

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2009-0108

WASTE DISCHARGE REQUIREMENTS

FOR

CITY OF LOYALTON AND GRANDI RANCH
WASTEWATER TREATMENT FACILITY
SIERRA COUNTY

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

1. The City of Loyalton (City) submitted a Report of Waste Discharge (RWD) on 12 March 2009 for updating existing Waste Discharge Requirements (WDRs) for the City of Loyalton's wastewater treatment facility. The purpose of the update is to allow the Discharger to reconfigure the wastewater treatment system, add constructed wetlands to the treatment train, and change the land application area location.
2. These WDRs were prepared because the Discharger is responding to requirements in Cease and Desist Order (CDO) No. R5-2005-0089, adopted due to inadequate wastewater storage and/or disposal capacity at the City of Loyalton wastewater treatment and disposal facility.
3. For the purposes of this Order, the term "Wastewater Treatment Facility" (WWTF) shall mean the wastewater collection system, the wastewater treatment ponds, constructed wetlands, wastewater storage ponds, recycled water distribution piping, and the land application area. The location of the facility is shown on Attachment A, which is attached hereto and made part of this Order by reference.
4. The treatment area is located at 403 Poole Lane, Loyalton, in Section 11, T21N, R15E, MDB&M. The City of Loyalton owns and operates the WWTF: Grandi Ranch owns the Land Application Area (LAA). The LAA is also in Section 11, T21N, R15E, MDB&M. The City and Grandi Ranch are hereafter jointly referred to as "Discharger."
5. Several orders have been adopted regarding the wastewater treatment facility. They consist of:
 - a. WDRs Order No. 5-01-069 was adopted by the Central Valley Water Board on 16 March 2001. The Order describes the existing wastewater treatment facility. However, that facility does not have adequate storage and disposal capacity.
 - b. Water Recycling Requirements (WRRs) Order No. 5-01-051, issued to supplement the City of Loyalton's wastewater disposal capacity was adopted by the Central

Valley Water Board on 16 March 2001. The Order allowed recycled water to be applied on the Bar One Ranch.

- c. CDO No. R5-2005-0089 was adopted by the Central Valley Water Board on 24 June 2005. The Order required design and construction of a system that complies with the storage capacity requirements of the Central Valley Water Board and submittal of an RWD by 1 May 2009. Because Item No. 14, submittal of a *Wastewater Treatment System Improvement Report* by 1 May 2010, has not been completed, the CDO is not being rescinded at this time.
 - d. Continued use of Orders 5-01-069 and 5-01-051 is not consistent with the current plans and policies of the Central Valley Water Board, nor with the Discharger's need to increase capacity.
6. The Assessor's Parcel Number (APN) for the WWTF is 016-002-0510. The APN for Grandi Ranch is 016-020-097.
 7. The CDO requires the treatment facility improvements to be complete and operational by 1 May 2010. In order to meet the schedule, the Discharger has begun collecting bids, and construction is planned for the summer and fall of 2009. A critical item has been financing the project. The City has received a United States Department of Agriculture (USDA) Rural Development Grant and Loan package that includes \$1 million in grant funds and \$3.5 million in low interest loan funds. Repayment of the loan required an increase in the sewer fee from \$50/month to \$75/month. The increased fees were approved by the City Council in August 2008. The City successfully completed the Proposition 218 protest period on 18 November 2008. Financing for the project design and construction is in place.

Existing Facility, Facility Improvements, and Discharge

8. Wastewater treatment has been performed at the treatment system area since 1956. Originally, an Imhoff Tank (similar to a large septic tank) was used to settle solids; effluent from the Imhoff Tank was discharged to ponds for biological treatment and percolation of wastewater. The treatment system as it exists presently was constructed in 1996, and was a complete reconstruction of the previous facility.
9. The existing treatment system consists of an automated influent screen, flow meter, influent pump station, four aerated lagoons, a settling pond, and nine effluent rapid infiltration basins. An emergency storage basin also exists. The treatment system site plan is shown on Attachment B, which is attached hereto and made part of this Order by reference.
10. The facility was designed to treat an average flow of 172,000 gallons per day (gpd) and a peak daily flow of 756,000 gpd. Because inadequate wastewater disposal capacity existed

at the wastewater facility, the Discharger contracted to dispose of wastewater on the nearby Bar One Ranch. That discharge was authorized by WRRs Order No. 5-01-051.

11. The existing treatment system is being reconfigured, storage is being added, and a new LAA is being developed. The improvements are needed to provide the storage capacity required in CDO R5-2005-0089 and to address inflow and infiltration issues. The collection system allows significant inflow and infiltration of groundwater and some areas served by the collection system are within the 100-year flood zone. When flooded, surface water can enter the collection system. The Discharger plans the following improvements:

- a. Construct a new 80 acre LAA that will be used to grow alfalfa or other crops. The crop will be removed from the LAA.
- b. Replace the existing influent pump station pumps with new pumps that provide increased capacity.
- c. Convert seven of the nine existing rapid infiltration ponds into two 60-mil thick HDPE liner equipped effluent storage ponds that provide 120 ac•ft of treated wastewater storage.
- d. Convert the remaining two of the nine rapid infiltration ponds into a constructed wetland that will polish effluent from the treatment ponds during average flow conditions. (The wetland will be bypassed during high flow events.)
- e. Replace 2,000 linear feet of undersized and/or flat gradient sewer trunk main, which requires excessive maintenance and is more likely to cause sanitary sewer overflows.
- f. Replace 20 existing manhole lids with new gasketed frames and watertight covers within the 100-year floodplain to reduce inflow during flood events.
- g. Relocate a pipeline crossing that exists under Smithneck Creek. The existing pipeline has become exposed by channel erosion and could be damaged during a flood. The new crossing will be in a safer location and the pipe will be located further below the stream bed.
- h. Install a new on-site sodium hypochlorite generating disinfection system and piping for the LAA.

If funding allows, the project will also include the following:

- i. Install a liner in the existing unlined emergency storage pond.
- j. Install a new sewer line crossing beneath Highway 49 at the west side of Loyalton, and replace an additional 1,000 feet of undersized and/or flat gradient sewers.

12. Wastewater is collected by gravity to the treatment system headworks where it is pumped into the treatment ponds. The headworks sump is equipped with a high level alarm that is programmed to dial employees if alarm conditions exist.
13. Wastewater is metered using a flume and ultrasonic flow meters at the headworks. Additional flow meters will be installed at the irrigation pumping station, and at the land application area tailwater pumping station.
14. A wastewater treatment schematic of the proposed treatment system is presented on Attachment C, which is attached hereto and made part of this Order by reference. The following summarizes the treatment process:
 - a. Wastewater will be biologically treated in the mechanically aerated treatment ponds. Effluent from the aerated ponds will be discharged to a settling pond prior to discharge to a constructed wetland during normal flow conditions (the wetland will be bypassed during high flow conditions); effluent from the wetlands (or bypassed water) will be discharged to the lined storage ponds.
 - b. Wastewater in the 120 ac•ft storage ponds will have undergone biological treatment but will not be disinfected. This wastewater will be disinfected prior to land application. In this Order, wastewater that has been disinfected is termed “recycled water.”
 - c. Disinfection will be performed using sodium hypochlorite, which will be provided by an on-site generator. The unit will include two generating cells, hypochlorite storage for three days, two metering pumps, and a low chlorine residual alarm as part of the Supervisory Control and Data Acquisition (SCADA) system.
 - i. Because milking animals will not graze on the LAA, Title 22 does not require disinfection of the wastewater. However, because stormwater will be allowed to escape the LAA during the months wastewater is not applied (November through February), disinfection of wastewater is required by this Order.
 - ii. The disinfection criteria is consistent with Title 22 California Code of Regulations (CCR) Section 60301.225, disinfected secondary - 23 recycled water, which is defined as: recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.
15. Pond configurations will change as part of the facility upgrade. However, the footprint of the treatment area will not change. The existing wastewater ponds are described below:
 - a. Four aerated treatment ponds provide a combined capacity of 6.50 ac•ft.

- b. The settling pond provides a capacity of 1.52 ac•ft.
 - c. The emergency storage pond provides 14.66 ac•ft of capacity
 - d. The rapid infiltration basins provide a combined capacity of approximately 6.0 ac•ft. (Seven of the nine basins will be reconfigured into the 120 ac•ft storage ponds; the remaining two basins will be converted to constructed wetlands.)
16. Emergency electrical power is provided by an on-site emergency electrical generator. The existing generator is capable of running the headworks lift pumps, some of the mechanical aerators, and the exterior lighting at the WWTF. As part of the system improvements, additional emergency electrical generation will be added. In addition, the SCADA system will be provided with battery backup in case the emergency electrical generation fails.
17. Depending on the season and location where stormwater falls, it will be handled as follows:
- a. Stormwater that falls on the roadways surrounding the ponds at the treatment area drains into the ponds. Other stormwater falling on roofs and paved areas drains to the surrounding unpaved area where it infiltrates.
 - b. Stormwater that falls on the LAA during the wastewater application season (March through October) will be captured and reapplied to the LAA. Tailwater will be handled the same way. During the nonapplication season (November through February), stormwater that falls on the LAA will be allowed to escape to surface water drainage.
18. A history of flow rates since 1996 is presented below. On several occasions, the wastewater treatment facility has experienced elevated flows due to inflow and infiltration events. Flood events occurred in 1997 (exceeded 900,000 gpd) and 1999 (approximately 800,000 gpd); the influent pumps had difficulty keeping up with the influent flow.

<u>Time Period</u>	<u>Total (gallons)</u>	<u>Daily Average (gpd)</u>	<u>Max Day Event (gpd)</u>
Sept., '96 - Aug., '97	96,608,524	264,681	930,080
Sept., '97 - Aug., '98	64,192,685	175,870	343,200
Sept., '98 - Aug., '99	82,955,700	227,276	799,200
Sept., '99 - Aug., '00	70,368,033	192,290	344,400
Sept., '00 - Aug., '01	54,418,100	148,596	211,000
Sept., '01 - Aug., '02	49,864,587	136,615	189,500
Sept., '02 - Aug., '03	50,145,600	137,385	242,900
Sept., '03 - Aug., '04	50,504,233	137,990	245,800
Sept., '04 - Aug., '05	45,500,505	124,659	386,000
Sept., '05 - Aug., '06	57,621,438	157,867	330,550
Sept., '06 - Aug., '07	40,711,828	111,539	145,700
Sept., '07 - Aug., '08	43,403,267	118,568	194,050

19. Wastewater quality has been characterized by the Discharger. Based on samples collected in 2008, wastewater constituent concentrations are consistent with published values but may be diluted by inflow and infiltration. The data is presented below:

Date	Influent	Pond Effluent (sampled at weir vault)			
	BOD (mg/L)	NO3 as N (mg/L)	TDS (mg/L)	BOD (mg/L)	TKN (mg/L)
1/15/08	87	0.1	270	24.4	16.0
2/19/08	144	0.0	240	32.0	20.0
3/21/08	NR	ND	280	NR	15.0
4/15/08	194	0.4	290	24.4	9.9
5/22/08	213	ND	300	17.2	19.0
6/2/08	284	NR	NR	47	15.0
7/24/08	162	NR	NR	30.5	NR
8/19/08	176	0.2	360	23.6	10.0
9/16/08	241	0.6	340	35.4	10.2
10/21/08	232	0.4	330	26.1	19.1
11/18/08	257	0.1	280	17.1	11.8
12/23/08	198	ND	280	27.0	20.0
Average	199	0.3	297	27.7	15.1

Recycled Water Application

20. Disinfected wastewater is currently applied to approximately 60 acres on the Bar One Ranch. Because the Bar One Ranch has entered into a conservation agreement, expansion of recycled water application at that site is not possible and use of the Bar One Ranch will be discontinued. This Order rescinds WRRs Order No. 5-01-051. A new LAA will be developed at the Grandi Ranch, which is located adjacent to the WWTF. The location is shown on Attachment A. The City of Loyalton and Grandi Ranch have entered into an Effluent Reclamation Agreement. The initial term of the agreement is 20 years.
21. The Grandi Ranch will provide approximately 100 acres to the land application of recycled water. Approximately 80 of the acres can be used for the actual land application area. A center pivot irrigation system will be used to distribute the recycled water on the LAA.
22. The LAA will be graded to allow effective irrigation and minimize ponding. Beef cattle livestock are allowed to graze on the LAA when not irrigating. Otherwise, the crops will be cut and removed for sale as animal feed. Because milking animals will not be allowed to graze on the LAA, disinfection of the wastewater is not required.
23. Stormwater that falls on the LAA during the application season will be captured and reapplied. Because the recycled water is disinfected, stormwater that falls on the LAA during the non-application season (November through February) will be allowed to run-off.

- 24. Effluent will be applied to the LAA at plant uptake rates for both nitrogen and water application. Irrigation tailwater will be controlled through such measures as controlling application and grading the area to prevent off-site drainage.
- 25. The RWD contains a water balance that demonstrates hydraulic capacity for the wastewater system. Because inflow and infiltration can significantly affect the amount of wastewater delivered to the system, the water balance included for a monthly average dry weather wastewater flow rate of 182,500 gallons/day, a monthly maximum average flow rate of 206,000 gallons/day an annual total wastewater flow rate of 66.61 million gallons. The water balance requires 117.6 ac•ft and 65 acres of land application area. The water balance does not require any wastewater to be applied from November through February.

Wastewater Collection System

- 26. The City of Loyalton wastewater collection system was constructed in 1956 and 1957. The original sewer main was constructed of vitrified clay pipe with rubber joints and precast concrete manholes. Most of the collection system was videologged in 1989. In 1996 the sewer interceptor main, which contained a number of serious leaks, was replaced with 12-inch diameter PVC pipe. The system generally consists of the following types of pipe:

<u>Pipe Material</u>	<u>Diameter (inches)</u>	<u>Length (linear feet)</u>
Vitrified Clay	6	16,000
Asbestos Cement	6	3,500
Vitrified Clay	8	3,200
Asbestos Cement	8	500
Vitrified Clay	10	1,700
<u>PVC</u>	<u>12</u>	<u>4,500</u>
Total		29,400

- 27. In response to the CDO, the wastewater collection system was investigated to determine the condition of the system and improvements that are needed. The City of Loyalton submitted a December 2005, *Analysis of Infiltration and Inflow* to the Central Valley Regional Water Board. The report identified the following issues:
 - a. No significant inflow (surface water entering the system through broken pipes or illegal connections) was observed.
 - i. An analysis of precipitation and wastewater flow rate was performed. The report determined that the increase in the amount of rain is not directly correlated with increased wastewater flow rate. Surface water inflow is considered a minor factor. However, when vented manholes become covered with surface water, the inflow can be increased substantially. To minimize such occurrences, the City plans to replace vented manholes in areas subject to flooding.

- b. Significant infiltration (groundwater leakage into the collection system) from broken pipe, leaky laterals, and/or illegal sump pump connections was observed. The quantity of infiltration is dependant on groundwater and pipe elevation. The report concludes that very shallow groundwater levels were largely responsible for the high flow rates reported in 1997 and 1999.
 - i. Planned repairs to the collection system are discussed in this Order.
 - ii. Ceasing illegal sump pump discharges is difficult. Without sump pumps, basements in the City would flood. Because there is no storm drain in the City, the only alternative to the wastewater system discharge would be to discharge groundwater on the street. That water would freeze in the winter creating hazards for the citizens.

28. Currently there are 98 manholes in the collection system. Manhole surveys were performed in October 1980 and June 2005 (a particularly wet spring) to survey the condition of the manholes and identify areas of major infiltration. Comparison of four critical manholes surveyed in 1980 and 2005 indicated wastewater flow rates had not increased in three of the four manholes. Manhole MH-18 contained significantly more wastewater flow and is being replaced as part of this project.
29. The sanitary sewer system collects wastewater and consists of sewer pipes, manholes, and/or other conveyance system elements that direct 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, 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. Sanitary sewer overflow is also defined in State Water Resources Control Board (State Water Board) Order No. 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*, which can be found at: http://www.waterboards.ca.gov/resdec/wqorders/2006/wqo/wqo2006_0003.pdf.
30. For this 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.
31. 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.

32. The Discharger is expected to take all necessary steps to adequately maintain, operate, and prevent discharges from its sanitary sewer collection system. The City shall prepare and implement a *Sewer System Management Plan* (SSMP) consistent with State Water Board Order No. 2006-0003-DWQ.

Site-Specific Conditions

33. California Department of Water Resources reports annual precipitation in Loyalton to be approximately 16.69 inches; the 100 year return total is 30.24 inches. The mean evapotranspiration rate is approximately 39.5 inches per year. All portions of the WWTF are outside the 100-year flood zone, but portions of the collection system are within the 100-year flood zone.
34. Based on the National Resource Conservation Service soil survey, the soils at the LAA consist primarily of the James Canyon Silt Loam. The infiltration rate is estimated at 0.57 to 1.98 in/hr.

Groundwater Considerations

35. The Loyalton community obtains its potable water from groundwater. Water quality was sampled on 19 June 2009. The data are presented below:

<u>Analyte</u>	<u>Units</u>	<u>Result</u>
Calcium	mg/L	26
Magnesium	mg/L	9.9
Hardness	mg/L	100
Total Dissolved Solids	mg/L	190
Fixed Dissolved Solids	mg/L	150
Electrical Conductivity	umhos/cm	270

36. Three groundwater monitoring wells were installed at the WWTF. The installation date of the wells is unknown, however they had been installed by July, 1998. Based on a monitoring well design drawing, the well construction details are estimated below. The well locations are presented on Attachments A and B.

<u>Name</u>	<u>Location</u>	<u>Dia. (in.)</u>	<u>Depth (ft.)</u>	<u>Screen Int (ft. bgs)</u>	<u>Filter Pack</u>	<u>Elev. (Ft. msl)</u>
MW-1	Upgradient	4	25	12-22	10-25	4917.09
MW-2	Downgradient	4	25	12-22	10-25	4913.04
MW-3	Downgradient	4	25	12-22	10-25	4911.08

Dia denotes casing diameter. Screen Int denotes Screen Interval feet below ground surface. Elev. (ft. msl) denotes the elevation of the top of the well casing.

37. In response to the CDO, a June 2008 *Background Groundwater Quality Study* was submitted by the City of Loyalton. The report was prepared to determine if the wastewater discharge has degraded, or is likely to degrade groundwater quality. The report concluded the following:

- a. Quarterly groundwater monitoring has been performed at the wastewater treatment facility since 1 March 2003.
- b. Groundwater exists at a shallow depth, often very close to the land surface. Groundwater flows consistently to the northwest. Well No. MW-1 is considered upgradient.
- c. In general, groundwater quality at the wastewater facility is good. Degradation of groundwater quality is noted in Well MW-2, but the degradation is limited and is unlikely to result in exceedance of a Water Quality Objective (WQO). A summary of average concentrations is presented in the table below.

<u>Well</u>	<u>TDS</u> mg/L	<u>Na</u> mg/L	<u>Ca</u> mg/L	<u>Mg</u> mg/L	<u>K</u> mg/L	<u>Fe</u> mg/L	<u>Mn</u> mg/L	<u>Cl</u> mg/L	<u>SO₄</u> mg/L	<u>NO₃ as N</u> mg/L	<u>TKN</u> mg/L	<u>TCO</u> MPN/100 mL	<u>Fecal Col</u> MPN/100 mL
MW-1	165	11.3	27.3	12.3	2	0.97	0.46	2.0	6.25	0.53	1.6	8.7	1
MW-2	294	28.3	44	21.3	8	3.1	3.0	12	32	0.95	1.6	ND (2.0)	ND (2.0)
MW-3	164	13.3	25	12	2	0.5	0.04	5.25	ND (2.0)	0.56	1.3	ND (2.0)	ND (2.0)

TDS denotes Total Dissolved Solids. Na denotes sodium. Ca denotes calcium. Mg denotes magnesium. K denotes potassium. Fe denotes iron. Mn denotes manganese. Cl denotes chloride. SO₄ denotes sulfate. NO₃ as N denotes nitrate as nitrogen. TKN denotes total Kjeldahl nitrogen. TCO denotes total coliform organisms. Fecal Col denotes fecal coliform organisms. MPN/100mL denotes most probable number per 100 mL.

38. The groundwater quality trends are described below:

- a. None of the monitoring wells contained average nitrate as nitrogen concentrations that exceed the water quality limit (10 mg/L). The average background nitrate concentration in Well MW-1 (0.53 mg/L) is less than the downgradient value in Well MW-2 (0.95 mg/L) and approximately equal to the concentration in Well MW-3 (0.56 mg/L).
- b. None of the monitoring wells contain average Total Dissolved Solids (TDS) concentrations that exceed the TDS water quality screening value of 450 mg/L. The average background TDS concentration in Well MW-1 (165 mg/L) is less than the downgradient value in Well MW-2 (294 mg/L) and approximately equal to the concentration in Well MW-3 (164 mg/L).
- c. The bacteria samples collected indicate low Most Probable Numbers per 100 mL (MPN) values or non-detectable values for samples collected from the wells. Coliform was only reported in samples from Well MW-1, the upgradient well. Due to the easily contaminated nature of bacteria samples, the parameter only being

detected upgradient of the WWTF, and the fine-grained nature of the soil in the area, the source of the coliform is questionable. Because coliform organisms are normally filtered as they migrate through soil media, the presence of TCO in the wells is likely a result of contamination during well installation or sampling. TCO in groundwater does not appear to be problematic; however, continued monitoring is prudent.

39. Based on the average total nitrogen concentration in effluent (15.4 mg/L), and the flow rate (66.61 Mgal/year), the total nitrogen applied to the land application areas (80 acres) is expected to be approximately 106 lbs/acre•year. The Discharger plans to grow alfalfa (or a similar crop) in the LAA. According to the *Western Fertilizer Handbook*, alfalfa is capable of taking up 480 lbs/acre•year of nitrogen. When wastewater is properly applied to land, the alfalfa should take up all the applied nitrogen. Groundwater beneath land application areas is not anticipated to be degraded by nitrogen compounds as a result of the wastewater application.
40. Based on the average TDS concentration in effluent from the weir vault (297 mg/L), and the flow rate (66.61 Mgal/year), the total TDS applied to the 80 acre land application area is expected to be 2,052 lbs/acre•year. Because TDS consists of biodegradable dissolved solids and Fixed Dissolved Solids (FDS), the loading rate of FDS should be less than the TDS loading rate. Groundwater beneath land application areas and wastewater ponds may be degraded by FDS compounds as a result of the wastewater application. However, the degradation is consistent with the Antidegradation Policy as described in the Antidegradation section of this Order.
41. Three groundwater monitoring wells exist at the WWTF, additional wells are required in the new LAA. The groundwater monitoring network is presented in the attached Monitoring and Reporting Program (MRP).

Antidegradation Analysis

42. State Water Resources Control Board (State Board) Resolution No. 68-16 (hereafter Resolution 68-16 or the "Antidegradation Policy") requires the Central Valley Water 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 Central Valley Water Board's policies. Resolution 68-16 requires that any discharge that could degrade the waters of the state be regulated to assure use of best practicable treatment or control of the discharge to assure that pollution or nuisance will not occur, and the highest water quality consistent with maximum benefit to the people of the State will be maintained.
43. The Discharger has provided a limited antidegradation analysis. Staff's review of the information finds that effluent disposal has the potential to degrade underlying groundwater with respect to salinity constituents.

44. The mineralization of water through use is on the low end of typical values. Potable water supplied to the City of Loyalton was sampled on 19 June 2009 (this data is presented in Finding No. 35). The TDS concentration was 190 mg/L. The average wastewater effluent TDS concentration for 2008 is approximately 297 mg/L. The incremental addition of dissolved salts through water usage at this facility (about 107 mg/L) falls below the normal range of salinity increase. Inflow and infiltration of high quality water are likely depressing the mineralization value, but even during the dry weather flow months (July, August, and September) of 2008, the average value of TDS in wastewater effluent remained low at 350 mg/L (no value for July was reported). During the dry weather discharge months, when inflow and infiltration is reduced, and therefore dilution is reduced, the mineralization rate remains below typical values.
45. The Central Valley Regional Water Board further finds that some degradation of the groundwater beneath the WWTF is consistent with the maximum benefit to the people of the state 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.
 - d. The degradation does not result in water quality less than that prescribed in the Basin Plan.
46. 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, 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 that can be effectively removed by conventional treatment is prohibited. When allowed, the degree of degradation permitted depends upon many factors (e.g., background water quality, the waste constituent, the beneficial uses and most stringent water quality objective, source control measures, and waste constituent treatability).
47. This Order acknowledges that some degradation may occur as a result of the application of treated wastewater to land, but the Regional Board finds that such degradation at this facility is consistent with the maximum benefit to the people of the state. Economic prosperity of local communities and associated industry is of benefit to the people of California, and therefore sufficient reason exists to accommodate growth and some

groundwater degradation, provided that the terms of the Basin Plan are met. 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* (California Water Code (CWC) section 13500-13529.4) declares that utilization of recycled water is of primary interest to the people of the state in meeting future water needs. This Order is consistent with State Water Board policy.

Treatment and Control Practices

48. Resolution No. 68-16 requires the discharge to be regulated to assure use of best practicable treatment or control (BPTC). The Central Valley Water Board may not, in general, specify the manner of compliance; therefore, to implement Resolution No. 68-16, the Central Valley Water Board sets forth effluent and receiving water limitations. To be consistent with Resolution No. 68-16, the Discharger must assure that it is complying with the requirements of this Order and complying with the receiving water limits. The Discharger will provide treatment and control of the discharge that incorporates:
- a. Alarms to prevent system bypass or overflow.
 - b. Collection system improvements to reduce the potential for SSOs and control inflow and infiltration.
 - c. Emergency electrical generation at the WWTF.
 - d. Battery backup power for the SCADA system.
 - e. Synthetically lined wastewater storage ponds.
 - f. Disinfection of treated effluent prior to land application.
 - g. Application of recycled water at plant uptake (for nitrogen and water) rates.
 - h. An Operation and Maintenance (O&M) manual.
 - i. Certified operators to assure proper operation and maintenance.
49. In order to determine compliance with Resolution No. 68-16 it is appropriate to establish a schedule for sampling of groundwater monitoring wells and to formally determine background groundwater concentrations for selected constituents. 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.
50. The discharge is consistent with Resolution No. 68-16 and the Basin Plan. Based on the results of the scheduled tasks, the Central Valley Water Board may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution No. 68-16.

Basin Plan, Beneficial Uses, and Regulatory Considerations

51. The *Water Quality Control Plan for the Sacramento River and Sierra 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.
52. Surface water drainage from the WWTF is to Smithneck Creek and then the Middle Fork Feather River. The beneficial uses of the Middle Fork Feather River from the source to Little Last Chance Creek as stated in the Basin Plan, are agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat. The facility lies within the Sierra Valley Hydrologic Unit Area No. 518.35, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August.
53. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.
54. The Basin Plan encourages water recycling.
55. 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 (i.e., least stringent) limits directly applicable to the protection of designated beneficial uses of the water. Controllable water quality factors are not allowed to cause further degradation of water quality in instances where other factors have already resulted in water quality objectives being exceeded. Controllable factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State are subject to the authority of the State or Regional Board, and that may be reasonably controlled. In addition, the water quality objectives do not require improvement over naturally occurring background concentrations.
56. 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 CCR: 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 Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

57. Constituents of concern that have the potential to degrade groundwater include salinity, nutrients, and coliform organisms, as discussed below:
- a. The salinity of the effluent currently averages approximately 297 mg/L (as characterized by TDS). The water supply in Loyalton is high quality, with a moderate hardness value. As a result, the residents do not use water softeners. As described in Finding No. 44, the salinity increase (from water supply to recycled water) is on the low end of typical salinity increases (150-380 mg/L are typical values). Minimizing degradation to the extent possible is consistent with the Antidegradation Policy and Basin Plan. Although limited degradation of groundwater quality by salinity is anticipated, the degradation will not impair the beneficial uses of groundwater due to increased salinity.
 - b. For nutrients such as nitrate, the potential for degradation depends on the quality of the treated effluent, the crop uptake capacity, and the potential for nitrification and denitrification before the nitrogen reaches the water table. Although groundwater is quite shallow at the wastewater treatment facility, there is not enough site-specific data to determine the threat. The nitrogen crop uptake rate for alfalfa is approximately 480 lbs/ac•year. As described in Finding No. 39, the wastewater application will only provide about 131 lbs/ac•year.
 - c. For coliform organisms, the potential for exceedance of the Basin Plan's numeric water quality objective depends on the disinfection performance and the ability of soil to provide adequate filtration. Groundwater has been monitored for coliform bacteria. As described in Finding No. 38.c, coliform is not normally detected in groundwater samples.
58. 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 numerical receiving water limitations will be established in Board orders which will, at a minimum, meet all applicable water quality objectives, that where compliance with narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives, and that compliance with narrative water quality objectives may be evaluated considering numerical criteria and guidelines developed and/or published by other agencies and organizations.

Water Recycling

59. As noted above, State Water 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.
60. The California Department of Public Health (CDPH) has established statewide water recycling criteria in Title 22, CCR, Section 60301 et. seq. (hereafter Title 22). The Discharger will treat the wastewater to secondary-23 recycled water standards and disinfect the effluent per Title 22 requirements.
61. A 1988 Memorandum of Understanding between CDPH and the State Water Board on the use of recycled water establishes basic principles relative to the two agencies and the California Water 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.
62. 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 by CDPH. Irrigation of fodder crops is considered a beneficial reuse. The Discharger submitted a Title 22 Engineering Report to CDPH on 13 Marcy 2009. CDPH provided comments on the Title 22 Report on 21 July 2009; those comments are addressed in these WDRs. A response to the comments was provided by the Discharger on 23 July 2009.

Other Regulatory Considerations

63. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements For Sanitary Sewer Systems General Order No. 2006-0003-DWQ (General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to comply with the Order. The Discharger's collection system exceeds one mile in length, therefore the General Order is applicable.
64. 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.
65. The Central Valley Water Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Central Valley Water 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.

66. The State Water 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. Because the design flow rate is less than one million gallons per day, the permit is not required.
67. A mitigated negative declaration was adopted by the City of Loyalton on 21 May 2008. With mitigation, no potentially significant impacts were identified in the Initial Study and Mitigated Negative Declaration. Mitigation measures related to water quality consist of the following:
 - a. Avoid/minimize potential water quality impacts from construction material release. Mitigation will consist of preparing and implementing a Spill Prevention and Contingency Plan and Stormwater Pollution Prevention Plan. The Discharger has already obtained a construction stormwater permit. The requirement to evaluate the need to obtain a Water Quality Certification is included in this Order.
 - i. The State Water Board issued Water Quality Order (WQO) No. 2008-0182, *Statewide General Waste Discharge Requirements For Dredged Or Fill Discharges That Have Received State Water Quality Certification*. Work performed under authority of a Water Quality Certification must comply with the WQO No. 2008-0182.
68. The Central Valley Water Board finds that this Order contains requirements that, if complied with, implement the mitigation measures related to wastewater issues and will reasonably protect the beneficial uses of waters of the state and prevent nuisance.
69. 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 attached Monitoring and Reporting Program No. R5-2009-0108 is necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

70. 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.
71. 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 CCR Section 20380. 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.
72. The discharge authorized herein and the treatment and storage facilities associated with the discharge, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, CCR, Section 20380 et seq. The exemption, pursuant to Title 27 CCR Section 20090(a), is based on the following:
- a. The Regional Water Board has prepared these WDRs.
 - b. The discharge is in compliance with the applicable water quality control plan.
 - c. The wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.
 - d. The waste discharge requirements are consistent with water quality objectives.
 - e. The waste consists primarily of domestic sewage and treated effluent. The treatment and storage facilities described herein are associated with a municipal wastewater treatment facility.
 - f. Residual sludge and/or screenings will be disposed of off-site at a sanitary landfill.
73. 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

74. The recommendations of the State Department of Public Health regarding the public health aspects of water recycling have been considered in preparation of this Order.
75. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, as well as the Central Valley Water Board's administrative record, were considered in establishing the following conditions of discharge.

76. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

77. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Orders No. 5-01-069 and 5-01-051 are rescinded, and that pursuant to Sections 13263 and 13267 of the California Water Code, City of Loyalton and Grandi Ranch, 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 facility is prohibited. Discharge of treated recycled water downstream of the wastewater treatment facility, other than at the designated storage ponds or land application areas, is prohibited.
4. Discharge of waste classified as "hazardous" under Title 23 CCR Chapter 15, Section 2521, 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 CCR Section 60304(c) and this Order is prohibited except that uses consistent with Title 22 and approved by the Central Valley Water Board Executive Officer, in writing, are acceptable.
7. Allowing milking animals to graze on the LAA is prohibited.
8. Application of recycled water to the land application area between 1 November and 28 February of each year is prohibited.

B. Discharge Specifications

1. The wastewater flow rate may not exceed any of the following limits:

<u>Title</u>	<u>Effective Dates</u>	<u>Units</u>	<u>Flow Limit</u>
Dry Weather Flow Rate	July, August, September	Gallons/day as a monthly average	182,500
Monthly Maximum Flow Rate	All year	Gallons/day as a monthly average	206,000
Annual Total Flow Rate	All year	Gallons/year	66,612,500

2. Only disinfected secondary-23 recycled water as defined in CCR, Title 22 Section 60301.225 may be applied to the LAA. Application of more highly treated water is acceptable.
3. Wastewater treatment and use of recycled water shall not cause pollution or a nuisance as defined by Section 13050 of the CWC.
4. Public contact with wastewater and recycled water shall be precluded or controlled through such means as fences, signs, or acceptable alternatives.
5. 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.
6. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the property owned by the Discharger.
7. As a means of discerning compliance with Discharge Specification B.6, the dissolved oxygen content in the upper one foot of any wastewater treatment or storage pond shall not be less than 1.0 mg/L.
8. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
9. 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.
10. 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, or debris shall not accumulate on the water surface.
11. The facility shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow, design seasonal precipitation, 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.
 12. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment levees and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond containing wastewater or recycled water shall never be less than two feet as measured vertically from the water surface to the lowest point of overflow.
 13. 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.11 and B.12.
 14. All recycled water conveyance and distribution piping and equipment shall comply with California Department of Public Health requirements and 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*.
 15. A use supervisor shall be appointed by the Discharger. The use supervisor shall be responsible for installation, operation, and maintenance of the recycled water system, prevention of potential hazards, implementing these requirements, and coordination with the cross-connection control program of the water purveyor or the Sierra County Environmental Health Department.

C. Effluent Limitations

1. Effective immediately, effluent discharged from the effluent pump station shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>
BOD ₅	mg/L	40
Total Nitrogen	mg/L	10
FDS	mg/L	350

BOD₅ denotes 5-day Biochemical Oxygen Demand. FDS denotes Fixed Dissolved Solids.

2. Effluent immediately downstream of the disinfection system shall not exceed the following limits for total coliform organisms:

- a. The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last three samples collected, and
 - b. The number of total coliform bacteria shall not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30-day period.
3. No stored wastewater or recycled water shall have a pH less than 6.5 or greater than 10.0.

D. General Solids Disposal Specifications

1. 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/or land recycling.
2. Sludge and solid waste shall be removed from screens, sumps, and ponds as needed to ensure optimal plant operation.
3. 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.
4. 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.
5. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27 CCR Division 2. Removal for further treatment, disposal, or reuse at disposal sites operated in accordance with valid waste discharge requirements issued by a California Water Board will satisfy this specification.
6. 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 Central Valley Water Board. If during the life of this Order, the state accepts primacy for implementation of 40 CFR 503, the Central Valley Water Board may also initiate enforcement where appropriate.

E. Water Recycling Specifications

1. Application of recycled water shall be confined to the designated application area as defined in this Order.
2. Recycled water shall be used in compliance with Title 22, Division 4, Chapter 3, 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:

<u>Setback Definition</u>	<u>Minimum Setback (feet)</u>
Edge of land application area to domestic well	100
Wastewater/Recycled water storage pond to domestic well	100
Spray irrigation to residence or exposure similar to park, playground, or school yard.	100
Impoundment of undisinfected secondary wastewater to domestic well	150
Land Application Area to Surface Water 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 CDPH-approved backflow prevention device.
8. Application rates for recycled water shall not exceed nitrogen and water uptake rates considering the plant, soil, climate, and irrigation management system in accordance with the water balance submitted with the RWD.
9. Irrigation runoff (e.g., 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. Sprinkler heads shall be of the type approved for recycled water and shall create a minimum amount of mist.
11. Irrigation of land application areas with recycled water shall not be performed within 24 hours of a forecasted storm, during a storm, or within 24 hours after any precipitation event, nor when the ground is saturated.
12. Wastewater shall not be applied to the LAA until the disinfection system is operable and all applied wastewater complies with Effluent Limitation C.2.
13. 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 background conditions have not yet been established for the land application areas.

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Chloride	mg/L	106
Total Coliform Organisms	MPN/100 mL	<2.2
Fixed Dissolved Solids	mg/L	450 ¹

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Nitrate (as N)	mg/L	10
Bromoform	µg/L	4
Bromodichloromethane	µg/L	0.27
Chloroform	µg/L	1.1
Dibromochloromethane	µg/L	0.37

¹ A cumulative impact limit that accounts for dissolved constituents.

- 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. The Discharger shall determine if the following permits are required based on the construction activities:
 - i. If the project will involve the disturbance or discharge of dredged or fill material into surface waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be required from the U.S. Army Corps of Engineers. If a Section 404 permit is required by the Corps, a Water Quality Certification must be obtained from the Regional Board as required under Section 401 of the Clean Water Act. A Water Quality Certification must be obtained prior to initiation of project activities. The applicant is also advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements
 - ii. If groundwater dewatering is required, evaluate the following permitting alternatives:
 - I. If dewatering of groundwater is required, and the groundwater will be discharged to land, the proponent may apply for coverage under Resolution No. R5-2008-0182, *Waiver of Reports of Waste Discharge and Waste Discharge Requirements for Specific Types of Discharge*.
 - II. If discharging groundwater to surface water, the proponent may be required to file a dewatering permit covered under WDRs Order No. R5-2008-0081 (NPDES CAG995001) *General Order for Dewatering and Other Low Threat Discharges to Surface Waters*.

- b. By **1 May 2010**, the Discharger shall submit a *Groundwater Monitoring Workplan and Well Construction Evaluation* prepared in accordance with, and including the items listed in, the first section of Attachment D: “*Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports.*” The workplan shall describe installation of groundwater monitoring wells at the LAA. The wells shall be designed to ensure that background water quality is adequately characterized and any potential water quality impacts from the discharges are detected. The system shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the site.
- c. By **1 May 2010**, the Discharger shall submit an updated *Operation and Maintenance Plan* (O&M Plan) for the WWTF. (An O&M Plan was submitted in response to CDO No. R5-2005-0089 but the WWTF configuration is significantly changing.) A copy of the O&M Plan shall be kept at the facility for reference by operating personnel. Key personnel shall be familiar with its contents. The O&M Plan shall provide the following:
 - i. Operation and Control of Wastewater Treatment - A description of the wastewater treatment equipment; operational controls; treatment requirements/effluent limitations; flow diagrams including valve/gate locations; operation of the treatment systems during start-up, normal operation, by-pass, shut-down, and draining procedures; potential operational problems including a troubleshooting guide.
 - ii. Sludge Handling - A description of the biosolids handling equipment, operational controls, control tests and observations related to process control, potential operational problems including a troubleshooting guide, and disposal procedures.
 - iii. Operation and Control of Recycled Water Distribution System – A description of the recycled water distribution system, operational controls, flow diagrams including valve/gate locations; potential operational problems including a troubleshooting guide and backflow and cross-connection controls.
 - iv. Personnel - Recommended staffing requirements, staff qualifications, training requirements and schedule, and operator certification requirements.
 - v. Maintenance – Maintenance procedures, equipment record system, scheduling and use of the maintenance record system, inventory system, special tools, warranty provisions and expiration dates, maintenance cost and budgeting system, maintenance schedule of all equipment.
 - vi. Emergency Response – A description of the vulnerability analysis including emergencies such as power outage, severe weather, or flooding. An equipment and telephone list for emergency personnel and equipment vendors. Coordination procedures with fire, police, and health department personnel, and an emergency operating plan.

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. R5-2009-0108 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 facility operators in accordance with Title 23 CCR, Division 3, Chapter 26.
8. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water 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.
 - d. Cleanup of sewage-related debris at the overflow site.
10. The Discharger shall report to the Central Valley Water 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 Central Valley Water 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 Central Valley Water Board in writing when it returns to compliance with the time schedule.
13. In the event of any change in control or ownership of the facility or wastewater disposal areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.
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 Central Valley Water 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 Central Valley Water 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 Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

I, PAMELA C. CREEDON, 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 8 October 2009.

Original signed by Kenneth D. Landau, for
PAMELA C. CREEDON, Executive Officer

TRO 9/10/09

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2009-0108

FOR

CITY OF LOYALTON AND GRANDI RANCH
WASTEWATER TREATMENT FACILITY
SIERRA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring influent wastewater, treated effluent, wastewater ponds, 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, portions of the MRP will not be relevant until the Wastewater Treatment Facility (WWTF) is expanded and is in use. In the meantime, the Discharger shall submit the monitoring data that is possible to collect, monthly construction 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:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow ¹	gpd	Continuous Meter	Daily	Monthly
Average Daily Flow ²	gpd	Calculated	Monthly	Monthly
BOD ₅ ³	mg/L	Grab	Monthly	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 from the effluent pump station, and prior to discharge to the storage ponds. However, samples collected for total coliform analysis and trihalomethanes shall be collected immediately downstream of the disinfection equipment. All samples shall be representative of the volume and nature of the discharge. Effluent monitoring shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
BOD ₅	mg/L	Grab/Composite ¹	Weekly	Monthly
Total Coliform Organisms ²	MPN/100 mL ³	Grab	Monthly ⁴	Monthly
Total Dissolved Solids	mg/L	Grab/Composite ¹	Monthly	Monthly
Fixed Dissolved Solids	mg/L	Grab/Composite ¹	Monthly	Monthly
Total Nitrogen (as N)	mg/L	Grab/Composite ¹	Monthly	Monthly
Trihalomethanes ⁵	ug/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 15 tubes or 3 dilutions.
3. Most probable number per 100 mL.
4. Coliform sampling is required whenever treated effluent is discharged to the LAA.
5. Individual trihalomethane constituent concentrations shall be identified, using EPA Method 8260B or equivalent.

WASTEWATER POND MONITORING

All wastewater ponds (treatment, settling, storage, and emergency storage), and the constructed wetland shall be monitored as specified below:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Dissolved Oxygen ¹	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
pH ¹	Standard	Grab	Weekly	Monthly
Odors	--	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.

LAND APPLICATION AREA MONITORING

Monitoring of the land application area shall be conducted **daily** when irrigation is occurring, 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:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
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
Nitrogen from Fertilizer Application	lbs/ac•month	Calculated	Monthly	Monthly
FDS 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 Including other sources of nitrogen including fertilizers.

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. The groundwater monitoring network is listed below; all new and existing wells identified in the groundwater monitoring well network shall be sampled and analyzed according to the schedule below.

<u>Well Name</u>	<u>Exist/Planned</u>	<u>Elevation Monitoring</u>	<u>Water Quality Monitoring</u>	<u>Location</u>
MW-1	Existing	Yes	Yes	WWTF
MW-2	Existing	Yes	Yes	WWTF
MW-3	Existing	Yes	Yes	WWTF
MW-4	Planned ¹	Yes	Yes	LAA
MW-5	Planned ¹	Yes	Yes	LAA
MW-6	Planned ¹	Yes	Yes	LAA

¹ Proposed wells for the Grandi land application area shall be installed by 31 December 2009.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of 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:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling and Reporting Frequency</u>
Depth to Groundwater	0.01 feet	Measurement	Quarterly
Groundwater Elevation ¹	0.01 feet	Calculated	Quarterly

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling and Reporting Frequency</u>
Gradient	feet/feet	Calculated	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly
Fixed Dissolved Solids	mg/L	Grab	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly
pH	pH units	Grab	Quarterly
Chloride	mg/L	Grab	Quarterly
Total Coliform Organisms	MPN/100 mL	Grab	Annually ⁴
Trihalomethanes ^{2,3}	ug/l	Grab	Annually ⁴

- 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, using EPA Method 8260B or equivalent.
- 3 Trihalomethanes analysis only required in samples collected from wells located in LAA areas.
- 4 Annual samples shall be collected during the third quarter monitoring events.

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:

<u>Constituents</u>	<u>Units</u>	<u>Sampling Frequency</u>
Total Dissolved Solids	mg/L	Annually
Fixed Dissolved Solids	mg/L	Annually
pH	Std. Unit	Annually

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. The report shall include the following:
 - a. Results of influent, effluent, wastewater ponds, and 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).
 - d. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program.
 - e. Monthly construction reports that briefly describe WWTF construction activities. Monthly construction reports shall be submitted until the project is completed.

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 trends, 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.
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. 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.
4. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.
5. 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.
6. Summary of information on the disposal of sludge and/or solid waste. The results from any sludge monitoring required by the disposal facility.
7. The results from annual monitoring of the groundwater wells and water supply.
8. An evaluation of the groundwater quality beneath the wastewater treatment facility, wastewater ponds, and land application areas.
9. Equipment maintenance and calibration records, as described in Standard Provision No. C.4.
10. A forecast of influent flows, as described in Standard Provision No. E.4.

A letter transmitting the self-monitoring reports shall accompany each report. The 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: Original signed by Kenneth D. Landau, for
PAMELA C. CREEDON, Executive Officer

8 October 2009

(Date)

TRO: 9/10/09

INFORMATION SHEET

ORDER NO. R5-2009-0108
CITY OF LOYALTON AND GRANDI RANCH
WASTEWATER TREATMENT FACILITY
SIERRA COUNTY

Background

The City of Loyalton is planning a Wastewater Treatment Facility (WWTF) improvement project that will result in improved treatment and more flexibility in how the WWTF is operated. The improvements are planned to comply with the Cease and Desist Order No. R5-2005-0089, which was issued because the Discharger did not have adequate wastewater storage and disposal capacity.

The Wastewater Treatment Facility (WWTF) includes the wastewater treatment equipment, wastewater collection system, recycled water storage ponds, recycled water delivery system, and land application areas. The City of Loyalton owns all the equipment and land with the exception of the Land Application Area and irrigation equipment (LAA) which is owned by Grandi Ranch. The City of Loyalton and Grandi Ranch are hereafter jointly referred to as "Discharger." The two parties have entered into an Effluent Reclamation Agreement. The initial term of the agreement is 20 years.

Since 1996, the daily average wastewater flow rate has been approximately 161,100 gallons per day. But substantial inflow and/or infiltration of surface water and/or groundwater occurs, which increases the amount of wastewater delivered to the WWTF. Many of the improvements at the facility are designed to reduce the amount of inflow and infiltration.

Planned Improvements

In responding to the CDO, the City of Loyalton has developed plans to construct substantial improvements at the WWTF. A critical item has been financing the project. The City has applied for and received a United States Department of Agriculture (USDA) Rural Development Grant and Loan package that includes \$1 million in a grant and \$3.5 million in a low interest loan. Repayment of the loan required an increase in the sewer fee from \$50/month to \$75/month. The increased fees were approved by the City Council in August 2008. The fees successfully completed the Proposition 218 protest period on 18 November 2008. Financing for the project design and construction is in place

The existing WWTF is being reconfigured, storage is being added, and a new LAA is being developed. The improvements are needed to provide the storage capacity that is required by the Central Valley Water Board and to address inflow and infiltration issues. The collection system allows significant inflow and infiltration of groundwater and some areas served by the collection system are within the 100-year flood zone. When flooded, surface water can enter the collection system in some areas.

The improvements generally consist of the following: construct a new 80 acre LAA, replace influent pumps with higher capacity pumps, construct two new 60-mil thick HDPE liner equipped effluent storage ponds that provide 120 ac•ft of storage, construct a wetland, repair

significant elements of the collection system, replace vented manhole covers (located in the flood zone), replace a pipeline crossing of Smithneck Creek, and construct a new disinfection system. If funding allows, the project will also include install a synthetic liner in the emergency storage pond, install a new sewer line crossing beneath Highway 49, and replace additional collection system piping.

Wastewater Treatment

The existing wastewater system consists of an automated influent screen, flow meter, influent pump station, four aerated lagoons, a settling pond, and nine effluent rapid infiltration basins. An emergency storage basin also exists. As previously described, improvements to the system will be constructed. Sludge will be allowed to accumulate in the treatment or storage ponds and will be removed on an as needed basis to maintain pond capacity and treatment effectiveness.

Although the disinfection requirements of Title 22 do not apply, wastewater will be disinfected to Title 22 disinfected secondary - 23 recycled water standards. The disinfection will be performed because during the nonapplication season (November through February), stormwater will be allowed to run off the LAA to surface water drainage. Stormwater that falls on the LAA during the irrigation season (March through October) will be captured and reapplied. Wastewater that has been disinfected is called "recycled water" in the Order.

Land Application

Recycled water will be applied to 80 acres of cropland during spring, summer, and fall months. Application will be performed by a center pivot irrigation system. Recycled water will be applied at crop uptake rates for both nitrogen and water application. Irrigation tailwater will be controlled using perimeter berms, grading the area to prevent off-site drainage, and/or management controls. A tailwater pumping station will be constructed to reapply runoff, or return it to the 120 ac•ft storage ponds.

This Order requires that wastewater be disinfected to secondary standards before application to land. Therefore, stormwater runoff from the land application areas is acceptable during the nonapplication season. It is expected that no wastewater will be applied during the months November through February.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage from the WWTF is to Smithneck Creek and then the Middle Fork Feather River. The beneficial uses of the Middle Fork Feather River from the source to Little Last Chance Creek as stated in the Basin Plan, are agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat.

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 water 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 Water Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Water 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 and additional investigation is needed at the new LAA; therefore staff is 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 Order, therefore, establishes interim groundwater 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.

According to the Basin Plan, 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 interim groundwater limits below apply numeric and narrative water quality objectives that must be met to maintain specific beneficial uses of groundwater. The constituents listed are those that are expected to be found in treated domestic wastewater or to be released from the soil upon the application of such waste. The *Policy for Application of Water Quality Objectives* in Chapter IV of the Basin Plan provides a mechanism to apply narrative objectives using relevant and appropriate numeric limits published by other agencies and organizations. Due to the expected high quality of natural background groundwater in the location of the discharge, numeric limits were selected so as to require that conditions of nuisance, adverse tastes and odors, toxicity, or impact to sensitive agricultural uses would not be expected to occur. For the same reason, where incorporated drinking water MCLs are expressed as ranges, limits were selected that represent no impact on the municipal or domestic supply beneficial use. Unless natural background for a constituent proves to be higher, the groundwater quality limit established in proposed Order is the most stringent of the values for the listed constituents. Once the discharger provides information on background water quality and best practicable treatment or control, the groundwater limits may need to be adjusted (see *Reopener* below).

<u>Constituent</u>	<u>Units</u>	<u>Limit</u>	<u>Beneficial Use</u>	<u>Water Quality Objective</u>	<u>Criteria or Justification</u>
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INFORMATION SHEET
ORDER NO. R5-2009-0108
CITY OF LOYALTON AND GRANDI RANCH
WASTEWATER TREATMENT FACILITY
SIERRA COUNTY

<u>Constituent</u>	<u>Units</u>	<u>Limit</u>	<u>Beneficial Use</u>	<u>Water Quality Objective</u>	<u>Criteria or Justification</u>	
Ammonia	mg/L	1.5	MUN ¹	Tastes and Odors	Odor Threshold ²	
Boron	mg/L	0.7	AGR ³	Chemical Constituents	Protect sensitive crops ⁴	
	mg/L	1.0	MUN ¹	Toxicity	Calif. Drinking Water Notification Level based on toxicity ¹¹	
Chloride	mg/L	106	AGR ³	Chemical Constituents	Sensitivity of certain crops irrigated via sprinklers ⁴	
Chloride (cont.)	mg/L	142	AGR ³	Chemical Constituents	Chloride sensitivity on certain crops ⁴	
	mg/L	250	MUN ¹	Chemical Constituents	Recommended Secondary MCL ⁵	
	mg/L	500	MUN ¹	Chemical Constituents	Upper Secondary MCL ⁵	
Iron	mg/L	0.3	MUN ¹	Chemical Constituents	Secondary MCL ⁶	
Manganese	mg/L	0.05	MUN ¹	Chemical Constituents	Secondary MCL ⁶	
Nitrate plus Nitrite as N	mg/L	10	MUN ¹	Chemical Constituents	Primary MCL ⁷	
Nitrite as N	mg/L	1	MUN ¹	Chemical Constituents	Primary MCL ⁷	
Sodium	mg/L	69	AGR ³	Chemical Constituents	Sensitivity of certain crops ⁴	
Total Dissolved Solids	mg/L	450 ⁸	AGR ³	Chemical Constituents	Crop sensitivity ⁴	
	mg/L	500	MUN ¹	Chemical Constituents	Recommended Secondary MCL ⁵	
	mg/L	1,000	MUN ¹	Chemical Constituents	Upper Secondary MCL ⁵	
Total Coliform Organisms	MPN/100 ml	<2.2	MUN ¹	Bacteria	Basin Plan and non-detect	
Trihalomethanes	ug/L	80	MUN ¹	Chemical Constituents	MCL ⁸	
	Bromoform	ug/L	4	MUN ¹	Toxicity	USEPA IRIS Cancer Risk Level ⁹
	Bromodichloromethane	ug/L	0.27	MUN ¹	Toxicity	Cal/EPA Cancer Potency Factor ¹²
	Chloroform	ug/L	1.1	MUN ¹	Toxicity	Cal/EPA Cancer Potency Factor ¹²
	Dibromochloromethane	ug/L	0.37	MUN ¹	Toxicity	Cal/EPA Cancer Potency Factor ¹²
pH	pH Units	6.5 to 8.5	MUN ¹	Chemical Constituents	Secondary MCL ¹⁰	

<u>Constituent</u>	<u>Units</u>	<u>Limit</u>	<u>Beneficial Use</u>	<u>Water Quality Objective</u>	<u>Criteria or Justification</u>
		6.5 to 8.4	AGR ³	Chemical Constituents	Protect sensitive crops ⁴
1	Municipal and domestic supply				
2	J.E. Amore and E. Hautala, <i>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</i> , Journal of Applied Toxicology, Vol. 3, No. 6 (1983).				
3	Agricultural supply				
4	Ayers, R. S. and D. W. Westcot, <i>Water Quality for Agriculture</i> , 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 which is incorporated by reference into the Basin Plan.				
6	Title 22, CCR, Section 64449, Table 64449-A which is incorporated by reference into the Basin Plan.				
7	Title 22, CCR, Section 64431, Table 64431-A which is incorporated by reference into the Basin Plan.				
8	Title 22, CCR, Section 64439, which applies the narrative objective to fully protect the cited beneficial use.				
9	USEPA Integrated Risk Information System, http://www.epa.gov/iris .				
10	Title 40, Code of Federal Regulations, Section 143.3, which applies the narrative objective to fully protect the cited beneficial use.				
11	California Department of Health Services, Division of Drinking Water and Environmental Management, Drinking Water Notification Levels, http://www.dhs.ca.gov/ps/ddwem .				
12	CAL/EPA Toxicity Criteria Database (OEHHA), http://www.oehha.org/risk/ChemicalDB .				

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. The relevant numerical water quality limit for salinity is 450 mg/L, and is used through Basin Plan procedures to apply the narrative Chemical Constituents water quality objective for the protection of agricultural supply, the beneficial use most sensitive to TDS. This limit assumes no impact on sensitive agricultural uses, consistent with the high quality of expected natural background water quality in the area of the discharge. Most individual salt components can safely be assumed to be proportionately low such that TDS can be an effective indicator parameter in their regulation.

Not all TDS constituents pass through the treatment process and soil profile in the same manner or rate. Chloride tends to pass through both rapidly to groundwater. As chloride concentrations in most groundwaters in the region are much lower than in treated municipal wastewater, chloride is a useful indicator parameter for evaluating the extent to which effluent reaches groundwater. Boron is another TDS constituent that may occur in wastewater in concentrations greater than groundwater depending on the source water and the extent residents use cleaning products containing boron. Other indicator constituents for monitoring for groundwater degradation due to recharged effluent include total coliform bacteria, ammonia and total nitrogen, and Trihalomethanes (THMs), a by-product of chlorination.

A Groundwater Limitation for chloroform is included in this Order and is based on the Basin Plan Toxicity objective and OEHHA Toxicity Criteria for the protection of human health. The

Office of Environmental Health Hazard Assessment (OEHHA) has published and maintains the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within the California Environmental Protection Agency (Cal/EPA). The cancer potency factor for oral exposure to chloroform in this database is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA, USEPA and other environmental agencies in evaluating health risks via drinking water exposure (i.e., 70 kg body weight and 2 liters per day water consumption), this cancer potency factor is equivalent to a concentration in drinking water of 1.1 ug/L (ppb) at the 1-in-a-million cancer risk level. The 1-in-a-million risk level is consistent with that used by the California Department of Public Health (CDPH) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in the development of drinking water MCLs and Action Levels and by OEHHA to set negligible cancer risks in the development of Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the National Toxics Rule and the California Toxics Rule for priority toxic pollutants in California surface waters.

Similarly, Groundwater Limitations for bromodichloromethane and dibromochloromethane are included in this Order and are based on the Basin Plan Toxicity objective and the Cal/EPA cancer potency factor. The Groundwater Limitation for bromoform included in this Order is based on the Basin Plan Toxicity objective and USEPA IRIS cancer risk level for the protection of human health. The U.S. Environmental Protection Agency maintains the Integrated Risk Information System (IRIS), which contains concentrations of constituents in drinking water associated with specified cancer risk levels. The Groundwater Limitations for bromoform, bromodichloromethane, and dibromochloromethane were also based on the 1-in-a-million risk level. Assumptions and rationale for selection of these limitations are identical to those discussed above for chloroform.

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. The bacteria objective in the Basin Plan, cited as a groundwater limitation in the order, is equivalent to requiring that coliform organisms not be detected in groundwater. Because all stormwater will not be prevented from running off the land application areas during the non-irrigation season, disinfection of wastewater is required. 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. Because the Discharger did not disinfect wastewater at the WWTF, THMs are unlikely to exist

in groundwater at the WWTF site. The Discharger will continue disinfecting wastewater prior to off-site land application. (The LAA will change to a new property in this Order.) Because disinfection with chlorine compounds will be performed, groundwater monitoring of the land application area includes THMs on the analyte list.

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, soil bacteria which naturally remove some nitrogen, and growing 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 FDS 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. As noted in the Order, the FDS concentration in wastewater is relatively low and any degradation is expected to be less than the water quality objective.

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 that 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

The proposed Order's Effluent Limitations for BOD₅, FDS, and total nitrogen are based on reasonable loading limits, odor control, and groundwater quality protection. Historical effluent sampling indicates the Discharger has been able to meet the limits. Effluent TDS concentrations averaged 297 mg/L in 2008; the water supply TDS value is 190 mg/L. That is an increase over domestic water supply of approximately 107 mg/L, which is lower than the typical value for salinity increase based on domestic water use. It is assumed that infiltration of high quality groundwater has diluted the average wastewater TDS values, but even when infiltration is at a minimum, the wastewater effluent TDS value remains a relatively low average of 350 mg/L. 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 of civil administrative liability where appropriate.

The proposed Order includes influent and effluent monitoring requirements, wastewater and storage pond monitoring, land application area monitoring, sludge monitoring, groundwater monitoring, and water supply monitoring. In order to adequately characterize the effluent, the Discharger is required to monitor for BOD, total coliform organisms, TDS, nitrogen, pH, and THMs. To ensure that 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 treated wastewater application to land, monitoring takes on even greater importance. The proposed Order includes monitoring of effluent 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 wastewater constituents expected to be present in the discharge, capable of reaching groundwater, and violating groundwater limitations if treatment, control, and environmental attenuation proves inadequate. 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 storage ponds and land application areas.

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

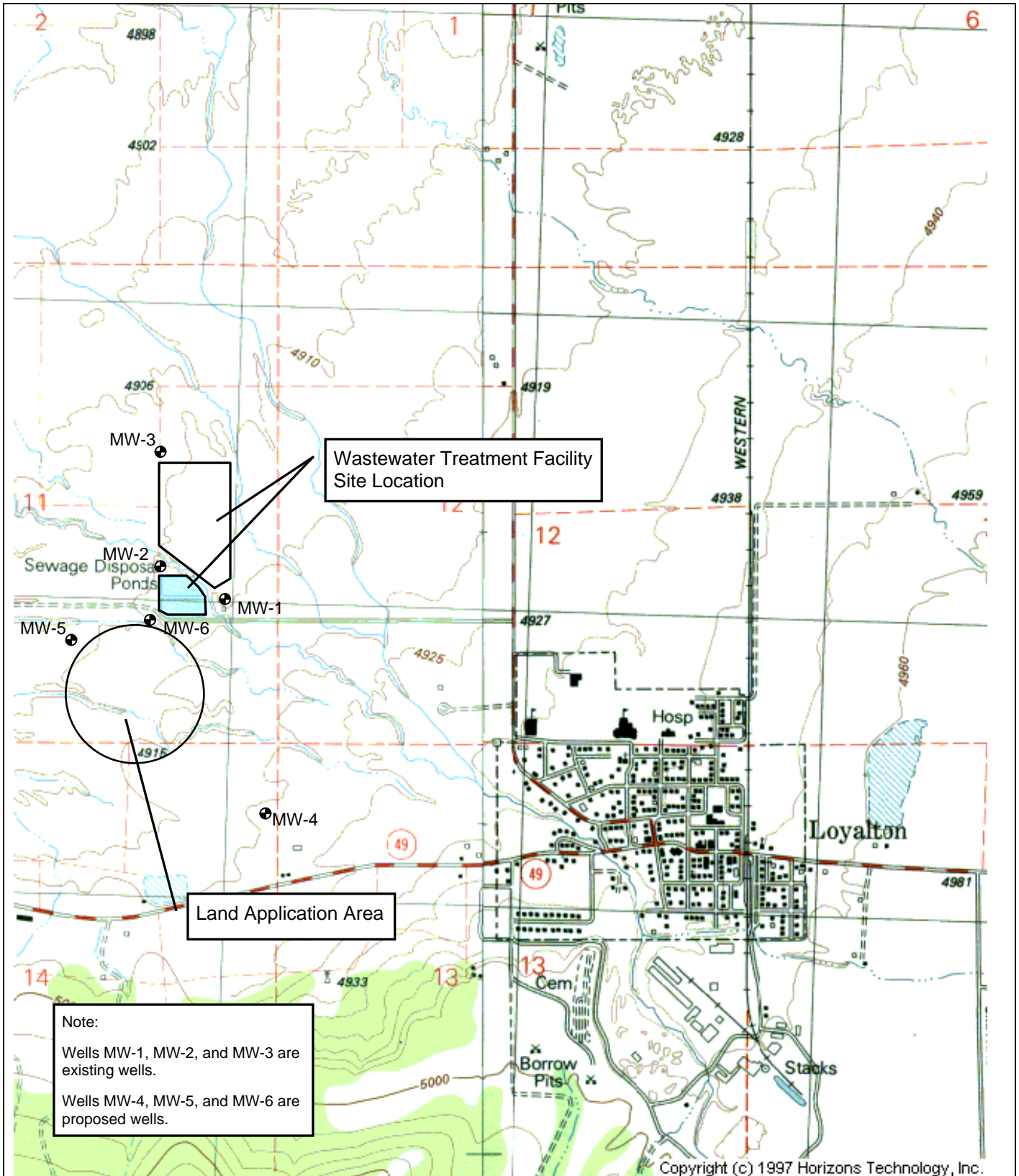
The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. However, information is presently insufficient to develop final recycled 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

INFORMATION SHEET
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CITY OF LOYALTON AND GRANDI RANCH
WASTEWATER TREATMENT FACILITY
SIERRA COUNTY

-11-

laws and regulations may change is not sufficient basis for reopening the Order. The CWC requires that WDRs implement all applicable requirements.

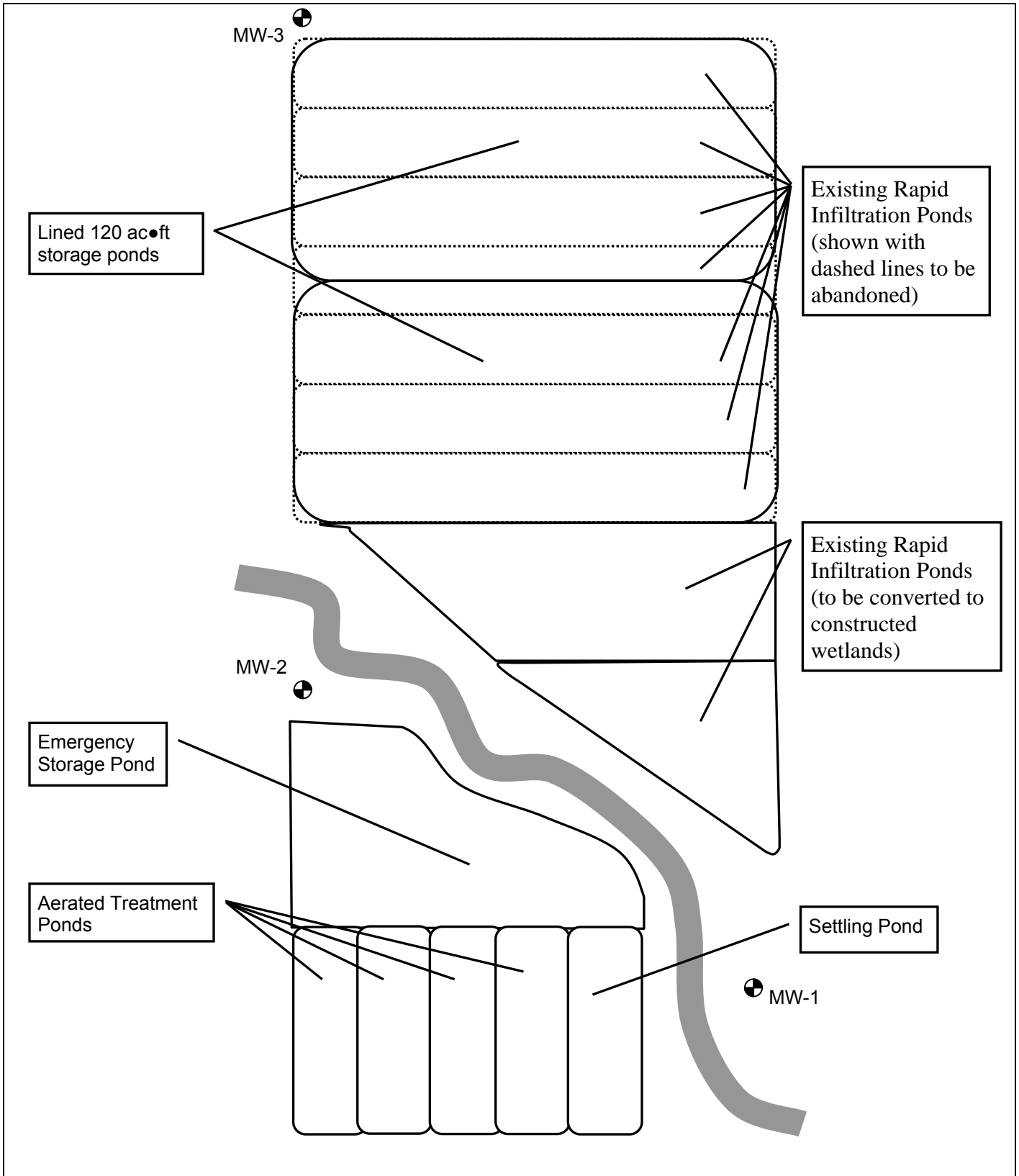
TRO: 9/10/09



Drawing Reference:
 U.S.G.S
 Loyaltón, CA
 Topographic Map
 7.5 Minute Quad

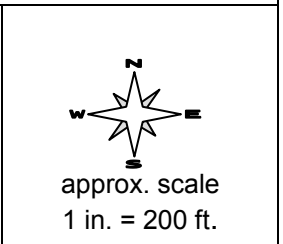
SITE LOCATION MAP
 City of Loyaltón and Grandi Ranch
 Wastewater Treatment Facility
 403 Poole Lane, Loyaltón
 Sierra County

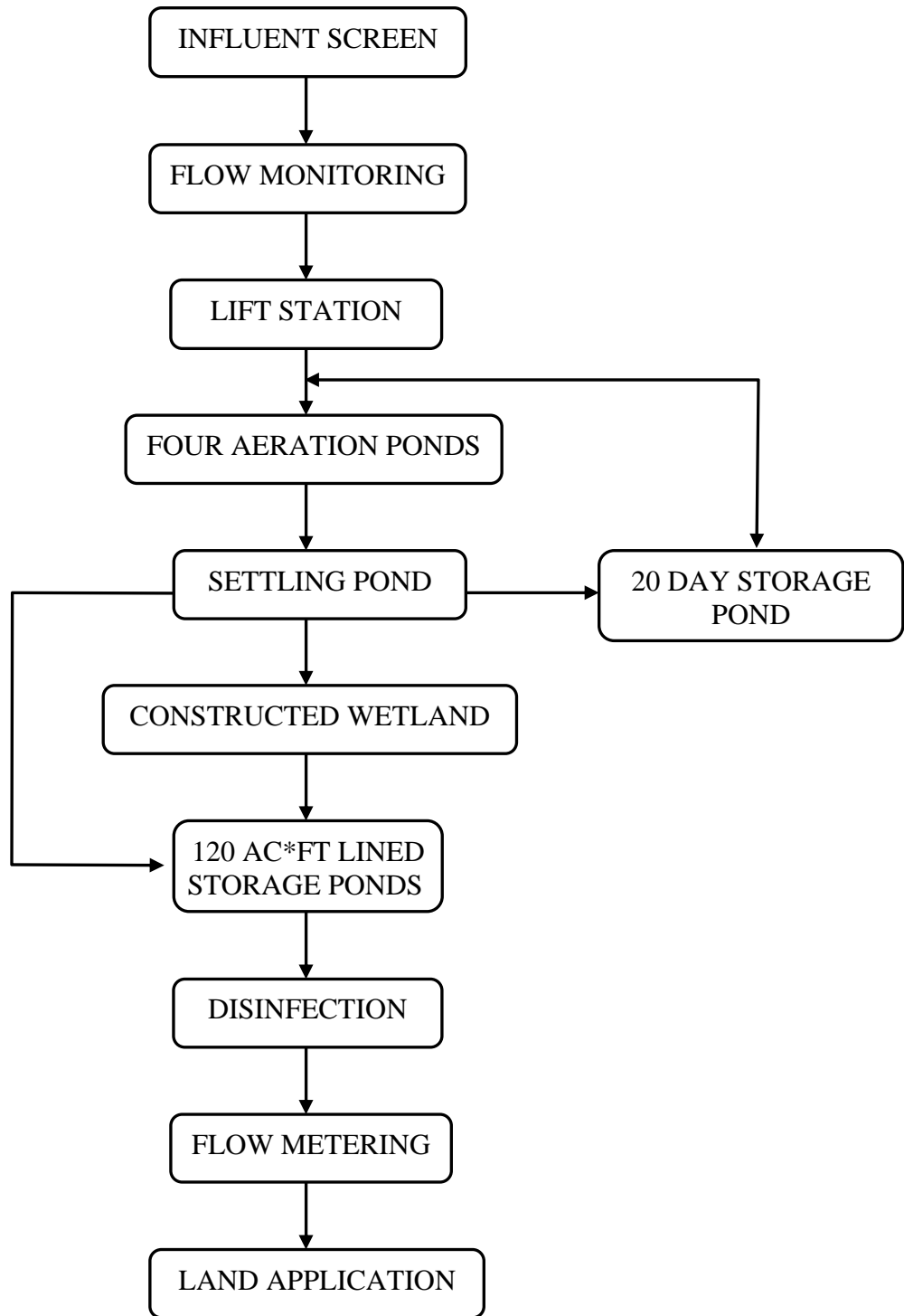
North arrow pointing up with cardinal directions N, S, E, W.
 approx. scale
 1 in. = 1,500 ft.



Drawing Reference:
Modified from
Drawing No. C200
30% Contract Drawings
Eco:Logic Eng. 2/4/09

TREATMENT SYSTEM SITE PLAN
City of Loyalton
Wastewater Treatment Facility
403 Poole Lane, Loyalton
Sierra County





Drawing Reference:

Modified from Figure 1-2
March, 2009 RWD
ECO:LOGIC ENG.

PROCESS FLOW SCHEMATIC

CITY OF LOYALTON
WASTEWATER TREATMENT FACILITY
SIERRA COUNTY



Linda S. Adams
Secretary for
Environmental
Protection

California Regional Water Quality Control Board Central Valley Region

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**Arnold
Schwarzenegger**
Governor

ORDER NO. R5-2009-0108 ATTACHMENT D 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
 - o General sampling techniques
 - o Record keeping during sampling (include copies of record keeping logs to be used)
 - o 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