finding 83 j
Final EIR, West Lathrop Specific Plan	2/21/96	96-494	Yes	N/A	See Finding 83 k
Initial Study, River Islands Disposal Fields Expansion	N/A	Staff Level Approved	N/A	N/A	See Finding 83 l

83. Each of the CEQA documents listed above identified mitigation measures that were required as part of project implementation. Each of the documents is discussed below.

a. The *Final EIR, Mossdale Landing Urban Design Concept* described the following mitigation measures:

i. Interim and build out development shall not occur until both adequate wastewater treatment capacity and tertiary treatment to Title 22 standards for unrestricted use are available.

ii. Build out shall not commence until and unless additional disposal capacity is provided to dispose of the increase in recycled water. Further conditions include:

1 Additional storage and application areas are available for land application of recycled water.

2 Infrastructure to transmit the recycled water exists.

3 Storage ponds are lined.

4 Application occurs at agronomic rates.

5 The application system is operational.

b. The *Final Subsequent EIR, River Islands at Lathrop Project* described the following mitigation measures:

i. Demand for wastewater treatment capacity during Phase 1a and Phase 1 will be mitigated by the City of Lathrop issuing occupancy certificates after wastewater treatment capacity is available.

ii. Demand for wastewater treatment capacity during Phase II will be mitigated by the City of Lathrop issuing occupancy certificates after wastewater treatment capacity is available.

iii. Demand for recycled water storage and disposal capacity for Phase II will be mitigated by the City of Lathrop limiting occupancy until adequate storage and disposal capacity is available.

c. The *Final Supplemental EIR, Mossdale Landing East* described the following mitigation measures:

i. Demand for wastewater treatment capacity shall not exceed 125,000 gpd. If project demands exceed the allotment, additional capacity must be acquired before additional construction can occur. The City of Lathrop is identified as responsible for monitoring flow rates.

ii. Funding for the MBR treatment facility shall be mitigated by the owners, developers, etc., to reimburse sewer consortium properties for their share of the wastewater costs.

iii. Demand for the wastewater collection system shall be mitigated by constructing sufficient collection system infrastructure prior to occupancy of homes.

iv. Funding for the collection system construction shall be mitigated by the owners, developers, etc., in accordance with established fee programs.

v. Proposed water recycling facilities shall be mitigated by review and approval of land areas by the City of Lathrop and Regional Water Quality Control Board.

d. The *Final EIR, Lathrop Water Recycling Plant No. 1, Phase 1 Expansion* described the following mitigation measures:

i. Long term odor impacts will be mitigated by engineering controls.

ii. Potential for violation of standards designed to protect public health will be mitigated by ensuring appropriate techniques and equipment are used in the design and construction, develop guidelines for the use of recycled water, provide training to operators, and enforce guidelines adherence through a City ordinance.

e. The *Reiter Property Recycled Water Disposal Field Relocation* is a mitigated negative declaration that was prepared as an amendment to the *Final EIR, Lathrop Water Recycling Plant No. 1 Phase 1 Expansion*. The report addressed use of a new land application area and pipeline. The *Initial Study* stated all mitigation measures required had been evaluated and addressed in the *Lathrop Water Recycling Plant No. 1 Phase 1 Expansion Environmental Impact Report*. A 6 July 2004 City of Lathrop Council Resolution No. 04-1698, reaffirmed mitigation measures described in the *Lathrop Water Recycling Plant No. 1, Phase 1 Expansion*.

f. The *Final EIR, Lathrop Water, Wastewater, and Recycled Water Master Plan* described the following mitigation measures:

i. TDS Groundwater quality impacts was identified as an issue that would be mitigated through on-going water quality monitoring of the City's municipal supply wells. If treatment is required possible measures will include:

1 Development of well-head treatment facilities.

2 Blending of groundwater with surface water.

3 Relocation of wells further east away from the salinity intrusion front.

ii. Long term odor impacts will be mitigated by engineering controls.

g. The *Final EIR, Mossdale Landing South* described the following mitigation measures:

i. Demand for wastewater treatment capacity shall not exceed their allocated wastewater treatment capacity. Additional capacity must be acquired before additional development is allowed. If project demands exceed the allotment, additional capacity must be acquired before additional construction can occur. The City of Lathrop is identified as responsible for monitoring flow rates.

ii. Funding for the MBR treatment facility shall be mitigated by the owners, developers, etc., to reimburse sewer consortium properties for their share of the wastewater costs.

iii. Demand for the wastewater collection system shall be mitigated by constructing sufficient collection system infrastructure prior to occupancy of homes.

iv. Funding for the collection system construction shall be mitigated by the owners, developers, etc., in accordance with established fee programs.

v. Proposed water recycling facilities shall be mitigated by review and approval of land areas by the City of Lathrop and Regional Water Quality Control Board.

h. The *Addendum to the Environmental Impact Report for the Lathrop Water Recycling Plant No. 1, Phase I Expansion Project* (Valentine property) described no new mitigation measures. The City of Lathrop Council Resolution No. 04-1781 reaffirmed mitigation measures described in the *Final EIR, Lathrop Water Recycling Plant No. 1, Phase 1 Expansion, Final EIR, Mossdale Landing Urban Design Concept, and Final EIR, Mossdale Landing South*

i. The *Addendum to the EIR for the Lathrop Water Recycling Plant No. 1, Phase 1 Expansion Project, Expansion of Mossdale Landing Recycled Water Disposal Fields* described no new mitigation measures. The City of Lathrop Council Resolution 04-1781 reaffirmed and readopted the mitigation measures published in *Final EIR, Lathrop Water Recycling Plant No. 1, Phase 1 Expansion.*

j. The *Nurisso Recycled Water Storage Ponds* described no new mitigation measures. The City of Lathrop Council Resolution No. 04-1788 reaffirmed mitigation measures described in the *Final EIR, Lathrop Water Recycling Plant No. 1, Phase 1 Expansion, Final EIR, Mossdale Landing Urban Design Concept, and Final EIR, Mossdale Landing South*.

k. The *Final EIR, West Lathrop Specific Plan Environmental Impact Report* described the following mitigation measures for wastewater management, odor control, and availability of land areas for recycled water application:

i. Select the most environmentally superior alternative for long term waste treatment, which might include discharge of wastewater to the City of Manteca or Stockton wastewater system.

ii. Eliminate on-site impacts at treatment plant, provide storage ponds in case of plant upset, and provide odor control in design of treatment facilities.

iii. Provide land disposal of effluent for interim and long term needs, Meet State standards for effluent spraying under Title 22, dispose of sludge on a regular basis.

l. The *River Islands Disposal Fields Expansion* report states no new potential impacts were identified and that the mitigation measures that will be employed for the *Final EIR, Lathrop Water Recycling Plant No. 1, Phase 1 Expansion* will address any wastewater issue arising from the disposal fields expansion.

Compliance with this Order implements the mitigation measures related to wastewater issues.

84. Section 13267(b) of the CWC provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or

is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. R5-2005-0045 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

85. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to CWC Section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order. Those wells that do not have a construction log, boring log, or County permit may not be used for monitoring associated with this Order.

86. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27. While the WWTF is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

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

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

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

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

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

Public Notice

89. The recommendations of the State Department of Health Services regarding the public health aspects of water recycling have been considered in preparation of this Order.

90. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.

91. The Discharger and interested agencies and persons have been notified of the Regional Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

92. All comments pertaining to the discharge were heard and considered in a public meeting

IT IS HEREBY ORDERED that pursuant to Sections 13263 and 13267 of the California Water Code, the City of Lathrop and Califia LLC their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

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

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Bypass or overflow of untreated or partially treated waste is prohibited.

3. Discharge of sewage from a sanitary sewer system at any point upstream of a wastewater treatment plant is prohibited. Discharge of treated recycled water downstream of the wastewater treatment plant other than at the designated storage ponds or land application areas, is prohibited.

4. Discharge of waste classified as "hazardous" under Section 2521, Chapter 15 of Title 23 or "designated," as defined in Section 13173 of CWC is prohibited.

5. Application of recycled water in a manner or location other than that described herein is prohibited.

6. The use of recycled water for purposes other than irrigation as defined in Title 22 Sections 60304(a) and this Order is prohibited.

B. Discharge Specifications

1. No wastewater may be treated or discharged under this Order until the Executive Officer approves the report required by Provision G.1.f. Upon approval, the monthly average flow may not exceed 187,600 gpd.

2. The monthly average flow may increase to 750,000 gpd after the Executive Officer approves the report required by Provision G.1.g.

3. Wastewater treatment and use of recycled water shall not cause pollution or a nuisance as defined by Section 13050 of the CWC.

4. The incidental discharge of recycled water from land application areas to waters of the State is not a violation of these requirements if the incidental discharge does not unreasonably affect the beneficial uses of the water, and does not result in exceeding an applicable water quality objective in the receiving water. Such discharge is only acceptable if the land application area has an approved irrigation system, safeguards to prevent discharge, and monitoring at the frequency in the Monitoring and Reporting (MRP) Program.

5. Public contact with wastewater and recycled water shall be precluded or controlled through such means as fences, signs, or acceptable alternatives.

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

7. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the property owned by the Discharger.

8. As a means of discerning compliance with Discharge Specification B.7, the dissolved oxygen content in the upper one foot of any wastewater or recycled water storage pond shall not be less than 1.0 mg/L.

9. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.

10. The Discharger shall treat the wastewater such that it complies with Title 22 CCR, Section 60301.230 ("Disinfected Tertiary Recycled Water").

11. All treatment and storage facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

12. Wastewater and recycled water ponds shall be managed to prevent breeding of mosquitoes. In particular,

    a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.

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

    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

13. The facility shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and

infiltration. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

14. Freeboard in any pond containing wastewater or recycled water shall never be less than two feet as measured from the water surface to the lowest point of overflow.

15. On or about **15 October** of each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications B.13 and B.14.

16. All recycled water conveyance and distribution piping and equipment shall comply with California Department of Health Services requirements and American Water Works Association (AWWA) *Guidelines for Distribution of Non-Potable Water* and *Guidelines for the On-site Retrofit of Facilities Using Disinfected Tertiary Recycled Water* with the exception of the pipe installation addressed in the 9 February 2005 DHS letter titled, *Recycled Water Main & Sanitary Sewer Force Main Separation Requirements*, and as approved by DHS.

C. Effluent Limitations

1. Effluent discharged from the wastewater treatment plant into Storage Pond No. 3 and/or Pond No. E shall not exceed the following limits:

Constituent	Units	Monthly Average	Daily Maximum
BOD_5	mg/L	<10	<20
TSS	mg/L	<10	--
Total N	mg/L	<10	<10
TDS	mg/L	600	--

BOD_5 denotes 5-day Biochemical Oxygen Demand. TSS denotes Total Suspended Solids. Total N denotes Total Nitrogen. TDS denotes Total Dissolved Solids.

2. Effluent discharged from the wastewater treatment plant into Storage Pond No. 3 and/or Pond No. E shall comply with the following limits for total coliform organisms:

   a. The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed.

   b. The number of total coliform bacteria shall not exceed an MPN of 23 per 100 milliliters per 100 milliliters in more than one sample in any 30-day period.

   c. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

3. Effluent discharged from the wastewater treatment plant into Storage Pond No. 3 and/or Pond No. E shall not exceed any of the following:

   a. An average of 2 NTU within a 24-hour period;

   b. 5 NTU more than 5 percent of the time within a 24-hour period;

c. 10 NTU at any time.

4. No stored wastewater or recycled water shall have a pH less than 6.5 or greater than 10.0.

D. General Solids Disposal Specifications

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

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

2. Treatment and storage of sludge shall be confined to the treatment facility property, and shall be conducted in a manner that precludes infiltration of waste constituents into soils in a mass or at concentrations that will violate the Groundwater Limitations of this Order.

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

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

5. Use and disposal of biosolids shall comply with the self-implementing Federal regulations of 40 CFR 503, which are subject to enforcement by the U.S. EPA, not the Regional Board. If during the life of this Order, the state accepts primacy for implementation of 40 CFR 503, the Regional Board may also initiate enforcement where appropriate.

E. Water Recycling Specifications

1. Application of recycled water shall be confined to the designated application areas as defined in this Order.

2. Recycled water shall be used in compliance with Title 22, Article 3, *Uses of Recycled Water*.

3. Public contact with recycled water shall be controlled through use of fences, signs, and/or other appropriate means. All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches by 8 inches and include the following wording, "Recycled Water – Do Not Drink." The size and content of these signs shall be as described in Section 60310(g) of Title 22.

4. Recycled water controllers, valves, and similar appurtenances shall be affixed with recycled water warning signs, and shall be equipped with removable handles or locking mechanisms to prevent public access or tampering. Quick couplers, if used, shall be of a type, or secured in a manner, that permits operation only by authorized personnel. Hose bibs shall not be used.

5. Application of recycled water shall comply with the following setback requirements:

Setback Definition	Minimum Setback (feet)
Edge of land application area to domestic well	50
Wastewater/Recycled water storage pond to domestic well	100
Land Application Area to Surface Water or Irrigation Canal Drainage Course[1]	50

[1] Excluding ditches used exclusively for tailwater return from the land application area.

6. Any use of recycled water shall comply with the following:
   a. Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.
   b. Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.
   c. Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.

7. Any connection between the recycled water conveyance system and any potable water conveyance system, groundwater supply well, or surface water supply source for the purpose of supplementing recycled water shall be equipped with a DHS-approved backflow prevention device.

8. Application rates for recycled water shall not exceed agronomic rates considering the crop, soil, climate, and irrigation management system in accordance with the water balance submitted with the RWD.

9. Irrigation runoff (i.e., tailwater) shall be completely contained within the designated land application area and shall not enter any surface water drainage course or stormwater drainage system.

10. Irrigation with recycled water shall not be performed within 24 hours of a forecasted storm, during or within 24 hours after any precipitation event, nor when the ground is saturated.

11. Land application areas shall be managed to prevent breeding of mosquitoes. In particular:
    a. There shall be no standing water 48 hours after application of recycled water;

b. Tailwater ditches must be maintained essentially free of emergent, marginal, or floating vegetation, and;

c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

F. Groundwater Limitations

1. Release of waste constituents from any portion of the WWTF and land application areas shall not cause groundwater to:

   a. Contain any of the following constituents in concentrations greater than listed or greater than natural background quality, whichever is greater. Note that natural background conditions have not yet been established for the land application areas.

Constituent	Units	Limitation
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
Total Coliform Organisms	MPN/100 mL	<2.2
Total Dissolved Solids	mg/L	450
Total Nitrogen	mg/L	10
Nitrite (as N)	mg/L	1
Nitrate (as N)	mg/L	10
Ammonia (as NH_4)	mg/L	1.5
Bromoform	µg/L	4
Bromodichloromethane	µg/L	0.27
Chloroform	µg/L	1.1
Dibromochloromethane	µg/L	0.37

   b. Exhibit a pH of less than 6.5 or greater than 8.4 pH units.

   c. Impart taste, odor, toxicity, or color that creates nuisance or impairs any beneficial use.

G. Provisions

1. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision G.3.

   a. By **30 June 2005**, the Discharger shall either apply for coverage or submit a Notice of Non Applicability for Order No. 97-03-DWQ, Discharges of Stormwater Associated With Industrial Activities.

b. At least **30-days prior** to destruction of any groundwater monitoring well, agricultural well, or domestic well located within the development boundaries, the Discharger shall submit a *Well Destruction Workplan*.

c. By **30 June 2005**, the Discharger shall submit a Groundwater Monitoring Workplan prepared in accordance with, and including the items listed in, the first section of Attachment F: *"Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports."* The workplan shall describe a proposed expansion to the existing groundwater monitoring network specifically designed to ensure that background water quality is adequately characterized and any potential water quality impacts from the discharge are detected. The system shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the site. At a minimum, wells shall be installed at the storage pond and land application areas identified in Finding No. 53. For any existing groundwater monitoring wells proposed for inclusion in the monitoring network, a boring log and well construction detail shall be included in the Workplan. If the information is determined to be adequate by staff the existing wells can be added to the monitoring network as appropriate. Installation of wells for Phase II land application areas and recycled water storage ponds can be included in the 30 June 2004 workplan or can be addressed in a supplemental workplan that would be submitted at a later date.

d. **By 30 September 2005**, the Discharger shall submit a Monitoring Well Installation Report prepared in accordance with, and including the items listed in, the second section of Attachment F: *"Monitoring Well Workplan and Monitoring Well Installation Report Guidance."* The report shall describe the installation and development of the new monitoring wells and explain any deviation from the approved workplan. The report shall also include the boring log and well construction detail for any existing well that is allowed to be used in the monitoring network. Installation of wells for Phase II land application areas and recycled water storage ponds can be included in the 30 September 2004 report or can be addressed in a report that would be submitted at a later date.

e. At least **30 days prior** to WWTF start-up, the Discharger shall submit an *As-Built Report* certifying WWTF construction. The as-built report shall address the mechanical treatment system, pumping stations, collection system, recycled water piping, recycled water storage ponds, land application areas, and construction quality assurance testing to ensure pond liner integrity. The report shall identify and discuss any significant deviation from the system design as presented in the RWD and Title 22 Engineering Report. It shall also address the comments on the November 2004 Revised Title 22 Engineering Report provided by DHS in their 3 December 2004 comment letter on the Title 22 Report and shall include DHS' final approval of the recycled water system. It is acceptable to submit several *As-Built Reports* for the project components as long as a log of all components to be submitted is developed and submitted with each report. The Discharger shall provide binders or other suitable means of storage such that all *As-Built Reports* are stored as one document.

f. At least **30 days prior** to irrigating with recycled water on any of the parcels listed in Findings No. 27 and 28, the Discharger shall submit a *Recycled Water Application*

Plan. For each parcel listed in the findings, the Plan shall include the following elements:

i. Documentation of operational status of the wastewater treatment system and compliance with all requirements for disinfection system performance and documentation of cross connection control tests.

ii. Documentation of installation and initial monitoring events of groundwater monitoring wells at the selected locations presented in Finding 27 (Phase I), and Finding 28 (Phase II). At least two sampling events shall be performed prior to wastewater storage or application.

iii. Operation and Maintenance Plan for the Recycled Water System. The O&M Plan shall provide a description of the irrigation system and best practicable treatment and control methods employed in the installation and operation to prevent runoff, describe how the irrigation system will be operated and maintained to prevent spills, prevent over application of recycled water, perform inspections to confirm proper operation, training requirements for operators, and response to spills or broken equipment procedures. Methods to contain and return tailwater to recycled water storage ponds or land application areas shall also be described.

iv. Confirmation that the expansion will comply with setbacks described in Water Recycling Specifications E.5

g. **At least 60 days** before the Discharger wishes to begin a discharge of up to 750,000 gpd, the Discharger shall submit a *Recycled Water Expansion Report*, which shall contain the following:

i. An updated water balance.

ii. At least two groundwater well sampling events at wells installed at the new land application areas and/or recycled water storage ponds. It is the Discharger's responsibility to submit, as needed, the *Phase II Groundwater Monitoring Workplan* and the *Phase II Monitoring Well Installation Report* in accordance with a schedule that allows the sample event data to be included in the *Recycled Water Expansion Report*.

iii. Documentation that notification signs are installed as required by Water Recycling Specification E.3.

iv. Updates to the *As Built Report; Recycled Water Application Plan;* and *SSO Plan.*

v. Confirmation that all proposed land application areas listed in Finding No. 28 overlie groundwater with a TDS concentration of 1,000 mg/L or greater.

h. By **14 July 2005**, the Discharger shall submit a *Sanitary Sewer Operation, Maintenance, Overflow Prevention, and Response Plan* (SSO Plan) that describes the actions designed to prevent, or minimize the potential for sanitary sewer overflows. The Discharger shall maintain the SSO Plan in an up-to-date condition and shall amend

the SSO Plan whenever there is a change (e.g. in the design, construction, operation, or maintenance of the sanitary sewer system or sewer facilities) that materially affects the potential for sanitary sewer overflows, or whenever there is a sanitary sewer overflow. The Discharger shall ensure that the up-to-date SSO Plan is readily available to sewer system personnel at all times and that sewer system personnel are familiar with it.

i. The Operation and Maintenance portion of the plan shall contain or describe the following:

1. Detailed maps of the sanitary sewer system, identifying sewer mains, manholes, and lift stations;

2. A detailed listing of elements to be inspected, a description of inspection procedures and inspection frequency, and sample inspection forms;

3. A schedule for routine inspection and testing of all pipelines, lift stations, valves, and other key system components. The inspection/testing program shall be designed to reveal problems that might lead to accidental spills and ensure that preventive maintenance is completed;

4. Provisions for repair or replacement of old, worn out, or defective equipment;

5. Provisions to minimize the need for manual operation of critical systems and provide spill alarms or other "fail safe" mechanisms;

6. The ability to provide adequate capacity to convey base flows and peak flows for all parts of the collection system the Discharger owns or over which the Discharger has operational control; and

ii. At a minimum, the Overflow Prevention and Response Plan shall contain or describe the following:

1. Maintenance activities that can be implemented to prevent future overflows. Maintenance activities may include pretreatment of wastewater from commercial dischargers that discharge high concentrations of oil and grease in their wastewater and/or more frequent cleaning of pipes that may experience blockages;

2. Procedures for responding to sanitary sewer overflows designed to minimize the volume of sewer overflow that enters surface waters, and minimize the adverse effects of sewer overflows on water quality and beneficial uses;

3. Steps to be taken when an overflow or spill occurs, and procedures that will be implemented to ensure that all overflows and spills are properly identified, responded to and reported; and

4. A public notification plan, in which any posting of areas contaminated with sewage is performed at the direction of the San Joaquin County Environmental Health Department. All parties with a reasonable potential for exposure to an overflow event shall be notified.

i. By **30 April 2007**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data and calculation of the

concentration in background monitoring wells. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), and shall be based on data from at least four consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare the calculated background concentration with the interim numeric limitations set forth in Groundwater Limitation F.1.a. Where background concentrations are statistically greater than the interim limitations specified in Groundwater Limitation F.1.a, the report shall recommend final groundwater limitations which comply with Resolution 68-16 for the waste constituents listed therein. Subsequent use of a concentration as a final groundwater limitation will be subject to the discretion of the Executive Officer.

j. By **2 June 2008**, the Discharger shall submit a *Stormwater Drainage Pipe Repair Report*. The report shall describe how the pipe was repaired to prevent dewatering the area and controlling the local groundwater flow direction.

2. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain waste constituents in concentrations statistically greater than background water quality then, within **120 days** of the request of the Executive Officer, the Discharger shall submit a *BPTC Evaluation Workplan* that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine best practicable treatment and control for each waste constituent listed in the Groundwater Limitation F.1.a of this Order. The workplan shall contain a preliminary evaluation of each component of the WWTF and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.

3. In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

4. The Discharger shall comply with Monitoring and Reporting Program No. R5-2005-0045, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

5. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements," dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

6. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with discharge limits specified in this order.

7. The Discharger shall provide certified wastewater treatment plant operators in accordance with Title 23 of the California Code of Regulations, Division 3, Chapter 26.

8. As described in the Standard Provisions, the Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.

9. Upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow, the Discharger shall take any necessary remedial action to (a) control or limit the volume of sewage discharged, (b) terminate the sewage discharge as rapidly as possible, and (c) recover as much as possible of the sewage discharged (including wash down water) for proper disposal. The Discharger shall implement all applicable remedial actions including, but not limited to, the following:

   a. Interception and rerouting of sewage flows around the sewage line failure;

   b. Vacuum truck recovery of sanitary sewer overflows and wash down water;

   c. Use of portable aerators where complete recovery of the sanitary sewer overflows are not practicable and where severe oxygen depletion is expected in surface waters; and

   d. Cleanup of sewage-related debris at the overflow site.

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

11. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

12. The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharge shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board in writing when it returns to compliance with the time schedule.

13. In the event of any change in control or ownership of land or waste discharge facilities described herein, 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.

14. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Regional Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

15. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.

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

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

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 17 March 2005.

_____
THOMAS R. PINKOS, Executive Officer

TRO: 3/17/05

AMENDED

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2005-0045

FOR

CITY OF LATHROP AND CALIFIA LLC
WASTEWATER TREATMENT FACILITY
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring influent wastewater, treated effluent, effluent storage ponds, recycled water land application areas, groundwater, sludge, and water supply. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

This MRP is effective upon date of signature; however, only groundwater samples need to be collected until the WWTF has been constructed and is in use. In the meantime, the Discharger shall submit monthly status reports and quarterly groundwater monitoring reports as described in the "Reporting" section of this MRP.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Field test instruments (such as those used to measure pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

INFLUENT MONITORING

Influent flow monitoring shall be performed at the headworks. Influent monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow[1]	gpd	Continuous Meter	Daily	Monthly
Average Daily Flow[2]	gpd	Calculated	Monthly	Monthly
BOD_5	mg/L	Grab	Weekly	Monthly
Total Suspended Solids	mg/L	Grab	Weekly	Monthly

[1] Flow represents the daily flow rate.
[2] Average Daily Flow represents the daily flow rate averaged over the month.
[3] BOD denotes 5-day Biochemical Oxygen Demand.

EFFLUENT MONITORING

Effluent samples shall be collected before discharge to any effluent storage pond and shall be representative of the volume and nature of the discharge. Effluent monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
BOD_5	mg/L	Grab/Composite[1]	Weekly	Monthly
Total Coliform Organisms [2]	MPN/100 ml [3]	Grab	Daily	Monthly
Turbidity	NTU [4]	Meter	Continuous	Monthly
Total Dissolved Solids	mg/L	Grab/Composite[1]	Monthly	Monthly
Sodium	mg/L	Grab/Composite[1]	Monthly	Monthly
Chloride	mg/L	Grab/Composite[1]	Monthly	Monthly
Nitrate as Nitrogen	mg/L	Grab/Composite[1]	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab/Composite[1]	Monthly	Monthly
Total Nitrogen (as N)	mg/L	Grab/Composite[1]	Monthly	Monthly
Total Suspended Solids[5]	mg/L	Grab/Composite[1]	Monthly	Monthly
pH	Standard	Grab/Composite[1]	Monthly	Monthly
Standard Minerals [6]	mg/L	Grab/Composite[1]	Annually	Annually

1. Grab/Composite indicates samples may be collected by composite sampler or grab method.
2. Using a minimum of 10 tubes or two dilutions.
3. Most probable number per 100 ml.
4. NTU denotes Nephelometric Turbidity Units.
5. Total Suspended Solids shall be performed using a Whatman glass fiber filter with a nominal pore size of about 1.58 µm or equivalent.
6. Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, magnesium, potassium, sulfate, total alkalinity (including alkalinity series), and hardness.

EFFLUENT STORAGE POND MONITORING

Each effluent storage pond shall be monitored as specified below:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Oxygen [1]	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
pH	Standard	Grab	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Liner condition	--	Observation	Weekly	Monthly
Berm condition	--	Observation	Monthly	Monthly

1 Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

RECYCLED WATER LAND APPLICATION AREA MONITORING

Monitoring of each recycled water land application area shall be conducted **daily** during the irrigation season, and the results shall be included in the monthly monitoring report. All land application areas shall be inspected following an irrigation event to identify any equipment malfunction or other circumstance that might allow recycled water to runoff the land application area and/or create ponding conditions that violate the Waste Discharge Requirements. Evidence of erosion, saturation, irrigation runoff, or the presence of nuisance conditions shall be noted in the report. A log of these inspections as well as any public complaints of runoff shall be kept at the facility and made available for review upon request.

Effluent monitoring results shall be used in calculations to ascertain loading rates at the land application area. Monitoring of the land application area shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	Gallons	Continuous	Daily	Monthly
Rainfall	Inches	Observation	Daily	Monthly
Acreage Applied [1]	Acres	Calculated	Daily	Monthly
Water Application Rate [2]	gal/acre·day	Calculated	Daily	Monthly
Total Nitrogen Loading Rate [2]	lbs/ac·month	Calculated	Monthly	Monthly
Total Dissolved Solids Loading Rate [2]	lbs/ac·month	Calculated	Monthly	Monthly

[1] Land application areas shall be identified and a map identifying all land application areas included.
[2] For each land application area.

GROUNDWATER MONITORING

Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for review and approval. All wells identified in the groundwater monitoring well network shall be sampled and analyzed according to the schedule below. Land application areas, recycled water storage ponds, and wastewater treatment system equipment that requires groundwater monitoring are listed in the table below:

Item to be Monitored[1]	Location	Development Phase
Land Application Areas Nos. 1, 2, 17, 18, 24, 52a, 52b	Mossdale	1
Ponds Nos. A, B, and C	Mossdale	1
Land Application Area No. 1	Reiter	1
Pond No. 3	MBR Facility	1
Land Application Areas Nos. 63, 64, 65, 66, 67, 68	River Islands	2
Pond No. D	Reiter	2
Pond No. E	MBR Facility	2

[1] Item requires monitoring only when it has been approved for use by the Executive Officer.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
Depth to Groundwater	0.01 feet	Measurement	Quarterly
Groundwater Elevation [1]	0.01 feet	Calculated	Quarterly
Gradient	feet/feet	Calculated	Quarterly
Gradient Direction	degrees	Calculated	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly
pH	pH units	Grab	Quarterly
Trihalomethanes [2]	µg/l	Grab	Quarterly
Boron	mg/L	Grab	Quarterly
Chloride	mg/L	Grab	Quarterly
Iron	mg/L	Grab	Quarterly
Manganese	mg/L	Grab	Quarterly
Sodium	mg/L	Grab	Quarterly
Standard Minerals [3]	mg/L	Grab	Annually

[1] Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.

[2] Individual trihalomethane constituent concentrations shall be identified. EPA Method 8260B or equivalent

[3] Standard Minerals shall include, at a minimum, the following elements/compounds: calcium, magnesium, potassium, sulfate, total alkalinity (including alkalinity series), and hardness.

SLUDGE MONITORING

A composite sample of digested sludge shall be collected at least once per year when sludge is removed from the wastewater treatment system for disposal in accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and analyzed for cadmium, copper, nickel, chromium, lead, and zinc.

Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report.

WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following for each water source used during the previous year:

Constituents	Units	Sampling Frequency
Total Dissolved Solids	mg/L	Annually
pH	Std. Unit	Annually
Standard Minerals [1]	mg/L	Annually

[1] Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, magnesium, sodium, potassium, chloride, nitrogen, sulfate, iron, manganese, total alkalinity (including alkalinity series), and hardness.

REPORTING

In reporting monitoring data, the District shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Regional Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in monthly monitoring reports. Monthly reports shall be submitted to the Regional Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. If the WWTF is not yet operational, then the report shall describe the construction progress to date and the anticipated start-up date.
2. Once the WWTF is operational, then the report shall include the following:
   a. Results of influent, effluent, effluent storage pond, and recycled water land application area monitoring;
   b. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
   c. If requested by staff, copies of laboratory analytical report(s); and

d. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program.

B. Quarterly Monitoring Reports

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st) and may be combined with the monthly report. The Quarterly Report shall include the following:

1. Results of groundwater monitoring;
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;
4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

An Annual Report shall be prepared as the fourth quarter monitoring report. The Annual Report will include all monitoring data required in the monthly/quarterly schedule. The Annual Report shall be submitted to the Regional Board by **1 February** each year. In addition to the data normally presented, the Annual Report shall include the following:

1. The contents of the regular groundwater monitoring report for the last sampling event of the year;

2. If requested by staff, tabular and graphical summaries of all data collected during the year;
3. An evaluation of the groundwater quality beneath the wastewater treatment facility, recycled water storage ponds, and land application areas;
4. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements;
5. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program;
6. A copy of the certification for each certified wastewater treatment plant operator working at the facility and a statement about whether the Discharger is in compliance with Title 23, CCR, Division 3, Chapter 26.
7. Summary of information on the disposal of sludge and/or solid waste;
8. The results from annual monitoring of the groundwater wells and water supply;
9. The results from any sludge monitoring required by the disposal facility;
10. Equipment maintenance and calibration records, as described in Standard Provision No. C.4; and
11. A forecast of influent flows, as described in Standard Provision No. E.4.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

17 March 2005
(Date)

TRO: 3/17/05

INFORMATION SHEET

ORDER NO. R5-2005-0045
CITY OF LATHROP AND CALIFIA, LLC
WASTEWATER TREATMENT FACILITY
SAN JOAQUIN COUNTY

Background

The City of Lathrop has constructed a wastewater facility that it will own and operate for a new planned community that consists of residential and commercial developments. The wastewater treatment facility (WWTF) will include the wastewater treatment plant, wastewater collection system, recycled water storage ponds, recycled water delivery system, and all the designated land application areas. Califia LLC owns portions of the land application areas. Both entities are hereafter referred to as "Discharger." The mechanical treatment equipment will be located adjacent to the existing City of Lathrop Crossroads wastewater treatment facility, but the two systems will not share equipment or storage ponds with the exception of sludge dewatering equipment. The Crossroads treatment plant is regulated by Waste Discharge Requirements (WDRs) Order No. 5-01-251.

Because the developments are under construction, wastewater flow rates are expected to grow over time. The Discharger has stated the treatment equipment can't be operated until a flow rate of at least 40,000 gpd is reached. Until a flow rate of 40,000 gpd is reached, wastewater will be discharged to the Manteca wastewater system through the existing pipeline that serves the existing residential developments in Lathrop.

The WWTF will provide wastewater treatment for domestic and commercial wastewater generated in the Mossdale Village and River Islands subdivisions. The WWTF has been designed to serve only the developments, which are planned residential communities with some commercial development. Single-family dwellings are presently under construction in the Mossdale Village area but no buildings are occupied. The developments will be constructed in sequences. In the first development sequence, approximately 750,000 gallons per day (gpd) of domestic wastewater from approximately 1,482 low, medium, and high-density residential developments as well as commercial establishments is anticipated. The first sequence is further divided into Phase I and Phase II for wastewater permitting purposes. Additional wastewater treatment and land application facilities and/or expansion of the proposed WWTF may be designed and permitted under a separate permitting process.

The mechanical treatment equipment will provide a treatment capacity of 750,000 gpd. However, this Order initially allows 187,600 gpd based on the limited availability of land application areas. In Phase I, 69 acres of potential land application areas were identified. However, recycled water will be applied to only 44.3 acres of land application areas due to groundwater quality concerns. An additional 294 acres has been proposed for Phase II use. With site improvements and submittal of a technical report demonstrating the wastewater system capacity, the Discharger can request the Executive Officer increase the wastewater flow rate to 750,000 gpd.

However, the 750,000-gallon per day flow rate will not be adequate for the future development that is planned. The Discharger will submit future sequenced Reports of Waste Discharge. The Discharger has stated in California Environmental Quality Act (CEQA) documents that as development proceeds, they

expect to obtain a future NPDES permit to allow recycled water discharge to surface waters. Issuance of this Order for a discharge of recycled water to land in no way guarantees that the Dischargers will obtain an NPDES permit. In addition, issuance of this Order does not guarantee a future increase in the volume of recycled water discharged to land beyond 750,000 gpd.

The treatment plant will provide tertiary treatment and disinfection using a Membrane Bioreactor (MBR) system. The treatment system consists of flow measurement, screening, grit removal, flow equalization, membrane bioreactors, and chlorine disinfection. The mechanical treatment portion of the WWTF is designed for an average dry weather flow capacity of 750,000 gpd. A 950,000 gallon flow equalization tank will provide short-term emergency retention if a system component fails. Wastewater in the flow equalization tank will be metered into the treatment system, as capacity is available. The system has been constructed in a modular approach to allow future expansion. Recycled water (treated wastewater) will be discharged to ponds (Pond No. 3 in Phase I and/or Pond No. E in Phase II) which are located adjacent to the wastewater treatment equipment. Recycled water will be stored at the mechanical treatment equipment location (Ponds 3 and/or E), at additional ponds located at Mossdale Village, and at an off-site recycled storage pond located north of the wastewater treatment equipment. In Phase I, a total of approximately 270.3 ac•ft of storage capacity will be available; in Phase II an additional 208.6 ac•ft of storage capacity will be available for a total of 478.9 ac•ft of storage capacity.

Recycled water will be applied during spring, summer, and fall months but if conditions allow, application during winter months is acceptable. Recycled water will be stored in High Density Polyethylene (HDPE) lined storage ponds and applied to cropped land application areas. Land application areas consist of landscaped areas, turf areas, and fodder crop areas. Recycled water will be applied by drip irrigation, flood irrigation, or sprinklers at agronomic rates for both nitrogen and water application. Irrigation tailwater will be controlled in some areas using perimeter berms, grading the area to prevent off-site drainage, and/or management controls. Because the RWD does not describe specific management practices for each area that will receive recycled water, this Order does not allow recycled water to be applied to any area until the Executive Officer approves a *Recycled Water Application Plan* for that area.

Biosolids Disposal

Screenings and grit removed from the wastewater will be dewatered and sent to a dumpster, prior to being hauled off-site to the local landfill for disposal. Waste Activated Sludge (WAS) will be stored in a WAS Storage Tank and dewatered using a belt filter press. Dewatered sludge will be hauled for subsequent land application at Brisco Enterprises of Merced under Waste Discharge Requirements Order No. 94-030.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water from the WWTF is to the San Joaquin River (within the Sacramento San Joaquin Delta). The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses

often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the maximum contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic and municipal supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation

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

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

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degree of degradation below water quality objectives.

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

Certain domestic wastewater constituents are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater. Some degradation for certain constituents is consistent with maximum benefit to the people of California because the technology, energy, water recycling, and waste management advantages of municipal utility service to the State far outweigh the environmental impact of a community that would otherwise be reliant on numerous concentrated individual wastewater systems. Economic prosperity of local communities is of maximum benefit to the people of California, and therefore sufficient reason to accommodate wastewater discharge provided terms of reasonable degradation are defined and met. The proposed Order authorizes some degradation consistent with the

maximum benefit to the People of the State but does not authorize pollution (i.e., violation of any water quality objective).

Groundwater monitoring has been conducted at the site but the area monitored is large, no systematic program for characterization was implemented, and data was collected without sampling and analysis plans or quality assurance plans; therefore staff are unable to establish the most appropriate groundwater limits. In addition, certain aspects of wastewater treatment and control practices may not be justified as representative of Best Practicable Treatment and Control (BPTC). Reasonable time is necessary to gather specific information about the WWTF to make informed, appropriate, long-term decisions. This proposed Order, therefore, establishes interim receiving water limitations to assure protection of the beneficial uses of groundwater of the State pending the completion of certain tasks and provides time schedules to complete specified tasks. During this period, degradation may occur from certain constituents, but can never exceed water quality objectives (or natural background water quality should it exceed objectives) or cause nuisance.

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

Constituent	Units	Value	Beneficial Use	Criteria or Justification
Ammonia	mg/L	1.5	MUN [1]	Taste and Odor [2]
Boron	mg/L	0.7	AGR [3]	Boron Sensitivity [4]
	mg/L	1.0	MUN[1]	Calif. Drinking Water Action Level[11]
Chloride	mg/L	106	AGR [3]	Chloride sensitivity on certain crops irrigated via sprinklers [4]
		142	AGR [3]	Chloride sensitivity on certain crops [4]
		250	MUN [1]	Recommended Secondary MCL [5]
		500	MUN [1]	Upper Secondary MCL [5]
Iron	mg/L	0.3	MUN [1]	Secondary MCL [6]
Manganese	mg/L	0.05	MUN [1]	Secondary MCL [6]
Nitrate plus Nitrite as N	mg/L	10	MUN [1]	Primary MCL [7]
Nitrite as N	mg/L	1	MUN [1]	Primary MCL [7]
Sodium	mg/L	69	AGR [3]	Sodium sensitivity on certain crops [4]
Total Dissolved Solids	mg/L	450[8]	AGR [3]	Salt sensitivity [4]
		500	MUN [1]	Recommended Secondary MCL [5]
		1,000	MUN [1]	Upper Secondary MCL [5]
Total Coliform Organisms	MPN/100 ml	<2.2	MUN [1]	Basin Plan
Trihalomethanes	µg/L	100	MUN [1]	MCL [8]
Bromoform	µg/L	4	MUN [1]	USEPA Cancer Potency Factor [9]
Bromodichloromethane	µg/L	0.27	MUN [1]	Cal/EPA Cancer Potency Factor [12]
Chloroform	µg/L	1.1	MUN [1]	Cal/EPA Cancer Potency Factor [12]
Dibromochloromethane	µg/L	0.37	MUN [1]	Cal/EPA Cancer Potency Factor [12]
pH	pH Units	6.5 to 8.5	MUN [1]	Secondary MCL [10]
		6.5 to 8.4	AGR [3]	Protect sensitive crops [4]

1 Municipal and domestic supply

2 J.E. Amoore and E. Hautala, *Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution*, Journal of Applied Toxicology, Vol. 3, No. 6 (1983).
3 Agricultural supply
4 Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)
5 Title 22, California Code of Regulations (CCR), Section 64449, Table 64449-B
6 Title 22, CCR, Section 64449, Table 64449-A
7 Title 22, CCR, Section 64431, Table 64431-A
8 Title 22, CCR, Section 64439
9 USEPA Integrated Risk Information System
10 Title 40, Code of Federal Regulations, Section 143.3
11 California Department of Health Services, Division of Drinking Water and Environmental Management, Drinking Water Action Levels, http://www.dhs.cahwnet.gov/ps/ddwem.
12 CAL/EPA Toxicity Criteria Database (OEHHA)

Domestic wastewater contains numerous dissolved organic and inorganic constituents that together comprise Total Dissolved Solids (TDS). Each component constituent is not individually critical to any beneficial use. Critical constituents are individually listed. The cumulative impact from the other constituents, along with the cumulative affect of the constituents that are individually listed can be effectively controlled using TDS as a generic indicator parameter.

Not all TDS constituents pass through the treatment process and soil profile in the same manner or rate. Chloride tends to pass through both rapidly to groundwater. However, groundwater chloride concentrations in the region are highly variable, which might limit the use of chloride as an indicator parameter of groundwater degradation. Boron is another TDS constituent that may occur in recycled water in concentrations greater than in groundwater because it is a common ingredient of detergents. Other indicator constituents for monitoring for groundwater degradation due to land application of recycled water include total coliform bacteria, ammonia, total nitrogen, and Total Trihalomethanes (TTHMs) a by-product of chlorination. Dissolved iron and manganese are useful indicators to determine whether components of the WWTF with high-strength wastewater constituents, such as sludge handling facilities, are ineffective in containing waste. Exceptionally high TDS and nitrogen also typifies this type of release.

Treatment Technology and Control

Given the character of domestic wastewater, secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents. Adding disinfection significantly reduces populations of pathogenic organisms, and reasonable soil infiltration rates and unsaturated soils can reduce them further. Neither organics nor total coliform organisms, the indicator parameter for pathogenic organisms, should be found in groundwater in a well-designed, well-operated facility. Due to the level of potential exposure to residents, the Discharger has elected to perform tertiary treatment with chlorine disinfection on the wastewater. Chlorine disinfection of effluent causes formation of trihalomethanes, which are toxic priority pollutants. Treatment to reduce these in wastewater generally has not been performed, and little is known at this point on the typical impact on groundwater.

Domestic wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Groundwater degradation by nitrogen can be controlled by an appropriate secondary treatment system (e.g., oxidation ditch), tertiary treatment with nitrogen reduction, and agronomic reuse crops that are harvested and removed from the land application area. The effectiveness varies, but generally best practicable treatment and control is able to control nitrogen degradation of groundwater at a concentration well below the water quality objectives. The proposed interim limitation reflects water quality objectives.

Dissolved solids can pass through the treatment process and soil profile; effective control of such constituents relies primarily upon source control and pretreatment measures. In the best of circumstances, long-term land discharge of recycled water will degrade groundwater with dissolved solids (as measured by TDS and EC). The proposed Order sets water quality objectives for the interim while site-specific, constituent-specific limits are developed in conjunction with a BPTC evaluation of source control and pretreatment.

Other constituents in domestic wastewater that may pass through the treatment process and the soil profile, include recalcitrant organic compounds, radionuclides, and pharmaceuticals. Hazardous compounds are not usually associated with domestic wastewater and when present are reduced in the discharge to inconsequential concentrations through dilution and treatment. It is inappropriate to allow degradation of groundwater with such constituents, so proposed limits are nondetectable concentrations.

A discharge of recycled water that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Overloading the land application areas is preventable. Though iron and manganese limits are set at the water quality objective, groundwater pH is expected to remain the same as background.

Title 27

Title 27, CCR, Section 20005 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable under Title 27 regulations.

Discharges of domestic sewage and recycled water can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, they have been conditionally exempted from Title 27. Discharges of domestic sewage and treated effluent which are regulated by WDRs and treatment and storage facilities associated with the WWTF are considered exempt from Title 27 under Section 20090(a), provided that the discharges and facilities will not result in a violation of any water quality objective. As the exemption specifically excludes the discharge to land of: 1) solid waste

such as grit and screenings that result from treatment of domestic sewage, and 2) residual sludge that will not be further treated at the WWTF, such discharges must comply with provisions of Title 27.

The discharge of recycled water and the operation of treatment and/or storage facilities associated with a wastewater treatment plant can be allowed without requiring compliance with Title 27 only if groundwater degradation complies with the Basin Plan, Resolution No. 68-16 (Antidegradation Policy), and does not violate any water quality objectives.

Proposed Order Terms and Conditions

Discharge Prohibitions and Specifications

Prior to beginning wastewater treatment, the proposed Order requires the Discharger to submit a *Recycled Water Application Plan*. The Plan will establish that treatment equipment is operational, that groundwater monitoring wells have been installed, and will include an operation and maintenance plan for the system. Upon approval by the Executive Officer, the initial wastewater flow rate limit is a monthly average of 187,600 gpd. The initial flow rate is based on the land application areas that will be available on startup (the Phase I land application areas). The RWD proposed a total of 69 acres of land application area for Phase I. The Discharger has proposed that wastewater would only be applied at land application areas where the underlying groundwater TDS concentration was at least 1,000 mg/L. Based on staff's review of the data, approximately 24.7 acres did not meet the Discharger's groundwater TDS criterion; therefore, the flow rate has been reduced from the proposed flow rate of 278,000 gpd to 187,600 gpd.

The Order allows the flow rate to increase to 750,000 gpd based on submittal, and approval by the Executive Officer, of the *Recycled Water Expansion Report* which will document the treatment system capacity, the availability of land application areas, and updates to technical reports such as the *As Built Report*, *Recycled Water Application Plan*, and *Sanitary Sewer Overflow Plan*. Some of the areas proposed for Phase II application may not be suitable for recycled water application based on preliminary characterization of underlying groundwater quality. The Discharger can perform additional investigations to support future consideration of the land areas.

The proposed Order's Effluent Limitations for BOD_5 and TSS are based on the predicted recycled water quality as stated in the RWD. The RWD did not predict TDS quality; that limit is based on the municipal supply water quality plus 200 mg/L, which is a reasonable increase in salinity based on domestic water use. The discharge specifications regarding dissolved oxygen and freeboard are consistent with Regional Board policy for the prevention of nuisance conditions and overtopping, and are applied to all such facilities.

In order to protect public health and safety, the proposed Order requires the Discharger to comply with the provisions of Title 22 and to implement best management practices with respect to recycled water application (application at reasonable rates considering the crop, soil, and climate).

Monitoring Requirements

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

The proposed Order includes influent and effluent monitoring requirements, recycled water storage pond monitoring, recycled water land application area monitoring, groundwater monitoring, sludge monitoring, and water supply monitoring. In order to adequately characterize recycled water, the Discharger is required to monitor for BOD, total coliform organisms, turbidity, TDS, sodium, chloride, nitrogen, and pH. Monitoring of additional minerals is required on an annual basis. To ensure that recycled water storage ponds do not create nuisance conditions, the Discharger is required to monitor freeboard and dissolved oxygen weekly.

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

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive land application of recycled water occurs. It is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code Section 13267.

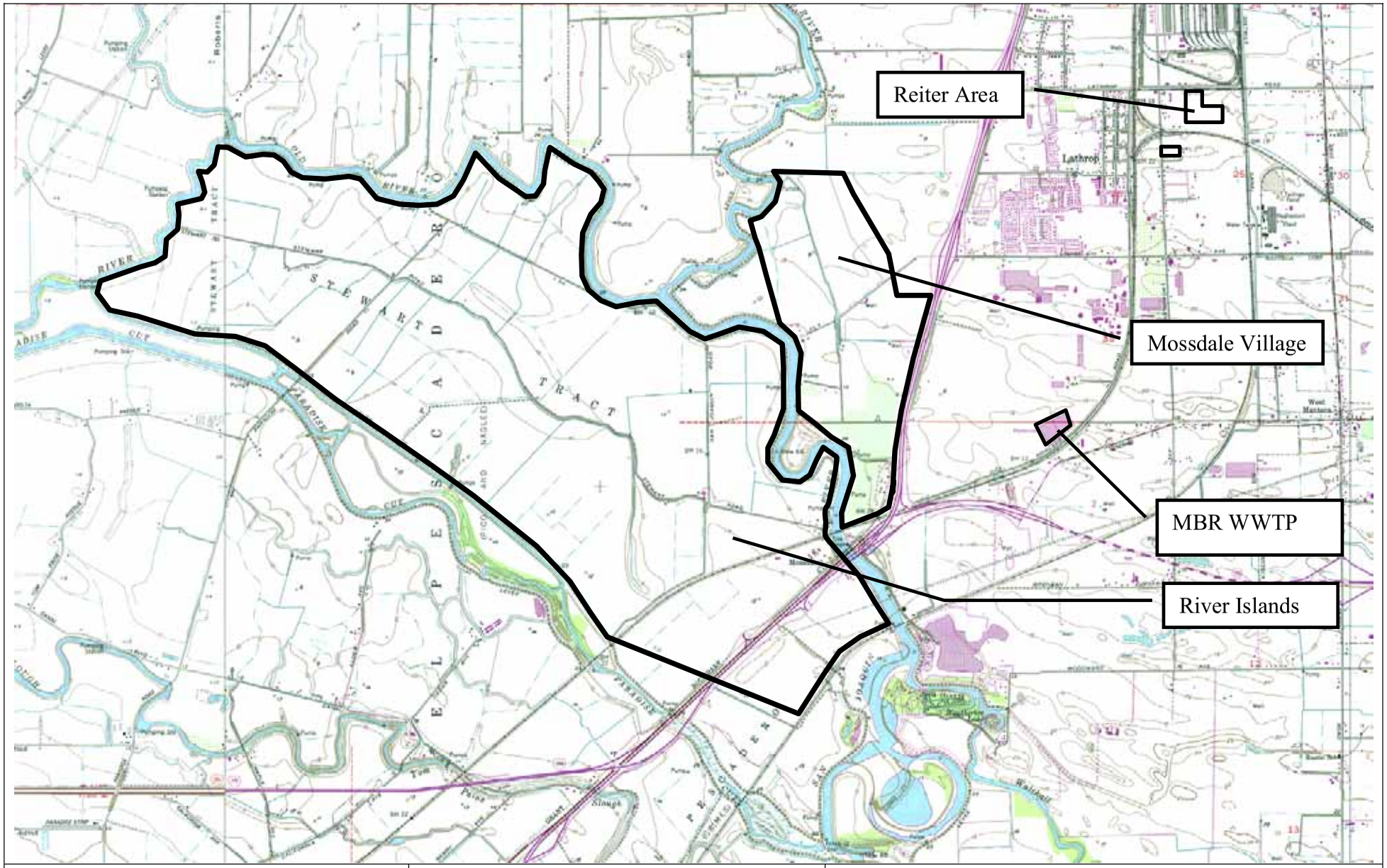
The Discharger must monitor groundwater for recycled water constituents expected to be present in the discharge, and capable of reaching groundwater, and violating groundwater limitations if its treatment, control, and environmental attenuation, proves inadequate. Background groundwater quality is poorly defined; this Order requires evaluation of the existing monitoring wells for suitability, and additional wells to be installed in areas most likely to detect groundwater impacts. Those areas were identified to be locations of recycled water storage ponds or large land application areas. There are a number of small land application areas for which groundwater monitoring is not required. Monitoring at those areas is not required due to their small size and the relatively small amount of recycled water that will be applied. However, the monitoring network is expected to include regional and site specific monitoring wells.

For each constituent listed in the Groundwater Limitations section, the Discharger must, as part of each monitoring event, compare concentrations of constituents found in each monitoring well (or similar type of groundwater monitoring device) to the background concentration or to prescribed numerical limitations to determine compliance.

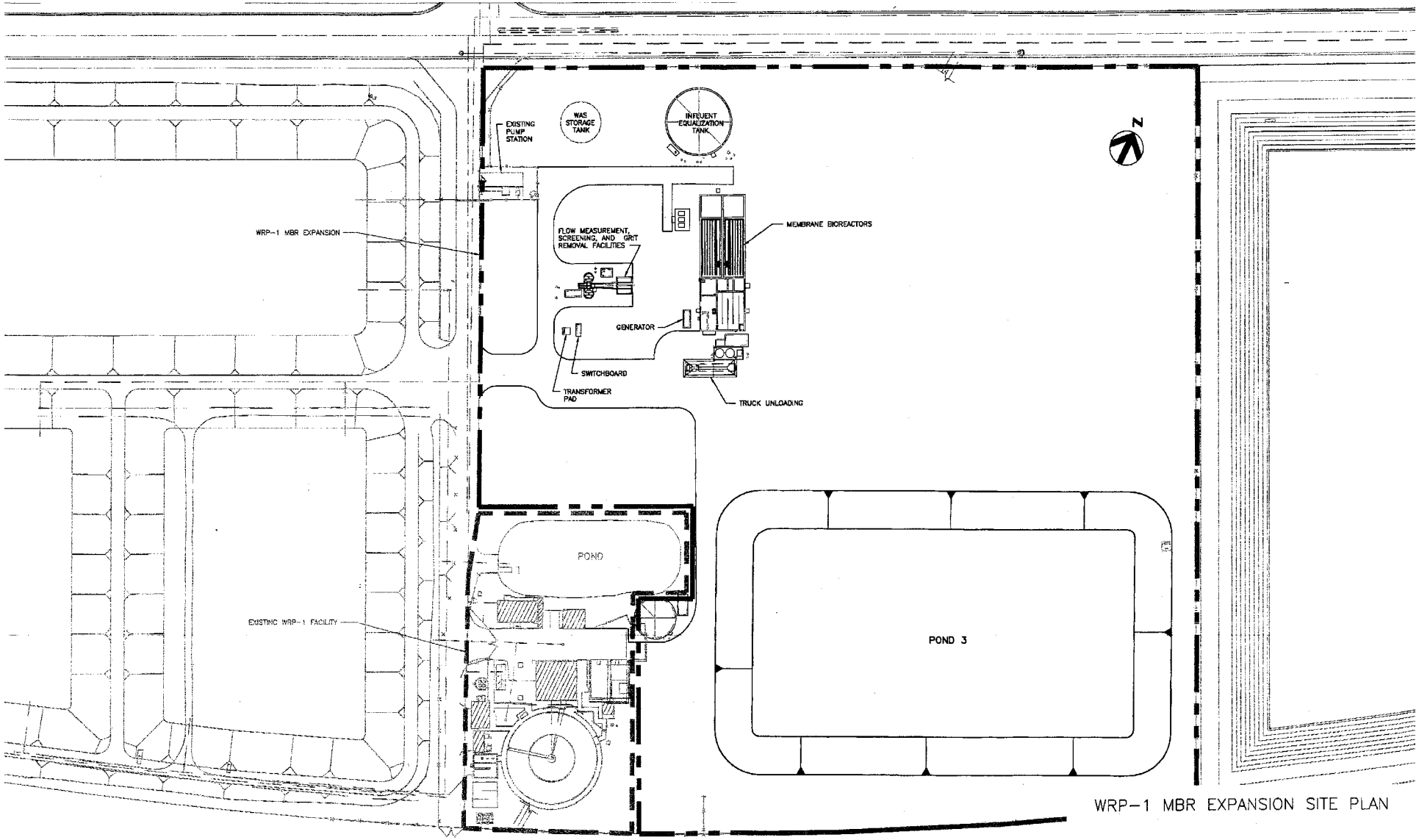
Reopener

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

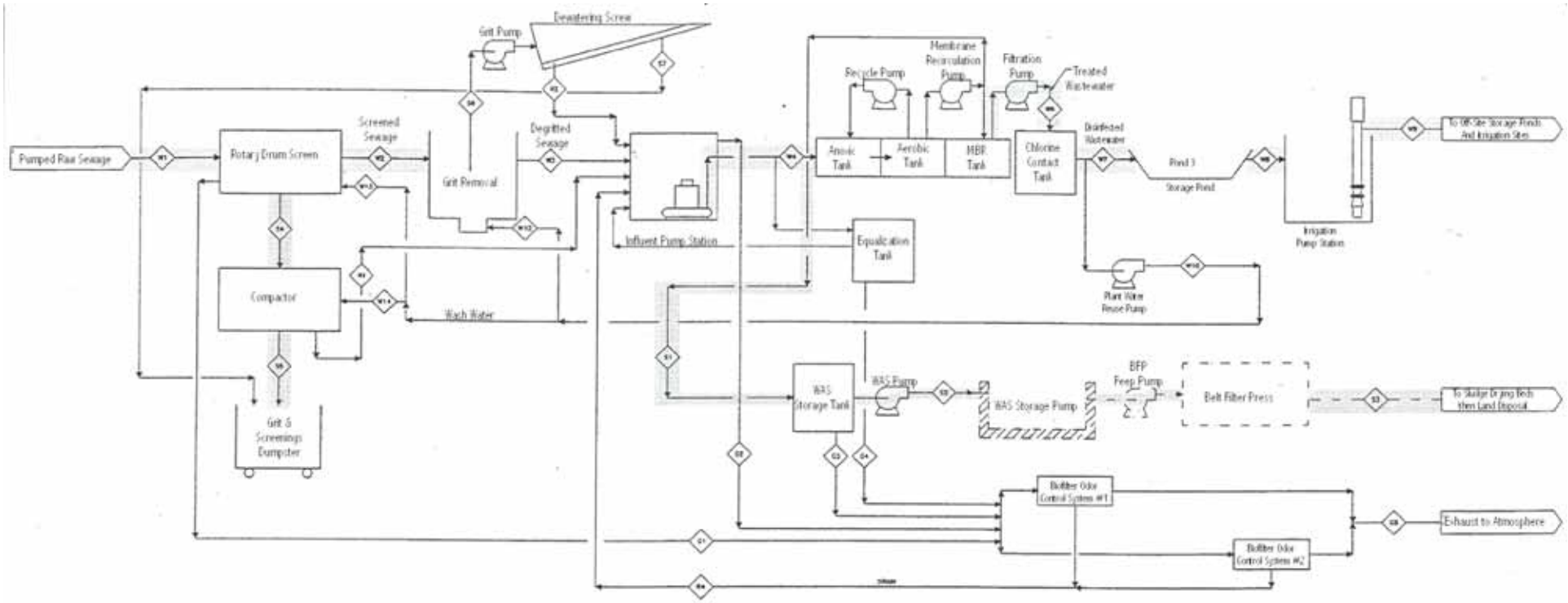
TRO: 2/22/05



Approximate Scale 1 in = 4,350	Drawing Reference: USGS 7.5 minute topographic map Lathrop Quadrangle	SITE LOCATION MAP City of Lathrop and Califia LLC Wastewater Treatment Facility San Joaquin County

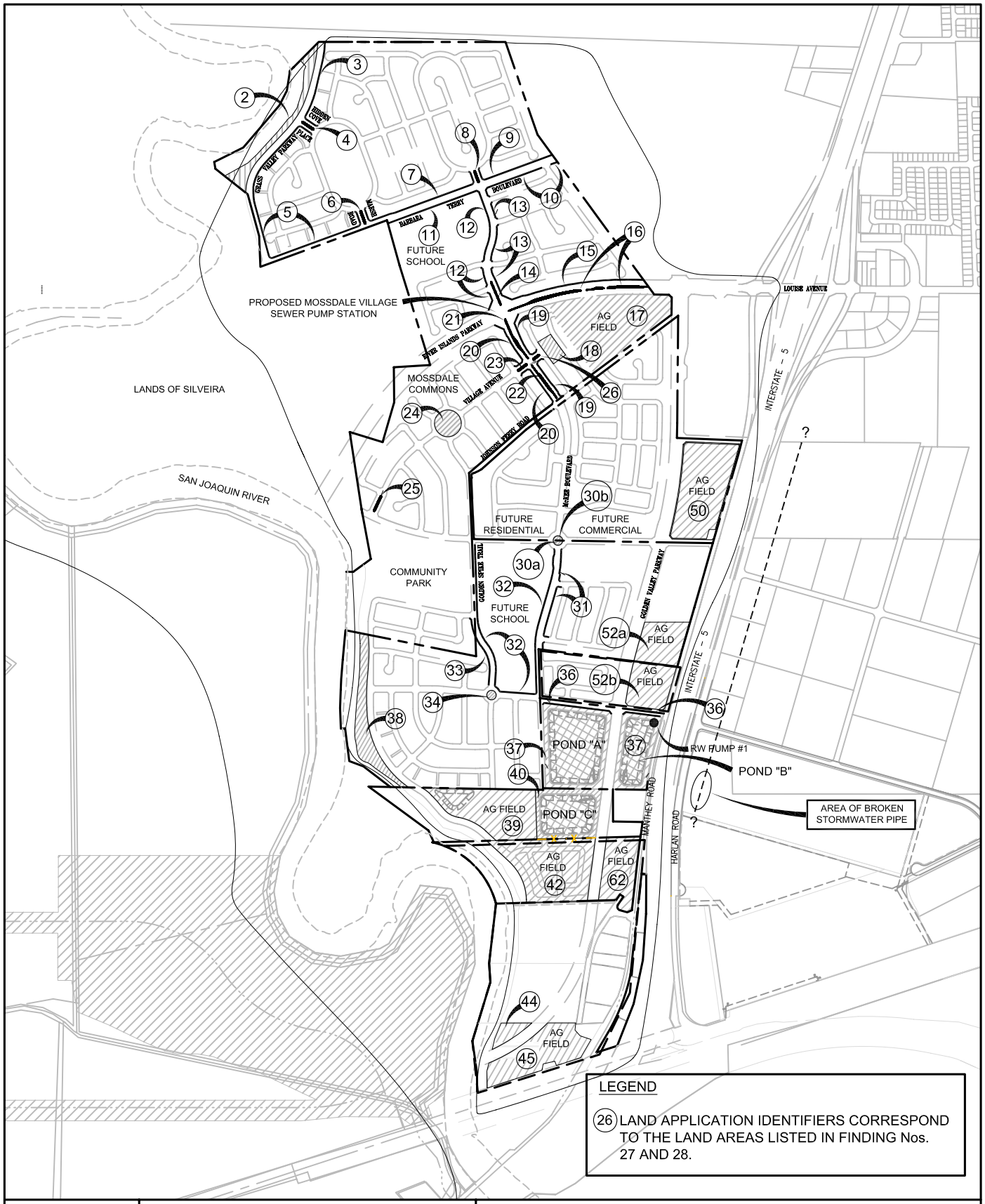


Not to Scale	Drawing Reference: Figure 1, November 2004 RWD HDR, Inc.	TREATMENT PLANT SITE PLAN City of Lathrop and Califia LLC Wastewater Treatment Facility San Joaquin County



Drawing Reference:
Figure 2, November 2004 RWD
HDR, Inc.

PROCESS FLOW SCHEMATIC DIAGRAM
City of Lathrop and Califia LLC
Wastewater Treatment Facility
San Joaquin County



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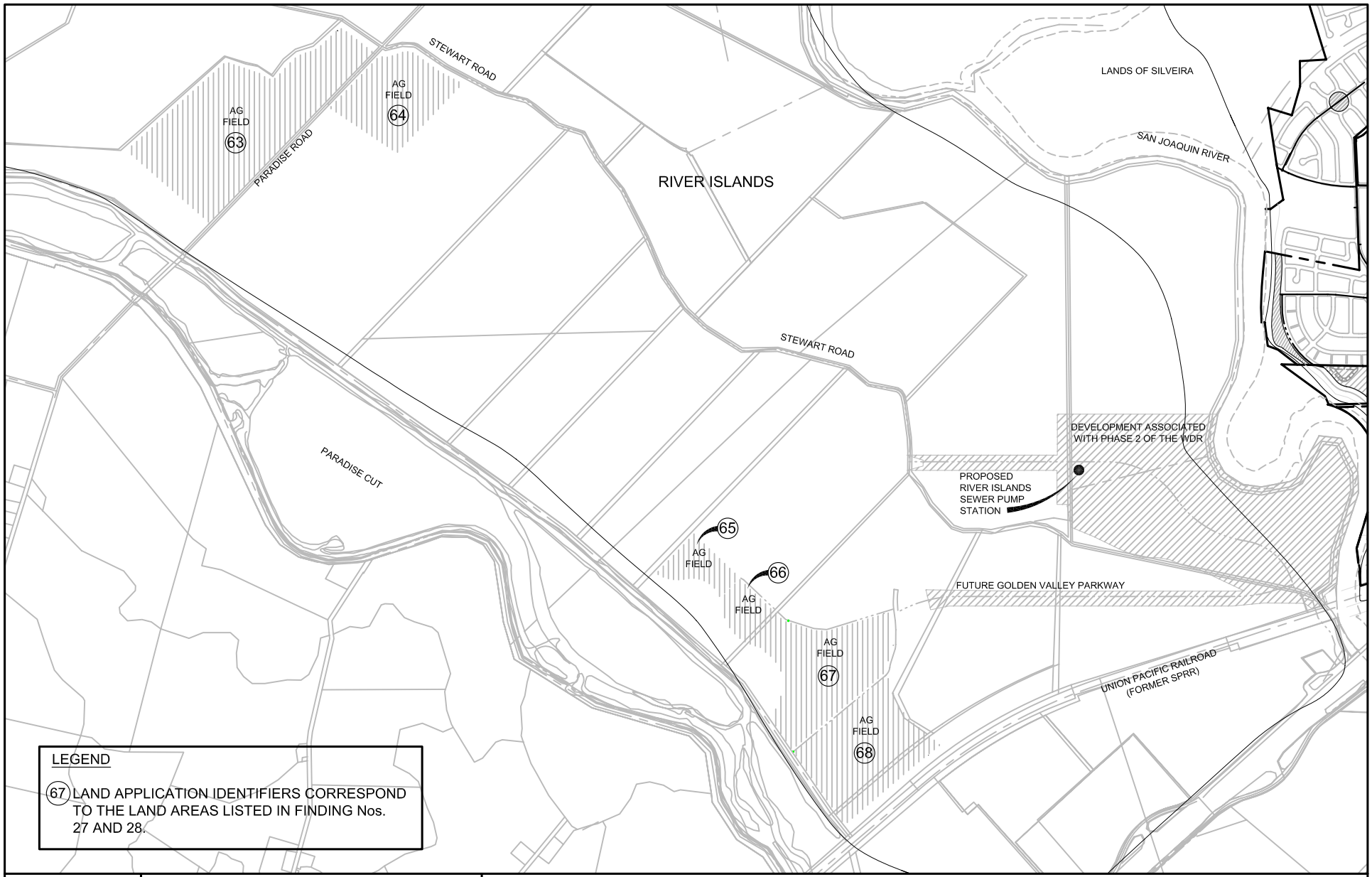
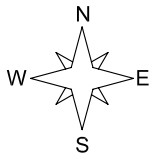
Reference:
Figure 1-1, December 2004 RWD
RMC, Inc.

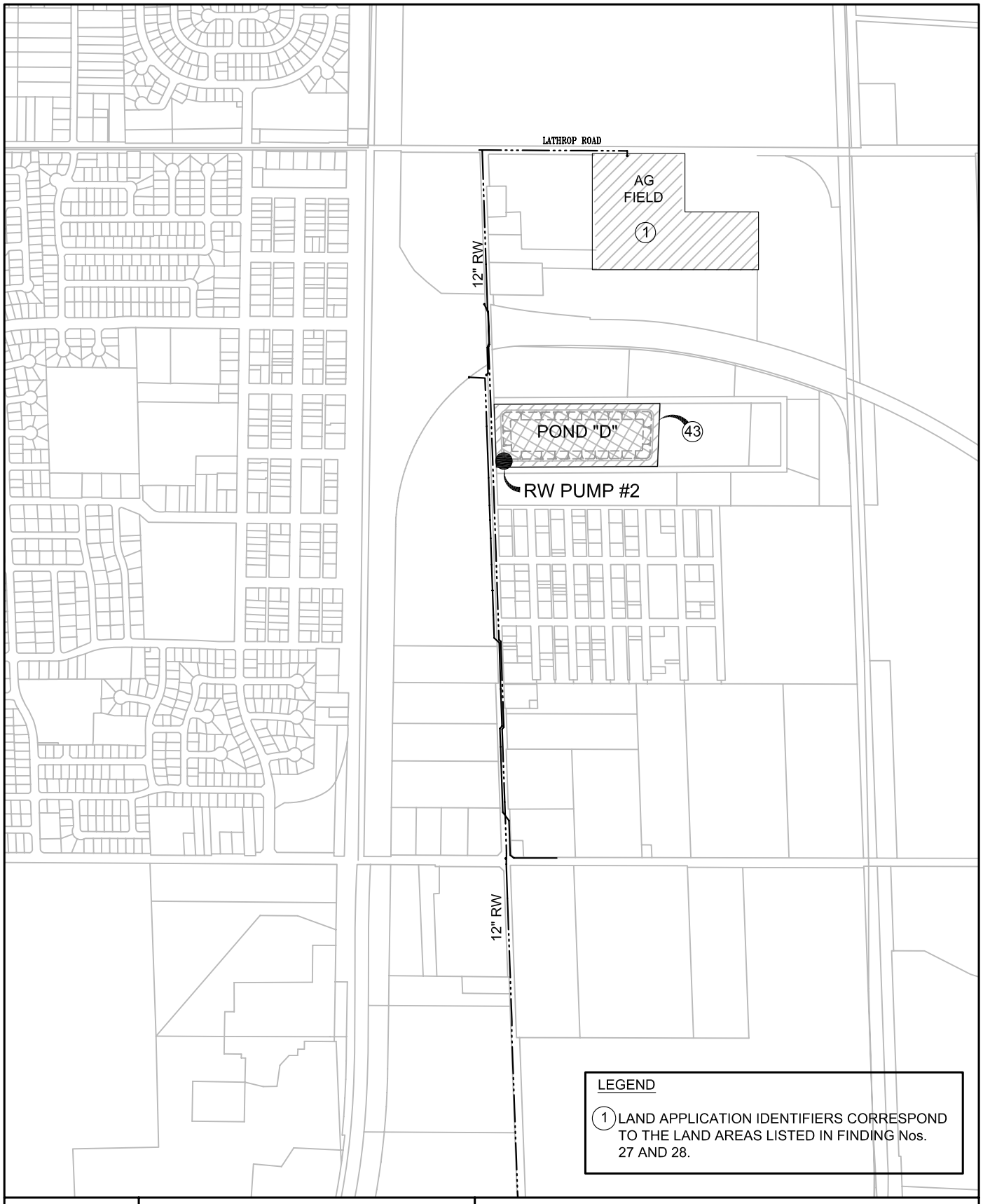
MOSSDALE VILLAGE
City of Lathrop and Califia LLC
Wastewater Treatment Facility
San Joaquin County





Drawing Reference:
Figure 1-1, December 2004 RWD
RMC, Inc.

RIVER ISLANDS
City of Lathrop and Califia LLC
Wastewater Treatment Facility
San Joaquin County



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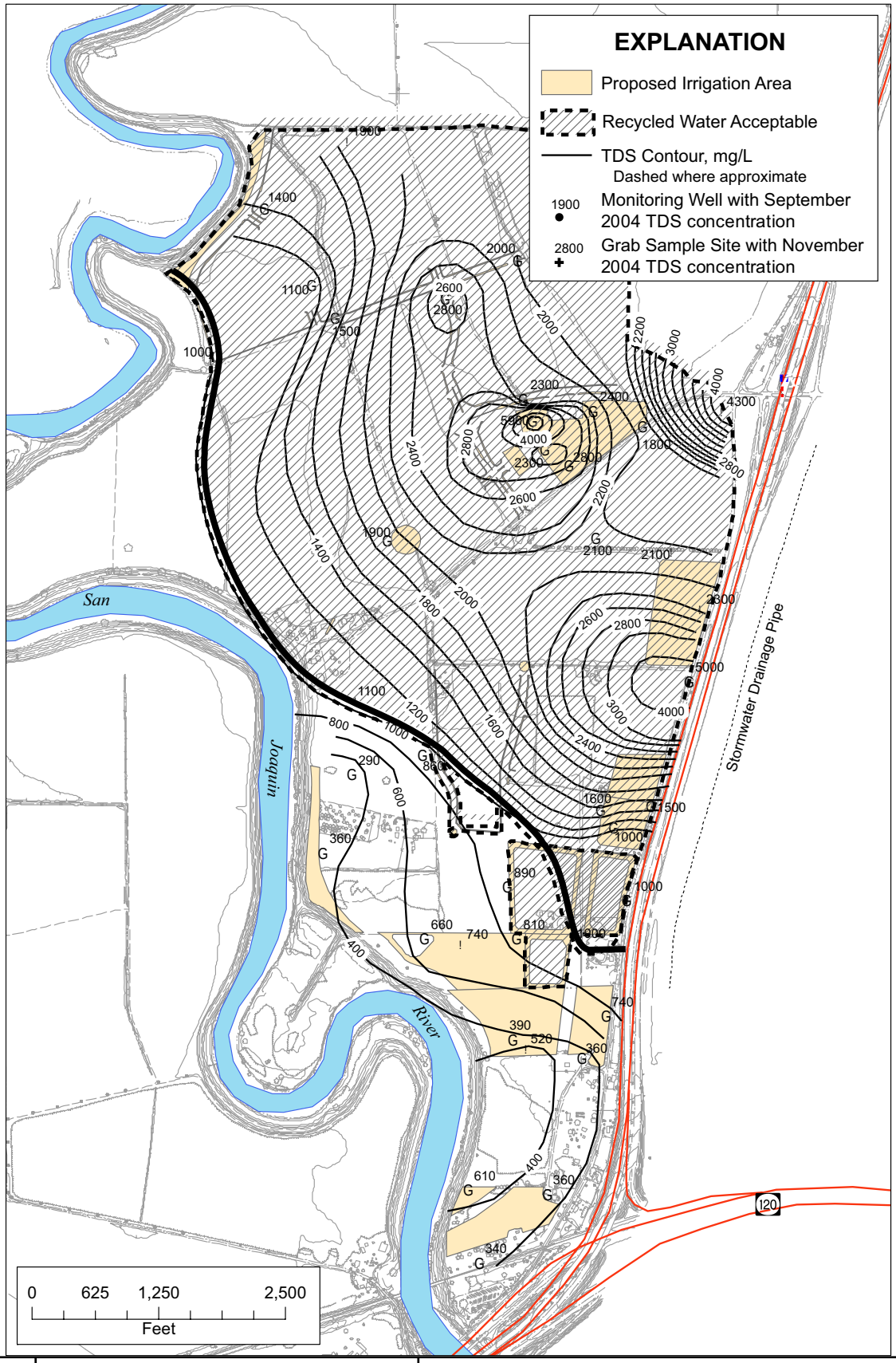
Reference:
Figure 1-1, December 2004 RWD
RMC, Inc.

REITER AREA
City of Lathrop and Califia LLC
Wastewater Treatment Facility
San Joaquin County



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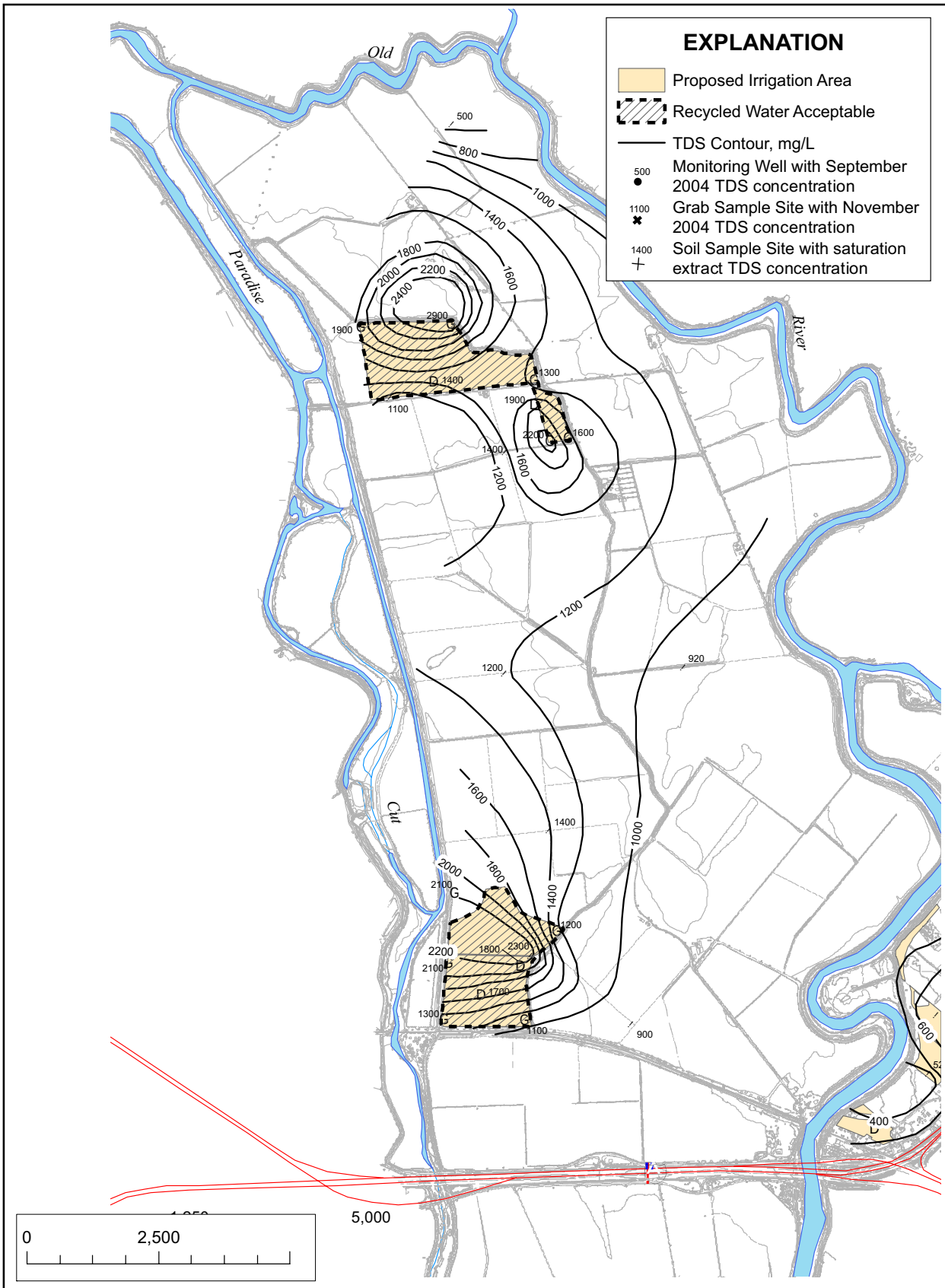
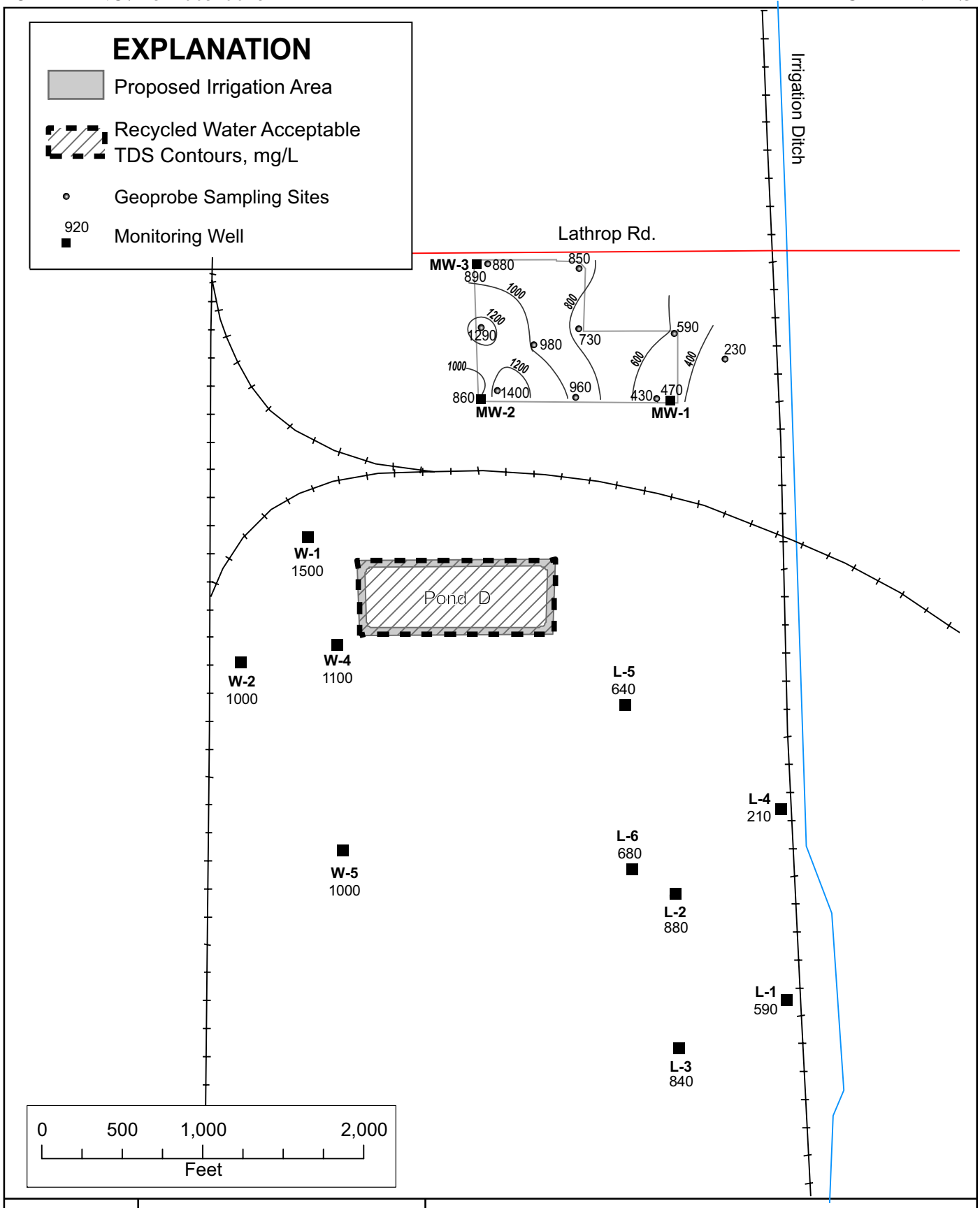
Reference:
Hydrofocus, Figure 5-2,
December 2004 RWD
RMC, Inc.

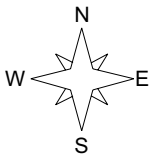
MOSSDALE VILLAGE
City of Lathorp and Califia LLC
Wastewater Treatment Facility
San Joaquin County



Reference:
Hydrofocus Figure 5-1,
December 2004 RWD
RMC, Inc.

RIVER ISLANDS GROUNDWATER TDS CONTOUR MAP
City of Lathorp and Califia LLC
Wastewater Treatment Facility
San Joaquin County





Reference:
Hydreofocus Figure 5-3,
December 2004 RWD
RMC, Inc.

REITER AREA GROUNDWATER TDS CONTOUR MAP
City of Lathorp and Califia LLC
Wastewater Treatment Facility
San Joaquin County

California Regional Water Quality Control Board

Central Valley Region

Robert Schneider, Chair

Alan C. Lloyd Ph.D.
Secretary for
Environmental Protection

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Arnold Schwarzenegger
Governor

ORDER NO. R5-2005-0045
ATTACHMENT F
REQUIREMENTS FOR
MONITORING WELL INSTALLATION WORKPLANS AND
MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:
   Purpose of the well installation project
   Brief description of local geologic and hydrogeologic conditions
   Proposed monitoring well locations and rationale for well locations
   Topographic map showing facility location, roads, and surface water bodies
   Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:
   On-site supervision of drilling and well installation activities
   Description of drilling equipment and techniques
   Equipment decontamination procedures
   Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):
   Diagram of proposed well construction details
   - Borehole diameter
   - Casing and screen material, diameter, and centralizer spacing (if needed)
   - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
   - Anticipated depth of well, length of well casing, and length and position of perforated interval
   - Thickness, position and composition of surface seal, sanitary seal, and sand pack
   - Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):
Method of development to be used (i.e., surge, bail, pump, etc.)
Parameters to be monitored during development and record keeping technique
Method of determining when development is complete
Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):
Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
Datum for survey measurements
List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. **Appendix: Groundwater Sampling and Analysis Plan (SAP)**
The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
  - General sampling techniques
  - Record keeping during sampling (include copies of record keeping logs to be used)
  - QA/QC samples
- Chain of Custody
- Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

A. General Information:
Purpose of the well installation project
Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
Number of monitoring wells installed and copies of County Well Construction Permits

Topographic map showing facility location, roads, surface water bodies
Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):
On-site supervision of drilling and well installation activities
Drilling contractor and driller's name
Description of drilling equipment and techniques
Equipment decontamination procedures
Soil sampling intervals and logging methods
Well boring log
- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
- Depth to first encountered groundwater and stabilized groundwater depth
- Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):
Well construction diagram, including:
- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:
Date(s) and method of development
How well development completion was determined
Volume of water purged from well and method of development water disposal
Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):
Identify the coordinate system and datum for survey measurements
Describe the measuring points (i.e. ground surface, top of casing, etc.)
Present the well survey report data in a table
Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix