

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2011-0092

WASTE DISCHARGE REQUIREMENTS  
FOR  
CITY OF PLYMOUTH  
PLYMOUTH WASTEWATER TREATMENT FACILITY  
AMADOR COUNTY

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

1. The City of Plymouth (hereafter "Discharger") submitted a Report of Waste Discharge ("RWD") in October 2009 to update existing Waste Discharge Requirements ("WDRs") for the City of Plymouth Wastewater Treatment Facility ("WWTF"). Supplemental information, including an antidegradation analysis, was received from the Discharger on various dates in July and August 2010, and August, September and October 2011.
2. The Discharger owns and operates the WWTF, which is located on Old Sacramento Road approximately two miles west of the City of Plymouth in Section 9, T7N, R10E, MDM&M (Assessor's Parcel Numbers 008-060-001, 003, 014, 028, 032 and 008-020-008, 024). The general location of WWTF is shown on Attachment A, which is attached hereto and made part of the Order by reference.
3. For the purposes of this Order, the term "Wastewater Treatment Facility" shall mean the wastewater collection, wastewater treatment and storage facilities, and Land Application Areas ("LAAs").
4. WDRs Order R5-01-095, adopted by the Central Valley Water Board on 27 April 2001, prescribes requirements for the WWTF, and allows a monthly average dry weather influent flow ("ADWF") of 0.17 million gallons per day ("mgd"). The Discharger requested to increase the monthly ADWF limit from 0.17 to 0.185 mgd and allow year-round discharge to the LAAs.

**Existing Facility and Discharge**

5. The WWTF treats and disposes of wastewater from residential and commercial units in the City of Plymouth, Far Horizons 49er Village RV Resort (the "RV Resort"), and the Amador County Fairgrounds. According to the 2009 General Plan, the City of Plymouth has an estimated population of 1,008. The WWTF serves a total of 625 equivalent dwelling units ("EDUs") including 408 residential and 217 non-residential EDUs.

6. The following table summarizes recent influent flow rates.

<u>Water Year</u> <sup>1</sup>	<u>Total Annual Influent Flow (MG)</u>	<u>Average Annual Flow (mgd)</u>	<u>Average Dry Weather Flow</u> <sup>2</sup> (mgd)	<u>Peak Month Flow</u> <sup>3</sup> (mgd)
2007 –2008	47	0.13	0.12	0.19
2008 - 2009	54	0.15	0.12	0.24
2009 - 2010	52	0.14	0.10	0.20

<sup>1</sup>. October through September (the beginning of the typical rainy season through the end of the typical dry season).

<sup>2</sup>. Average daily flow for the months of July through September, which consistently exhibit the lowest precipitation and influent flows.

<sup>3</sup>. The highest monthly average influent flow during a water year.

The peak month flow is double the amount of the ADWF during the water year 2008 to 2009, which indicates high inflow and infiltration (“I/I”). In December 2010, the Discharger completed some repair work for the collection system, as discussed further below.

7. In March 2010, the City of Plymouth received a new water supply from the Mokelumne River. This ended the history of using the local high-salinity groundwater. According to the Discharger’s April 2010 test data, the new water supply has an average total dissolved solid (“TDS”) concentration of 55 mg/L, which is much lower than the TDS concentrations of 325 to 349 mg/L in the groundwater supply based on the *2009 Consumer Confidence Report* for the City of Plymouth. Surface water is now the City’s primary water source; however, the water supply wells will remain as a backup/emergency supply per the Drinking Water System Permit issued by the California Department of Public Health.
8. The WWTF consists of a collection system, two aerated ponds (Ponds 1 and 3), one unaerated pond (Pond 2), chlorination facilities, a storage reservoir, and the LAAs. All of the ponds and the reservoir are unlined. Little Indian Creek is located topographically downgradient from the LAAs and an unnamed tributary passes through the LAAs. Sludge is hauled off site to a permitted landfill. A current site plan is included in Attachment B, which is attached hereto and made part of the Order by reference.
9. The wastewater is treated in Ponds 1 through 3. Design data for the existing ponds are summarized below.

<u>Pond</u>	<u>Depth (feet)</u>	<u>Volume (MG)</u>	<u>Surface Area</u>
1	8	2	1
2	4.5	2.1	1.6
3	5.5	4.5	2.8

10. The storage reservoir is used for storage of treated and disinfected effluent. The reservoir has a capacity of 185 acre-feet (60 MG) at two feet of freeboard. A diversion ditch around the storage reservoir has been modified to divert stormwater runoff away from the storage reservoir.

11. Wastewater is applied to approximately 85 acres of the 125-acre site. The LAAs are divided into six fields designated Field 1 through 6. The Discharger has installed earthen berms in Fields 2, 3 and 6 along a portion of Little Indian Creek and the unnamed tributary to contain tailwater and storm water (see Attachment B). To prevent tailwater and stormwater runoff from the LAAs entering surface water courses, only these three fields with berms can be used for year-round land application. Fields 1, 4 and 5 currently do not have berms, thus application of wastewater is limited to the period of 1 April to 1 November. However, if the Discharger builds berms or ditches around these fields, upon approval by the Executive Officer, the land application on Fields 1, 4 and 5 may occur throughout the wet season.
12. Hypochlorite is injected to the Pond 3 effluent at the output of the storage reservoir transfer pumps. Contact time in the transfer pipeline from the hypochlorite injection point to the storage reservoir is estimated to be 15 minutes. Additional chlorination for odor control may take place at the irrigation pumps.
13. The Discharger may move the disinfection system to the Pond 3 outlet to allow disinfected effluent to bypass the storage reservoir and be discharged directly to the LAAs. In order to ensure adequate chlorine contact time, this Order requires approval of a technical report documenting completion of the disinfection system modifications prior to any bypass of the storage reservoir.
14. Influent samples collected at the headworks and a manhole from the RV Resort have been characterized as shown below from July 2005 through May 2011.

Influent Wastewater Constituent Concentrations

Constituent	Units	Headworks			RV Resort		
		Minimum	Maximum	Average	Minimum	Maximum	Average
BOD <sup>1</sup>	mg/L	24	1,120	236	17	1,290	248
Total Zinc <sup>2</sup>	µg/L	75	326	138	20	1,900	267
Total Phenols <sup>2</sup>	µg/L	<0.1	62	23	<0.1	330	46
Formaldehyde <sup>2</sup>	µg/L	7	380	50	<5	8,800	621
Ammonia <sup>2</sup>	mg/L	6.8	52	30	2.6	105	20

<sup>1</sup>. Samples were collected monthly.

<sup>2</sup>. Samples were collected quarterly.

The significant formaldehyde spike of 8,800 µg/L occurred in February 2007 at the RV Resort influent sampling station. This is likely related to special activities and seasonal discharge from the RV Resort. Discharges from the fairgrounds RV dump station are not monitored separately; samples from the RV park dump station are considered representative of the overall discharge to the WWTF from RV holding tanks.

15. The quality of treated wastewater prior to discharge to LAAs (effluent) has been characterized as shown below from July 2005 through May 2011.

Effluent Wastewater Constituent Concentrations

Constituent	Units	Minimum	Maximum	Average
BOD <sup>1</sup>	mg/L	11	102	31
Total Coliform Organisms <sup>1</sup>	MPN/100 mL	<2	>2,400	123
pH <sup>1</sup>	std	7.6	8.2	7.8
Nitrate as N <sup>2</sup>	mg/L	0.05	4	0.8
TDS <sup>2</sup>	mg/L	262	788	514
Total Zinc <sup>3</sup>	µg/L	<5	1,440	110
Total Phenols <sup>3</sup>	µg/L	<1	31	3
Formaldehyde <sup>3</sup>	µg/L	<5	120	29
Ammonia <sup>3</sup>	mg/L	0.05	9.4	4

- <sup>1.</sup> Samples were collected weekly.
- <sup>2.</sup> Samples were collected monthly.
- <sup>3.</sup> Samples were collected quarterly.

The effluent samples often contained high concentrations of total coliform organisms in violation of WDRs Order R5-01-095. The Discharger states that the effluent coliform samples may be “old water” taken at spigots located at the spray fields, or may be freshly disinfected effluent from the pump station where the chlorinator is located. The Discharger has since implemented an improved effluent sampling protocol to verify compliance with the total coliform organism effluent limit.

- 16. The RWD includes nutrient loading rates for BOD and total nitrogen. Based on an assumed average effluent BOD concentration of 40 mg/L, the average BOD loading to the LAAs is estimated to be approximately 1.35 lb/ac•day with a maximum of 3.30 lb/ac•day in the summer when the wastewater application rates are greatest. This level is less than the published design values for BOD loading of up to 100 lb/ac•day and should not cause adverse conditions or odors. The annual nitrogen load for the LAAs is estimated to be 44 lb/ac•year, which is less than the typical nitrogen uptake rates of over 200 to 300 lb/ac•year for pasture land cited in the RWD.

**Compliance Issues**

- 17. Cease and Desist Order R5-2005-2006 (the “CDO”) was adopted by the Central Valley Water Board on 27 January 2005 due to a series of violations, including: a) Tailwater from LAAs entered the 100-foot buffer zone and surface drainage courses; b) Wastewater applications during prohibited periods (winter); c) Dissolved oxygen less than 1.0 mg/L in wastewater ponds; d) Water quality exceedances for ammonia as nitrogen; e) Inadequate storage capacity; and f) Failure to submit monitoring reports on time and technical reports required by WDRs Order R5-01-095.
- 18. The CDO required the Discharger to submit a series of reports including: Contingency Plan, Wastewater Pond Aeration Report, Spray Irrigation Management Plan and Spray Improvement Report, Diversion Ditch Construction Report, Sludge Management Plan, Collection System Improvement Report, and RWD. In addition, the CDO has the following provisions: a) The Discharge shall comply with WDRs Order R5-01-095 except the ammonia effluent limitation of 0.5 mg/L; b) A monthly ADWF of 97,000 gpd shall not be exceeded without technical documentation submitted describing storage reservoir

improvements and an updated water balance; and c) Effluent disposal on LAAs may occur throughout the wet season.

19. The Discharger completed a number of physical improvements in 2005 including additional pond aeration, stormwater diversion around the effluent storage reservoir, earthen berms along a portion of Little Indian Creek and its unnamed tributary. In addition, the sprinklers near the 100-foot buffer zone were deactivated; Field 6 was retrofitted to sprinkler heads instead of flood irrigation; an irrigation controller was installed for timed and volume irrigation; and maintenance of the LAAs has increased to prevent tailwater runoff to the surface water drainage course. Technical information, including a description of the reservoir improvements and an updated water balance was provided in support of monthly a monthly ADWF in excess of 97,000 gpd.
20. The RWD requested relaxation of the 100-foot buffer zone required by WDRs Order R5-01-095 to 50 feet. A 50-foot setback is adequate to protect water quality.

### **WWTF Modifications**

21. In September 2009, the Discharger received \$2.82 million in funding from the State Water Resources Control Board ("State Water Board") for its Phase 1 Sewer Collection System Rehabilitation Project (Phase 1 project). Phase 1 project is intended to achieve compliance with WDRs Order R5-01-095 and the CDO by reducing I/I through collection system rehabilitation, and restore the original permitted capacity of 0.17 mgd. The project includes:
  - a. Rehabilitation of 6,220 linear feet of sewer mains, sealing/repair of 48 manholes and installation of 1,450 linear feet of underdrain in the area of high groundwater.
  - b. Construction of a headworks facility, including a mechanical screen and solids compactor along with associated electrical and water supply facilities. A new influent meter was installed downstream of the headworks.
  - c. Replacement of the single 25-Hp aerator in Ponds 1 and 3 with two 20-Hp aerators and three 3-Hp aerators, respectively.
  - d. Replacement of the existing transfer pump with a new pump and addition of a standby pump. A new transfer meter was installed downstream of the transfer pumps.
  - e. Installation of a pipe bypass of Pond 1 to Pond 2. Distribution piping between ponds will be increased to facilitate shunting of water during potential process upsets.
  - f. Removal of 146 tons of sludge from Pond 1.
  - g. Installation of a concrete sludge drying bed and portable pump for future sludge removal. The sludge drying bed was built with concrete and is piped so that supernatant drains back into Pond 2 to preclude infiltration of leachate to groundwater.

In December 2010, the Discharger completed the Phase 1 project.

22. The water balance provided in the RWD demonstrates that the WWTF has capacity for a monthly average dry weather wastewater inflow rate of 0.185 mgd, a maximum monthly inflow rate of 0.261 mgd, and annual total wastewater inflow rate of 82.5 million gallons based on a 100-year return period 365-day precipitation event.

### **Wastewater Collection System**

23. The collection system consists of six miles of gravity pipelines, one pump station, and one private lift station. The pipe diameters range from six to ten inches and mostly are composed of clay and PVC.
24. 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 WWTF. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges into these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities and then properly disposed. Sanitary sewer overflow is also defined in State Water Board Order 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*, which can be found at: [http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/wqo06](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/wqo06).
25. Potential 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.
26. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, nutrients, oxygen demanding organic compounds, oil and grease, and other wastes. Sanitary sewer overflows can cause temporary exceedance 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.

### **Site-Specific Conditions**

27. The elevation of the City of Plymouth is approximately 820 feet above mean sea level. According to the precipitation data from the California Department of Water Resources station in Fiddletown, which is located about six miles east of Plymouth, the average annual precipitation is 37.67 inches per year. Fiddletown, however, is at an elevation 1,300 feet higher than Plymouth (elevation 2,160 feet versus elevation 820 feet). Based on data from Fiddletown and other stations in the area, the 100-year precipitation value for Plymouth is adjusted to be 50.93 inches (versus 65.73 inches for Fiddletown). The mean reference evapotranspiration rate is approximately 51.8 inches per year. All portions of the WWTF are outside the 100-year flood zone.
28. The facility is within the Hydrologic Unit Area No. 532.21, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

- 29. Surrounding land uses are primarily agricultural and residential.
- 30. Area soils consist primarily of Exchequer and Auburn loams, with slopes from 3 to 31 percent. The Exchequer loam is excessively drained, and the Auburn loam is well drained. Surface soil is very thin or completely eroded. Runoff is medium to rapid and erosion hazard is moderate to severe.

**Groundwater Conditions**

- 31. The depth to groundwater ranges from less than 1 foot to 21 feet below the ground surface. The shallower groundwater is found at higher elevations. Generally, groundwater flows from southeast to northwest (downslope) with a hydraulic gradient of approximately 0.03 feet/foot.
- 32. In 2003, the Discharger installed six groundwater monitoring wells, as shown on Attachment B. Monitoring wells MW-3 (upgradient of the wastewater treatment ponds) and MW-4 (upgradient of the effluent storage reservoir) are considered upgradient monitoring wells for the network within the two sub-basin areas within fractured slate. Well MW-1 is within the LAA site, MW-2 is downgradient of the treatment ponds, MW-5 is downgradient of the storage reservoir, and MW-6 is downgradient of LAA Field 5. The depths of monitoring wells range from 15 to 26 feet below ground surface.
- 33. Groundwater quality has been characterized by quarterly sampling of monitoring wells. A summary of average concentrations from July 2005 to May 2011 is presented in the table below.

<u>Constituent</u>	<u>Upgradient Wells</u>		<u>Downgradient Wells</u>			
	<u>MW-3</u>	<u>MW-4</u>	<u>MW-1</u>	<u>MW-2</u>	<u>MW-5</u>	<u>MW-6</u>
TDS (mg/L) <sup>1</sup>	476	5,393	1,137	568	688	649
pH (Std.) <sup>1</sup>	6.8	6.4	6.5	6.7	6.9	6.7
Nitrate (mg/L) <sup>1</sup>	<0.05	0.06	<0.05	0.21	<0.05	0.05
Specific Conductivity (µmhos/cm) <sup>1</sup>	668	5,087	1,664	926	957	978
Total Coliform Organisms (MPN/100 mL) <sup>1</sup>	21	3	9	99	35	2
Chloride (mg/L) <sup>2</sup>	13	91	171	39	58	109
Sodium (mg/L) <sup>2</sup>	20	383	44	36	35	32
Zinc (µg/L) <sup>2</sup>	12	70	92	16	35	8
Formaldehyde (µg/L) <sup>2</sup>	12	40	42	25	52	22
Phenols (µg/L) <sup>2</sup>	2	3	2	2	1	1

<sup>1</sup>. Samples were collected quarterly.  
<sup>2</sup>. Samples were collected annually.

- 34. A discussion of groundwater constituents is presented below based on the above data:

- a. Groundwater TDS concentrations have fluctuated over time based on the quarterly sampling events, but overall trends are stable. The TDS concentrations for the upgradient well MW-4 ranged from 4,220 to 5,800 mg/L from July 2005 through May 2011 while the range in the remaining monitoring wells was 282 to 1,480 mg/L. High TDS levels appear to be typical of this monitoring well. MW-4 is at the uphill edge of the effluent storage pond, which was formed by damming an ephemeral drainage course. Based on the local geology (fractured bedrock in the Sierra Foothills), it is unlikely that local shallow groundwater is that saline, especially at an upslope location where there is little soil mantle. It is possible that MW-4 is monitoring a localized perched zone that is subject to evapoconcentration because the groundwater is so shallow at the upslope end of the local recharge area.
- b. The upgradient well MW-3 had an average of 476 mg/L for TDS, which is the lowest for all wells. However, this well is located next to the Little Indian Creek and the groundwater samples may be affected by the surface water. Wells MW-3 and MW-4 do not appear suitable to provide samples that are representative of background water quality. Therefore, a new background well is necessary to determine the background water quality.
- c. All pH levels observed were within normal range for the area. The concentrations of nitrate as nitrogen in all wells were below 10 mg/L, which is the Basin Plan's water quality objective for nitrate as nitrogen.
- d. Groundwater monitoring reports show that some samples had total coliform organism concentrations greater than 2.2 MPN/100 mL, which is the Basin Plan's numeric water quality objective for total coliform organisms. Downgradient well MW-2 had an average concentration of 99 MPN/ 100mL for total coliform organisms from July 2005 to May 2011. Downgradient wells MW-1 and MW-5 and the upgradient wells MW-3 and MW-4 also show exceedances. The groundwater coliform detections are likely due to cross-contamination of the monitoring wells during construction and/or subsequent sampling. Therefore this Order requires the Discharger to submit a *Groundwater Monitoring Well Disinfection Workplan* and a *Sampling and Analysis Plan* for better sampling techniques.
- e. The WWTF receives wastewater from the RV Resort, and Amador County Fairgrounds which contains formaldehyde, zinc, and/or phenol due to the use of deodorants in holding tanks and portable toilets. The Discharger has been monitoring formaldehyde, zinc, ammonia and total phenol annually in groundwater since 2005. Most total phenol concentrations were non-detectable. The zinc average concentrations ranged from 8 to 92 µg/L, which are less than the California Drinking Water Standard Secondary Maximum Contaminant Level ("MCL") of 5,000 µg/L for zinc. The groundwater formaldehyde average concentrations ranged from 12 to 60 µg/L, which are less than the USEPA Health Advisory Level of 1,000 ug/L. Although the RV waste chemical impacts appear to be minimal, source control could be achieved through educational outreach to the RV park/fairground customers. This Order requires the Discharger to submit a best practicable treatment and control ("BPTC") evaluation and implementation plan for source control.



### **Basin Plan, Beneficial Uses, and Regulatory Considerations**

35. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition (hereafter "Basin Plan") designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.
36. Surface water drainage is to Little Indian Creek, a tributary of the Cosumnes River. The beneficial uses of Cosumnes River are municipal and domestic supply; agricultural irrigation and stock watering; contact, rafting, and other noncontact recreation; warm and cold freshwater habitat; migration for warm and cold water species; spawning for warm and cold water species; and wildlife habitat.
37. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.
38. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objectives for total coliform organisms
39. The Basin Plan's narrative water quality objective for chemical constituents, at a minimum, requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations. The Basin Plan recognizes 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.
40. In summary, the narrative toxicity objective 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. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.
41. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number ("MPN") of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater. The applicability of this objective to groundwater designated as MUN has been affirmed by State Water Board Order WQO-2003-0014 and by subsequent decisions of the Sacramento County Superior Court and California Court of Appeal, 3rd Appellate District.

### **Antidegradation Analysis**

42. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter "Resolution 68-16") prohibits degradation of groundwater unless it has been shown that:

- a. The degradation is limited and will provide social and economical benefit to the people of the State;
- b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
- c. The degradation is not expected to result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives; and
- d. The discharger employs BPTC to minimize degradation.

Resolution 68-16 prohibits degradation of groundwater quality as it existed in 1968, or at any time thereafter that groundwater quality was better than in 1968, other than degradation that was previously authorized. An antidegradation analysis is required for a new discharge location, and/or an increased volume of waste and/or an increased concentration of waste constituents.

43. Degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after best practicable source control, treatment, and control is consistent with providing social and economical benefit to the people of the State. The technology, energy, water recycling, and waste management advantages of municipal utility service 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. Economic prosperity of the valley and foothill communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason to accommodate growth and groundwater degradation provided terms of the Basin Plan are met.
44. The Discharger has been monitoring groundwater quality at the current WWTF site since 2003. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on existing background groundwater quality.
45. In August 2010, the Discharger submitted an *Antidegradation Analysis* with a simplified groundwater model, which used MW-4 as a background well. However, since MW-4 does not appear to provide samples that are representative of background water quality, this Order requires the Discharger to (1) install a new background groundwater monitoring well; (2) submit a *Background Groundwater Quality Report*; and (3) complete the *Antidegradation Analysis*.
46. Constituents of concern that have the potential to degrade groundwater include salts, nutrients, and coliform organisms, as discussed below:
  - a. Since the change to a new low-salinity water supply in March 2010, the effluent average TDS concentration has been reduced from 564 mg/L (August 2005 through December 2009) to 355 mg/L (March 2010 through May 2011). Although the discharge may cause

degradation of groundwater quality, it will likely not cause exceedance of a Water Quality Objective and the Discharger has implemented BPTC to reduce salinity.

- b. For nutrients such as nitrate, the potential for unreasonable degradation depends not only on the quality of the treated effluent, but the ability of the vadose zone below the effluent storage/disposal ponds to provide an environment conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. Effluent and groundwater monitoring data for the wastewater treatment plant site do not indicate unreasonable degradation due to nitrate and the native plants grown at the LAAs should remove most of the nitrogen in the applied wastewater. However, groundwater is shallow at the wastewater treatment plant, so there is some threat that the discharge could cause a violation of the MCL for nitrate, which is 10 mg/L as nitrogen. It is therefore appropriate to adopt a numerical groundwater limitation of 10 mg/L for nitrate as nitrogen to protect the municipal and domestic use of groundwater.
  - c. For coliform organisms, the potential for exceedance of the Basin Plan's numeric water quality objective depends on the ability of vadose zone soils below the treatment plant and effluent storage ponds and saturated soils within the shallow water-bearing zone to provide adequate filtration. Groundwater monitoring data indicate that the soils beneath the treatment and storage ponds may not provide sufficient filtration. However, the wells may have become cross-contaminated and should be disinfected to assess whether coliform detections actually represent degradation from the discharge. Sampling will continue to provide site-specific data to determine the threat. This Order requires that the Discharger continue to disinfect treated effluent. Disinfection would reduce the potential threat, but the use of sodium hypochlorite will also increase the salinity of the effluent and create trihalomethanes, neither of which is desirable. Additionally, disinfection does not prevent coliform impacts at the treatment plant site because treatment takes place in unlined ponds prior to disinfection. Depending on the outcome of the groundwater data analysis, it may be necessary to provide less permeable liners for the treatment ponds and/or change the method of disinfection. It is therefore appropriate to adopt a numerical groundwater limitation of 2.2 MPN/100mL for total coliform organisms to protect the municipal and domestic use of groundwater.
  - d. RV waste chemicals can be detrimental to bacteria in biological treatment process, inhibit the WWTF operation and also pose a threat to the quality of groundwater. To protect the municipal and domestic use of groundwater, it is appropriate to adopt following numerical limits for groundwater: 1,000 µg/L for formaldehyde, 2,000 µg/L for total phenol and 5,000 µg/L for total zinc. With an effluent limit of 600 µg/L for formaldehyde, the Discharger should be able to comply with the groundwater limits without additional treatment.
47. The expansion of the WWTF will accommodate an approximate one percent annual wastewater flow increase over the next twelve years. Sufficient reasons exist to accommodate this growth as long as the Discharger verifies its antidegradation analysis and selects and implements BPTC measures within a reasonable timeframe. It is also appropriate to allow some groundwater degradation as long as it is consistent with the Basin Plan and Resolution 68-16 because social and economic prosperity of local

communities and associated industry is of benefit to the people of California. This Order establishes terms and conditions of discharge to ensure that the discharge does not impact present and anticipated uses of groundwater and includes groundwater limitations that apply water quality objectives established in the Basin Plan to protect beneficial uses of the underlying groundwater. This Order also requires a groundwater quality evaluation, and requires groundwater monitoring to quantify any water quality impacts. Following completion of the work required by the time schedule contained in the Provisions, this Order will be reopened, if necessary, to reconsider effluent limitations and other requirements to comply with Resolution 68-16. Based on the existing record, the discharge is consistent with the antidegradation provisions of Resolution 68-16.

48. The Discharger currently provides treatment and control of the discharge that incorporates:
- a. Secondary treatment;
  - b. Disinfection;
  - c. Land application at agronomic rates;
  - d. Alarms to prevent system bypass or overflow;
  - e. An Operation and Maintenance Plan (O&M Plan); and
  - f. Certified operators to assure proper operation and maintenance.

### **Other Regulatory Considerations**

49. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in California Code of Regulations, title 27 ("Title 27"), section 20380 et seq. Title 27 conditionally exempts certain activities from its provisions. To qualify for an exemption, the activity must meet, and continue to meet, specified preconditions. Section 20090 of Title 27 contains conditional exemptions that are relevant to the discharge:
- (a) Sewage – Discharges of domestic sewage or treated effluent which are regulated by WDRs, or for which WDRs have been waived, and which are consistent with applicable water quality objectives, and treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludges or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable SWRCB-promulgated provisions of this division.
  - (b) Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leach fields if the following conditions are met:
    - (1) the applicable regional water quality control board has issued WDRs, or waived such issuance;
    - (2) the discharge is in compliance with the applicable water quality control plan; and

(3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

50. 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 as follows:
- a. Treatment Ponds 1, 2 and 3 are exempt from Title 27 pursuant to Title 27, section 20090(a) because they are treatment ponds associated with a municipal domestic wastewater treatment plant.
  - b. The secondary effluent storage reservoir and LAAs are exempt from Title 27 pursuant to Title 27, sections 20090(a) and (b) because they are associated with municipal wastewater treatment plants and because (1) Central Valley Water Board is issuing WDRs; (2) the discharge is in compliance with the Basin Plan. This Order requires the Discharger to install a new background monitoring well and submit a *Background Groundwater Quality Report and an Antidegradation Analysis* to determine if degradation is occurring and if that degradation is consistent with the Antidegradation Policy. The reports will be used to determine whether additional treatment and/or improved containment are needed to ensure compliance with the Basin Plan. Because compliance with the Basin Plan can not be determined immediately, this Order includes a compliance schedule for completion of those tasks. The treated effluent discharged to the effluent storage reservoir and LAAs does not need to be managed as hazardous waste.
51. While the WWTF is exempt from Title 27, the data analysis methods of Title 27 are appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.
52. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems General Order 2006-0003-DWQ (the "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.
53. The United States Environmental Protection Agency (U.S. EPA) has promulgated biosolids reuse regulations in 40 CFR section 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.

The Central Valley Water Board is using the Standards in 40 CFR section 503 as guidelines in establishing this Order, but the Central Valley Water Board is not the implementing agency for 40 CFR section 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the U.S. EPA.

54. The State Board adopted Water Quality Order 97-03 DWQ (NPDES General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The wastewater treatment plant has a design capacity of less than 1.0 mgd, and therefore the Discharger is not required to obtain coverage under NPDES General Permit No. CAS000001.

55. Section 13267(b) of the Water Code 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 technical reports required by this Order and the attached Monitoring and Reporting Program R5-2011-0092 ("MRP") are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

56. 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 Water Code section 13801, apply to all monitoring wells.

57. The City Council of the City of Plymouth adopted a Notice of Exemption for the Phase 1 project on 9 April 2009 pursuant to the California Environment Quality Act. The exemption is a categorical exemption pursuant to Section 15301, Class 1(b) (existing sewerage facilities).

58. The action to adopt waste discharge requirements for this existing facility is exempt from the provisions of the CEQA, in accordance with California Code of Regulations, title 14, section 15301.

59. Pursuant to Water Code 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

- 60. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
- 61. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
- 62. All comments pertaining to the discharge were heard and considered in a public meeting.

**IT IS HEREBY ORDERED** that Order R5-01-095 is rescinded except for the purpose of enforcement, and pursuant to Water Code sections 13263 and 13267, the City of Plymouth, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the 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 wastewater at a location or in a manner different from that described in the Findings is prohibited.
- 4. Discharge of waste classified as "hazardous" under California Code of Regulations, title 23, section 2521, or "designated," as defined in Water Code section 13173 is prohibited.
- 5. Surfacing of treated wastewater outside of the treatment ponds, storage reservoir or LAAs is prohibited.

#### B. Discharge Specifications

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

<u>Influent Flow Measurement</u>	<u>Influent Flow Limit</u>
Total Annual Flow <sup>1</sup>	82.5 MG
Average Daily Dry Weather Flow <sup>2, 3</sup>	0.185 mgd

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<sup>1</sup>. Based on the calendar year (January through December).  
<sup>2</sup>. Dry weather is defined as the months of July through September, inclusive.  
<sup>3</sup>. As determined by the total influent flow for the dry weather period divided by 92.

2. Neither the treatment nor the discharge of wastewater shall cause a nuisance or condition of pollution as defined by the Water Code section 13050.
3. Public contact with wastewater shall be precluded or controlled through such means as fences, signs, or acceptable alternatives.
4. 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.
5. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the property at an intensity that creates or threatens to create nuisance conditions.
6. As a means of discerning compliance with Discharge Specification B.5, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Central Valley Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.
7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
8. All wastewater treatment and storage ponds shall be managed to prevent breeding of mosquitoes. Example management strategies include,
  - a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.
  - b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.
  - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.
9. All treatment, storage, and disposal facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
10. The facility shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter months. 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.
11. 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 shall never be less than two feet as measured vertically from the water surface to the lowest point of overflow.

12. 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.10 and B.11.

**C. Land Application Area Specifications**

1. Irrigation runoff (tailwater) and storm water runoff shall be completely contained within the designated LAAs or be returned to the WWTF, and shall not enter any surface water drainage course.
2. Fields 2, 3 and 6, which have tailwater/storm water containment berms, may be used for year-round land application in compliance with LAA Specification C.5.
3. For Fields 1, 4 and 5, the application of wastewater is limited to the period of **1 April to 1 November**. If the Discharger builds berms or ditches to control tailwater and storm water runoff, land application on Fields 1, 4 and 5 may occur throughout the wet season upon approval of the report described in Provision G.2. by the Executive Officer.
4. Application of effluent shall comply with the following setback requirements:

<u>Setback Definition</u> <sup>1</sup>	<u>Minimum Irrigation Setback (feet)</u>
Edge of LAAs to property boundary	50
Edge of LAAs to public road	50
Edge of LAAs to irrigation well	100
Edge of LAAs to domestic well	100
Edge of LAAs to manmade or natural surface water drainage course <sup>2</sup> or spring	50

<sup>1</sup>. As defined by the wetted area produced during irrigation.

<sup>2</sup>. Excluding ditches used exclusively for tailwater return and drainages that do not discharge to surface waters.

5. The volume of treated wastewater applied to the LAAs on any single day shall not exceed reasonable agronomic rates based on the vegetation grown, pre-discharge soil moisture conditions, and weather conditions.
6. The discharge of treated wastewater to the LAAs shall be at reasonable agronomic rates designed to maximize uptake and breakdown of waste constituents in the root zone and minimize the percolation of waste constituents below the root zone.
7. Irrigation of effluent shall not be performed within 24 hours of a forecasted precipitation event, during precipitation, within 24 hours after any measurable precipitation event, or when the ground is saturated.

8. Spray irrigation of effluent is prohibited when wind velocities exceed 30 mph.
9. The LAAs shall be managed to prevent breeding of mosquitoes. In particular:
  - a. There shall be no standing water 72 hours after irrigation ceases;
  - b. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store effluent.

#### **D. Solids/Sludge 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 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 generated by the WWTF shall be confined to its 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 Division 2 of Title 27. 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. This does not preclude land application of biosolids at the WWTF site in accordance with another Order (i.e., general or individual Waste Discharge Requirements).
6. Use and disposal of biosolids shall comply with the self-implementing Federal regulations of 40 CFR section 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 section 503, the Central Valley Water Board may also initiate enforcement where appropriate.

#### **E. Effluent Limitations**

1. Effluent discharged to the LAAs shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Monthly Maximum</u>	<u>Quarterly Maximum</u> <sup>2</sup>
BOD <sub>5</sub> <sup>1</sup>	mg/L	40	80	--
Total Nitrogen	mg/L	--	--	10
<u>Formaldehyde</u>	µg/L	--	--	600

<sup>1.</sup> 5-day biochemical oxygen demand at 20° C.

<sup>2.</sup> Compliance with Quarterly Maximum limits shall be determined based on the analytical results for the calendar quarter.

2. Prior to discharge to the LAAs, effluent 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 based on all samples in a calendar month.
  - 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.

Compliance with this requirement shall be determined based on samples obtained at the sampling locations shown on Attachment C.

3. No wastewater contained in any pond shall have a pH of less than 6.5 or greater than 10.0.

#### **F. Groundwater Limitations**

1. **Effective immediately except as provided below**, the discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than the interim limits in the following table.

<u>Constituent</u>	<u>Units</u>	<u>Limits</u>
Nitrate as N	mg/L	10
Total Coliform Organisms	MPN/100 mL	2.2
Formaldehyde	µg/L	1,000
Total Phenol	µg/L	2,000
Total Zinc	µg/L	5,000

The Interim Groundwater Limitation for total coliform organisms shall not be effective until the Discharger has completed the monitoring well disinfection program required by Provision G.1.a or 30 June 2012, whichever occurs first.

2. Effective **30 December 2016**, the final groundwater limits will be the interim groundwater limits or the background groundwater quality (as determined by required studies approved by the Executive Officer), whichever is greater. Background groundwater quality shall be determined using the methods provided in Title 27, section 20415(e)(10). If background values are not determined, the interim groundwater limits listed above will be the final groundwater limits. If the Discharger determines that it cannot meet the final groundwater limits without WWTF improvements, the Discharger shall provide a proposed time schedule to bring the discharge into compliance before the effective date.

## G. Provisions

1. All of the following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision G.4.
  - a. By **29 February 2012**, the Discharger shall submit a *Groundwater Monitoring Well Disinfection Workplan* and a *Sampling and Analysis Plan*. The disinfection workplan shall provide detailed procedures for well disinfection, and include a schedule to complete the work by **30 June 2012**. The *Sampling and Analysis Plan* shall propose effluent and groundwater sampling techniques designed to minimize cross-contamination of the monitoring wells and groundwater samples with coliform organisms.
  - b. By **30 October 2012**, the Discharger shall submit a report documenting completion of monitoring well disinfection in accordance with the approved *Disinfection Workplan* and implementation of the approved *Sampling and Analysis Plan*.
  - c. By **30 December 2012**, the Discharger shall submit and implement a *BPTC Evaluation and Implementation Plan* for RV Waste Chemicals. The plan shall identify the source of RV waste chemicals, including but not limit to formaldehyde, total phenol and total zinc, and propose an implementation plan for source control to minimize influent concentrations of these chemicals.
  - d. By **30 December 2012**, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan*. The workplan shall propose an appropriate location for a new background monitoring well. The new well shall be designed to provide samples that are representative of background water quality. The workplan shall describe the criteria that will be utilized to determine whether a monitoring well can be considered to provide reliable groundwater quality data. The workplan shall include conclusions, recommendations, and a rationale for the location of each monitoring well. The rationale shall consider both the potential impacts from wastewater treatment ponds and the effluent storage reservoir and the requirements of the *Background Groundwater Quality Report* and the updated *Antidegradation Analysis* described below. The workplan for the new well

installation shall contain the information listed in the first section of Attachment D, which is attached hereto and made part of this Order by reference.

- e. By **30 July 2013**, the Discharger shall submit a *Groundwater Monitoring Well Installation Report* for the new groundwater monitoring well. The report shall be prepared in accordance with, and include the items listed in, the second section of Attachment D. The report shall describe the installation and development of the new monitoring well, and explain any deviation from the approved workplan.
  - f. By **30 December 2015**, the Discharger shall submit a *Background Groundwater Quality Study Report* for the wastewater treatment plant and effluent disposal sites. The report shall present a summary of all historical monitoring data for each groundwater monitoring parameter/constituent identified in the MRP and calculation of the background groundwater concentration for electrical conductivity, nitrate as nitrogen, total coliform organisms, and formaldehyde. Determination of background quality shall be made using the methods described in Title 27, section 20415(e)(10), and shall be based on all groundwater monitoring events. The report shall compare the calculated background concentration with the concentration in each downgradient well.
  - g. By **30 December 2016**, the Discharger shall submit an *Antidegradation Analysis*, which shall be based on the background water quality established in the *Background Groundwater Quality Study Report* and determine if the discharge is causing degradation in violation of the Groundwater Limitations of this Order. For each monitoring parameter/constituent, the report shall compare the monitoring data with the calculated background concentration and the limitations set forth in Groundwater Limitations of this Order. The report shall identify constituents of concern, and evaluate the impacts of WWTF operation and modifications to groundwater quality. If exceedances occur, the report shall include a BPTC workplan.
2. If the Discharger proposes to use Fields 1, 4, and 5 for land application between 1 November and 1 April, the Discharger shall install containment berms and or ditches for those fields and submit a *Tailwater Collection System Improvement Report* after completion of the work. The report shall include a site map that shows the locations of berms or ditches and demonstrates that tailwater and stormwater runoff will be completely contained within the designated LAAs or be returned to the WWTF and will not enter any surface water drainage course. Upon written approval by the Executive Officer, the land application on Fields 1, 4 and 5 may occur throughout the wet season.
  3. If the Discharger moves the disinfection system to an alternate location as described in Finding No. 13, the Discharger shall submit a *Disinfection System Modification Report* that describes the system design basis, as-built drawings, and proposed effluent sampling location for determination of compliance with the total coliform effluent limits of this Order. The Discharger shall not allow any direct discharge from the disinfection system to the LAAs prior to approval of this report by the Executive Officer.

4. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.
5. The Discharger shall comply with Monitoring and Reporting Program No. R5-2011-0092, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
6. 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)."
7. 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.
8. The Discharger shall provide certified wastewater treatment facility operators in accordance with California Code of Regulations, title 23, Division 3, Chapter 26.
9. 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.
10. 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.

11. 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."
12. 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.
13. 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 Discharger 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 this Order.
14. 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 Water Code. Transfer shall be approved or disapproved by the Executive Officer.
15. 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.
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.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial

enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

[http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

or will be provided upon request.

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 1 December 2011.

Original signed by

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PAMELA C. CREEDON, Executive Officer



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION  
MONITORING AND REPORTING PROGRAM NO. R5-2011-0092

FOR  
CITY OF PLYMOUTH  
PLYMOUTH WASTEWATER TREATMENT FACILITY  
AMADOR COUNTY

This Monitoring and Reporting Program (“MRP”) presents requirements for monitoring of wastewater influent, effluent, treatment ponds and storage reservoir, 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.

Central Valley Water Board staff shall approve specific sampling locations prior to any sampling activities. All samples shall be representative of the volume and nature of the discharge. The time, date, and location of each sample shall be recorded on the sample chain of custody form.

Field testing instruments (such as those used to test 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;
4. Field calibration reports are submitted as described in the “Reporting” section of this MRP.

**WWTF INFLUENT MONITORING**

Influent samples shall be collected at the headworks prior to treatment. Grab samples will be considered to be representative of the influent. Influent monitoring shall include, at a minimum the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow	gpd	Continuous	Daily	Monthly
BOD <sub>5</sub> <sup>1</sup>	mg/L	Grab	Monthly	Monthly
Total Zinc	µg/L	Grab	Quarterly	Quarterly
Total Phenols	µg/L	Grab	Quarterly	Quarterly
Formaldehyde	µg/L	Grab	Quarterly	Quarterly

<sup>1</sup> 5-day biochemical oxygen demand.

### RV PARK WASTEWATER MONITORING

The samples of the RV park wastewater shall be collected from the last manhole or lift station within the 49er Village RV Park upstream of the point where wastewater flows into the community sewer. Grab samples will be considered to be representative of the influent. The monitoring shall include, at a minimum the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Total Zinc	µg/L	Grab	Quarterly	Quarterly
Total Phenols	µg/L	Grab	Quarterly	Quarterly
Formaldehyde	µg/L	Grab	Quarterly	Quarterly

### WWTF EFFLUENT MONITORING

Effluent samples shall be representative of the treated wastewater prior to discharge to the LAAs after full chlorine contact has been achieved. The samples shall be collected at the sampling stations shown on Attachment C of the WDRs. The sampling location for each sampling event shall be reported in the Monthly Monitoring Reports. At a minimum, effluent monitoring shall consist of the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
BOD <sub>5</sub>	mg/L	Grab	Weekly	Monthly
Total Coliform Organisms <sup>1</sup>	MPN <sup>2</sup> /100 mL	Grab	Weekly	Monthly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Chloride	mg/L	Grab	Quarterly	Quarterly
Total Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Zinc	µg/L	Grab	Quarterly	Quarterly
Total Phenols	µg/L	Grab	Quarterly	Quarterly
Formaldehyde	µg/L	Grab	Quarterly	Quarterly
Standard Minerals <sup>3</sup>	mg/L	Grab	Annually	Annually

<sup>1</sup> Using a minimum of 15 tubes or three dilutions.

<sup>2</sup> Most Probable Number.

<sup>3</sup> Standard minerals shall include, at a minimum, the following elements/compounds: boron, calcium, iron, magnesium, manganese, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness.

### WASTEWATER TREATMENT POND AND STORAGE RESERVOIR MONITORING

Samples shall be collected from an established sampling station located in an area that will provide a sample representative of the wastewater in each aerated pond, polishing pond, and storage reservoir. Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 feet. Monitoring of all three treatment ponds and the storage reservoir shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
pH	Standard Units	Grab	Weekly	Monthly
Dissolved Oxygen <sup>1</sup>	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Berm condition <sup>2</sup>	--	Observation	Weekly	Monthly

<sup>1</sup> Samples shall be collected at a depth of one foot, opposite the inlet.

<sup>2</sup> Containment berms shall be observed for signs of seepage or surfacing water along the exterior toe of the berms.

### LAND APPLICATION AREA MONITORING

Monitoring of the land application areas (“LAAs”) shall be conducted **daily** when the disposal areas are used, and the results shall be included in the monthly monitoring report. Evidence of erosion, field saturation, irrigation runoff, or the presence of nuisance conditions shall be noted in the report. Effluent monitoring results shall be used in calculations to determine loading rates at the LAAs. Monitoring of the LAAs shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow to each LAA	Gallons	Continuous	Daily	Monthly
Acreage Applied <sup>1</sup>	Acres	Calculated	Daily	Monthly
Water Application Rate <sup>2</sup>	Inches/day	Calculated	Daily	Monthly
Rainfall <sup>3</sup>	Inches	Observation	Daily	Monthly
Total Nitrogen Loading Rate <sup>2</sup>	lbs/ac/month	Calculated	Monthly	Monthly
LAA Berm Condition	NA	Observation	Weekly	Monthly

<sup>1</sup> Specific LAAs shall be identified.

<sup>2</sup> Average calculated for each LAA.

<sup>3</sup> Rainfall data collected from the weather station that is nearest to the LAAs or a properly maintained on-site rain gauge.

At least **once per week** when the LAAs are being used, the LAAs shall be inspected to identify any equipment malfunction or other circumstances that might allow irrigation runoff to leave the irrigation area and/or create ponding conditions that violate the Waste Discharge Requirements. A daily log of each inspection shall be kept at the facility and be submitted with the monthly monitoring reports. Photocopies of entries into an operator’s field log are acceptable. If the land application areas are not used, then the monthly monitoring reports shall state so.

### GROUNDWATER MONITORING

This sampling program applies to all existing groundwater monitoring wells, and any wells subsequently installed under direction of the Central Valley Water Board. Prior to sampling, groundwater elevations shall be measured. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. Samples shall be collected and analyzed using approved EPA methods or other methods approved by the Central Valley Water Board.

Once the new background monitoring well is installed, well MW-3 may be monitored for groundwater elevation only. For the new background well, sampling shall be conducted quarterly for the first two years after installation (i.e., from July 2013 to June 2015); after two years, the sampling frequency can be changed to semi-annually. 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> <sup>4</sup>
Groundwater Elevation <sup>1</sup>	0.01 Feet	Calculated	Semi-annually
Depth to Groundwater	0.01 Feet	Measurement	Semi-annually
Gradient	Feet/Feet	Calculated	Semi-annually
Gradient Direction	Degrees	Calculated	Semi-annually
Total Coliform Organisms <sup>2</sup>	MPN/100mL	Grab	Semi-annually
pH	Standard Units	Grab	Semi-annually
Total Dissolved Solids	mg/L	Grab	Semi-annually
Nitrate as Nitrogen	mg/L	Grab	Semi-annually
Total Zinc	µg/L	Grab	Annually
Total Phenols	µg/L	Grab	Annually
Formaldehyde	µg/L	Grab	Annually
Standard Minerals <sup>3</sup>	mg/L	Grab	Annually

<sup>1</sup> Groundwater elevation shall be based on depth-to-water using a surveyed measuring point elevation on the well and a surveyed reference elevation.

<sup>2</sup> Using a minimum of 15 tubes or three dilutions.

<sup>3</sup> Standard Minerals shall include, at a minimum, the following elements and compounds: boron, calcium, chloride, iron, magnesium, manganese, nitrogen, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness.

<sup>4</sup> Except for the new background well, which shall be sampled quarterly for two years after installation.

### **SLUDGE MONITORING**

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

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

### **WATER SUPPLY MONITORING**

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following for each water source used during the previous year. As an alternative to annual water supply monitoring, the Discharger may submit results of the most current Department of Public Health Consumer Confidence Report.

<u>Constituent</u>	<u>Units</u>	<u>Sampling and Reporting Frequency</u>
Total Dissolved Solids	mg/L	Annually
pH	Standard Units	Annually
Standard Minerals <sup>1</sup>	mg/L	Annually

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

## REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, reservoir, 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 in the next scheduled monitoring report.

As required by the 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

Monthly reports shall be submitted to the Regional Board by the **1<sup>st</sup> day of the second month** following the end of the reporting period (i.e. the January monthly report is due by 1 March). At a minimum, the reports shall include:

1. Results of the influent, effluent, treatment pond and storage reservoir, and LAA monitoring. The monthly monitoring reports for the months of March, June, September, and December shall also contain the results of quarterly RV park wastewater, WWTF influent, and WWTF effluent monitoring;
2. Copies of inspection logs;
3. A comparison of the monitoring data to the discharge specifications and an explanation of any violation of those requirements;
4. Copies of laboratory analytical report(s); and
5. Copies of current calibration logs for all field test instruments.

### B. Semi-Annual Monitoring Report

In addition to the monthly monitoring reports, the Discharger shall establish a semi-annual sampling schedule for groundwater monitoring such that samples are obtained approximately every six months. Semi-Annual Monitoring Reports shall be submitted to the Central Valley Water Board by the **1<sup>st</sup> day of August (for the first six months of the year) and February**

**the following year (for the last six months of the year).** The Semi-Annual Monitoring Reports shall include the following:

1. Results of groundwater monitoring, including quarterly data for the new background well for a period of two years following installation;
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, determination 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 the monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
6. Summary data tables and graphs of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
8. Copies of laboratory analytical report(s) for groundwater monitoring.

### **C. Annual Report**

In addition to the monthly and semi-annual monitoring reports, an Annual Report shall be prepared. The Annual Report shall be submitted to the Central Valley Water Board by **1 February** each year. The Annual Report shall include the following:

1. The results from annual monitoring of the effluent, groundwater, and water supply;
2. Tabular summaries of data collected during the year;
3. A digital database (Microsoft Excel) containing historic groundwater data;
4. An evaluation of the performance of the WWTF, including discussion of capacity issues, infiltration and inflow rates, pond sludge layer thickness, nuisance conditions, and a forecast of the flows anticipated in the next year;

5. An evaluation of the groundwater quality beneath the wastewater treatment facility and the land application area;
6. Summary of information on the disposal of sludge as described in the "Sludge Monitoring" section. If applicable, describe the volume of sludge removed during the year and the means of off-site disposal;
7. 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;
8. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program;
9. 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 California Code of Regulations, title 23, division 3, chapter 26;
10. A forecast of influent flows, as described in Standard Provision No. E.4; and
11. A statement of when the O&M Manual was last reviewed for adequacy, and a description of any changes made during the year.

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 as of the date of this Order.

Ordered by:

Original signed by

\_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer  
1 December 2011

\_\_\_\_\_  
(Date)

## INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2011-0092  
CITY OF PLYMOUTH WWTF  
AMADOR COUNTY

### **Background**

The City of Plymouth Wastewater Treatment Facility (WWTF) treats and disposes of domestic wastewater from residential and commercial units in the City of Plymouth, Far Horizons 49er Village RV Resort (RV Resort), and Amador County Fairgrounds. The WWTF serves an estimated population of 1,008 with a total of 625 equivalent dwelling units (EDUs), including 408 residential and 217 non-residential EDUs. In March 2010, the City of Plymouth received a new water supply (TDS 55 mg/L) from the Mokelumne River. This ended their history of using the local groundwater supply (TDS 325 mg/L) as the primary water source. The wells remain as a backup/emergency supply per the City's Drinking Water System Permit issued by the State Department of Health. The WWTF consists of two aerated ponds, one unaerated pond, chlorination facilities, a 185 acre-foot storage reservoir, and 85 acres of on-site Land Application Areas (LAAs). All of the ponds and the storage reservoir are unlined. Little Indian Creek is located topographically downgradient from the LAAs and an unnamed tributary passes through the LAAs. Secondary disinfected wastewater is applied to the LAAs.

Waste Discharge Requirements (WDRs) Order No. 5-01-095, adopted by the Central Valley Water Board on 27 April 2001, prescribes requirements for the WWTF, and allows a monthly average dry weather influent flow (ADWF) of 0.17 million gallons per day (mgd). The Discharger requested to increase the monthly ADWF limit from 0.17 to 0.185 mgd and allow year-round discharge to the LAAs.

Cease and Desist Order No. R5-2005-2006 (CDO) was adopted by the Central Valley Water Board on 27 January 2005 due to a series of violations. The violations listed in the CDO include: a) Tailwater from LAAs entered the 100-foot buffer zone and surface drainage courses; b) Wastewater applications during prohibited periods (winter); c) Dissolved oxygen less than 1.0 mg/L in wastewater ponds; d) Water quality exceedances for ammonia as nitrogen; e) Inadequate storage capacity; and f) Failure to submit monitoring reports on time and technical reports required by WDRs Order No. 5-01-095.

The Discharger submitted all the reports required by the CDO and completed a number of physical improvements in 2005 including additional pond aeration, stormwater diversion around the effluent storage reservoir, earthen berms along a portion of Little Indian Creek and its unnamed tributary. In addition, the sprinklers near the 100-foot buffer zone were deactivated; Field 6 was retrofitted to sprinkler heads instead of flood irrigation; an irrigation controller was installed for timed and volume irrigation; and maintenance of the LAAs has increased to prevent tailwater runoff to the surface water drainage course.

### **Modifications to the Wastewater System**

In 2009, the Discharger received \$2.25 million in funding from the State Water Resources Control Board (SWRCB) for its Phase 1 Sewer Collection System Rehabilitation Project (Phase 1 project). Phase 1 project is intended to achieve compliance with WDRs and the



CDO by reducing inflow and infiltration through collection system rehabilitation, and restore the original permitted capacity of 0.17 mgd. The project includes:

1. Rehabilitation of 6,220 linear feet of sewer mains, sealing/repair of 48 manholes and installation of 1,450 linear feet of underdrain in the area of high groundwater.
2. Construction of a headworks facility, including a mechanical screen and solids compactor along with associated electrical and water supply facilities. A new influent meter was installed downstream of the headworks.
3. Replacement of the single 25-Hp aerator in Ponds 1 and 3 with two 20-Hp aerators and three 3-Hp aerators, respectively.
4. Replacement of the existing transfer pump with a new pump and addition of a standby pump. A new transfer meter was installed downstream of the transfer pumps.
5. Installation of a pipe bypass of Pond 1 to Pond 2. Distribution piping between ponds will allow shunting of water during potential process upsets or major construction/maintenance activities.
6. Removal of 146 tons of sludge from Pond 1.
7. Installation of a concrete sludge drying bed and portable pump for future sludge removal. The sludge drying bed was built with concrete and is piped so that supernatant drains back into Pond 2 to preclude infiltration of leachate to groundwater.

In December 2010, the Discharger completed the Phase 1 project.

### **Groundwater Conditions**

The depth to groundwater ranges from less than 1 foot to 21 feet below the ground surface. Generally, groundwater flows from southeast to northwest.

In 2003, the Discharger installed two upgradient and four downgradient monitoring wells with depths from 15 feet to 26 feet below ground surface. One upgradient well (MW-4) had a high average concentration of 5,393 mg/L for TDS. The other upgradient well had the lowest TDS concentrations for all wells due to location next the Little Indian Creek. The two upgradient wells do not appear suitable to serve as background wells. Therefore, a new background well is necessary to determine the background water quality.

The WWTF receives wastewater from the RV Resort and Amador County Fairgrounds which contains formaldehyde, zinc, and/or phenol due to the use of deodorants in holding tanks, and portable toilets. The Discharger has been monitoring formaldehyde, zinc, ammonia and total phenol annually in groundwater since 2005. Most total phenol concentrations were non-detectable. The zinc average concentrations ranged from 8 to 92 µg/L, which are less than the California Drinking Water Standard Secondary Maximum Contaminant Level of 5,000 µg/L for

zinc. The groundwater formaldehyde average concentrations ranged from 12 to 60 µg/L, which are less than the USEPA Health Advisory Level of 1,000 ug/L. Although the RV waste chemical impacts appear to be minimal, source control could be achieved through educational outreach to the RV park/fairground customers. This Order requires the Discharger to submit a best practicable treatment and control (BPTC) evaluation and implementation plan for source control.

### **Basin Plan, Beneficial Uses, and Regulatory Considerations**

Surface water drainage is to Little Indian Creek, a tributary of the Cosumnes River. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (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 Water Resources Control Board.

### **Antidegradation**

State Water Resources Control Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

1. The degradation is limited and will provide social and economical benefit to the people of the State;
2. The degradation will not unreasonably affect present and anticipated future beneficial uses;
3. The degradation is not expected to result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives; and
4. The discharger employs BPTC to minimize degradation.

Resolution 68-16 prohibits degradation of groundwater quality as it existed in 1968, or at any time thereafter that groundwater quality was better than in 1968, other than degradation that was previously authorized. An antidegradation analysis is required for a new discharge location, and/or an increased volume of waste and/or an increased concentration of waste constituents.

Degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after best practicable source control, treatment, and control is consistent with providing social and economical benefit to the people of the State. The technology, energy, water recycling, and waste management advantages of municipal utility service 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. Economic prosperity of the valley and foothill communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason to accommodate growth and groundwater degradation provided terms of the Basin Plan are met.

The Discharger has been monitoring groundwater quality at the current WWTF site since 2003. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on existing background groundwater quality.

In August 2010, the Discharger submitted an *Antidegradation Analysis* with a simplified groundwater model, which used MW-4 as a background well. However, since MW-4 does not appear to provide samples that are representative of background water quality, this Order requires the Discharger to (1) install a new background groundwater monitoring well; (2) submit a *Background Groundwater Quality Report*, and (3) complete the *Antidegradation Analysis*.

Since the change to a new low-salinity water supply in March 2010, the effluent average TDS concentration has been reduced from 564 mg/L (August 2005 through December 2009) to 355 mg/L (March 2010 through May 2011). Although the discharge may cause degradation of groundwater quality, it will likely not cause exceedance of a Water Quality Objective and the Discharger has implemented BPTC to reduce salinity.

RV waste chemicals can be detrimental to bacteria in biological treatment process, inhibit the WWTF operation and also pose a threat to the quality of groundwater. To protect the municipal and domestic use of groundwater, it is appropriate to adopt following numerical limits for groundwater: 1,000 µg/L for formaldehyde, 2,000 µg/L for total phenol and 5,000 µg/L for total zinc. With an effluent limit of 600 µg/L for formaldehyde, the Discharger should be able to comply with the groundwater limits without additional treatment.

The expansion of the WWTF will accommodate an approximate one percent annual wastewater flow increase over the next twelve years. Sufficient reasons exist to accommodate this growth as long as the Discharger verifies its antidegradation analysis and selects and implements BPTC measures within a reasonable timeframe. It is also appropriate to allow some groundwater degradation as long as it is consistent with the Basin Plan and Resolution No. 68-16 because social and economic prosperity of local communities and associated industry is of benefit to the people of California. This Order establishes terms and conditions of discharge to ensure that the discharge does not impact present and anticipated uses of groundwater and includes groundwater limitations that apply water quality objectives established in the Basin Plan to protect beneficial uses of the underlying groundwater. This Order also requires a groundwater quality evaluation, and requires groundwater monitoring to quantify any water quality impacts. Following completion of the work required by the time schedule contained in the Provisions, this Order will be reopened, if necessary, to reconsider effluent limitations and other requirements to comply with Resolution 68-16. Based on the existing record, the discharge is consistent with the antidegradation provisions of Resolution 68-16.

## **Title 27 Exemption**

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. Title 27 conditionally exempts certain activities from its provisions. To qualify for an exemption, the activity must meet, and continue to meet, specified preconditions. Section 20090 of Title 27 contains conditional exemptions that are relevant to the discharge:

- (a) Sewage – Discharges of domestic sewage or treated effluent which are regulated by WDRs, or for which WDRs have been waived, and which are consistent with applicable water quality objectives, and treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludges or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable SWRCB-promulgated provisions of this division.*
  
- (b) Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leach fields if the following conditions are met:*
  - (1) the applicable regional water quality control board has issued WDRs, or waived such issuance;*
  
  - (2) the discharge is in compliance with the applicable water quality control plan;*  
*and*
  
  - (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.*

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 as follows:

- a. Treatment Ponds 1, 2 and 3 are exempt from Title 27 pursuant to Section 20090(a) because they are treatment ponds associated with a municipal domestic wastewater treatment plant.
  
- b. The secondary effluent storage reservoir and LAAs are exempt from Title 27 pursuant to Section 20090 (a) and (b) because they are associated with municipal wastewater treatment plants and because (1) Central Valley Water Board is issuing WDRs; (2) the discharge is in compliance with the Basin Plan. This Order requires the Discharger to install a new background monitoring well and submit a *Background Groundwater Quality Report and an Antidegradation Analysis* to determine if degradation is occurring and if that degradation is consistent with the Antidegradation Policy. The reports will be used to determine whether additional treatment and/or improved containment are needed to ensure compliance with the Basin Plan. Because compliance with the Basin Plan cannot be determined immediately, this Order includes a compliance schedule for completion of

those tasks. The treated effluent discharged to the effluent storage reservoir and LAAs does not need to be managed as hazardous waste.

### **Discharge Prohibitions, Specifications and Provisions**

The Discharger's water balance capacity analysis indicates that the WWTF will provide the following capacities:

<u>Influent Flow Measurement</u>	<u>Influent Flow Limit</u>
Total Annual Flow <sup>1</sup>	82.5 MG
<u>Average Daily Dry Weather Flow <sup>2, 3</sup></u>	0.185 mgd

<sup>1</sup> Based on the calendar year (January through December).

<sup>2</sup> Dry weather is defined as the months of July through September, inclusive.

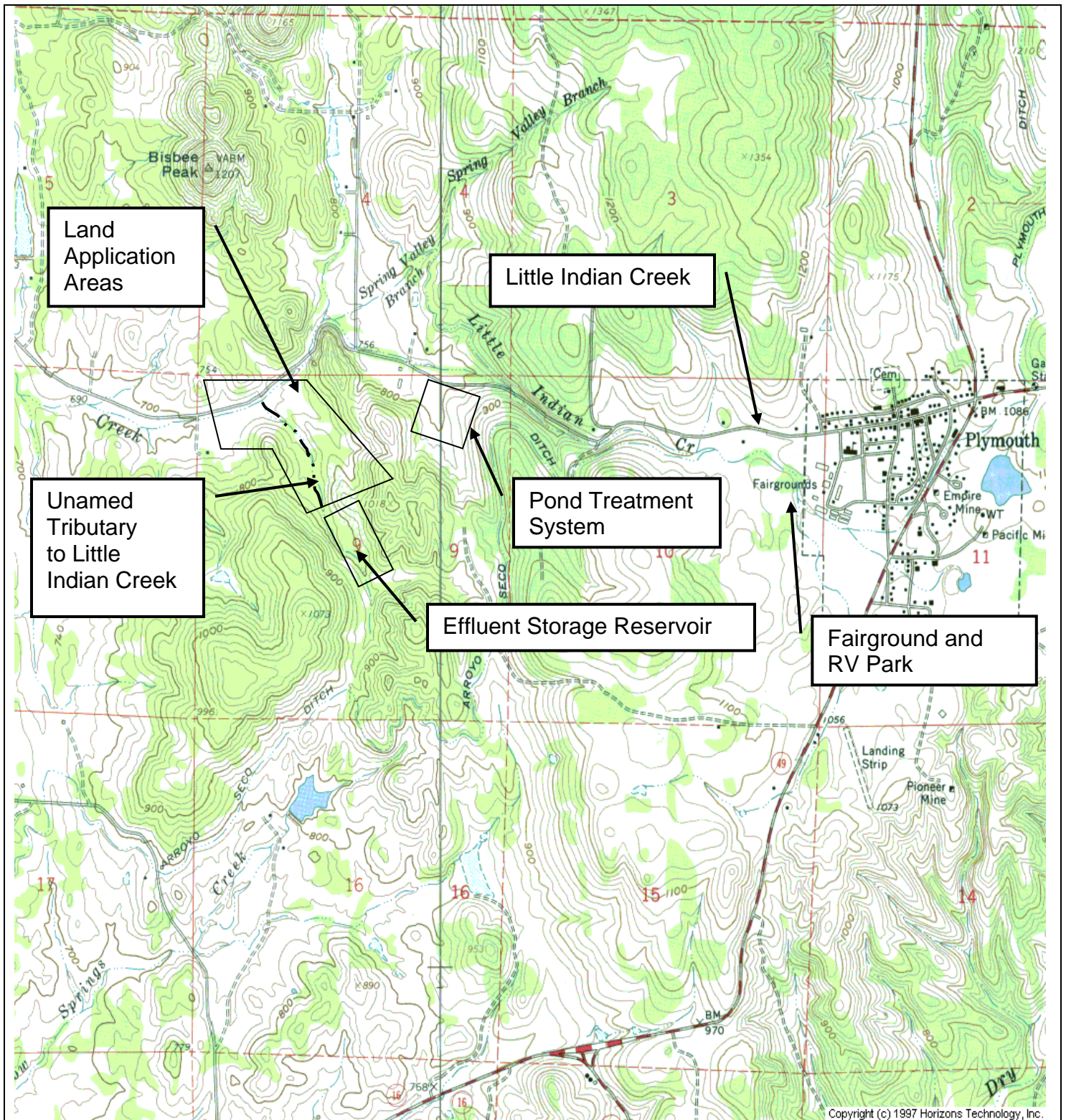
<sup>3</sup> As determined by the total influent flow for the dry weather period divided by 92.

Three spray fields with earthen berms are allowed for year-round land application.

This Order prescribes groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedance of these objectives or natural background water quality, whichever is greatest.

The Provisions require submittal of certain technical reports to improve sampling techniques, install a new background monitoring well, evaluate groundwater quality, complete anti-degradation analysis, and implement BPTC measures for source control of RV waste chemicals.

The Monitoring and Reporting Program is designed to verify compliance with effluent limitations, groundwater limitations, and operational requirements of the WDRs.



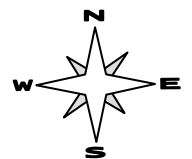
Copyright (c) 1997 Horizons Technology, Inc.

Drawing Reference:

United States Geological Survey  
Irish Hill 7.5' Quadrangle

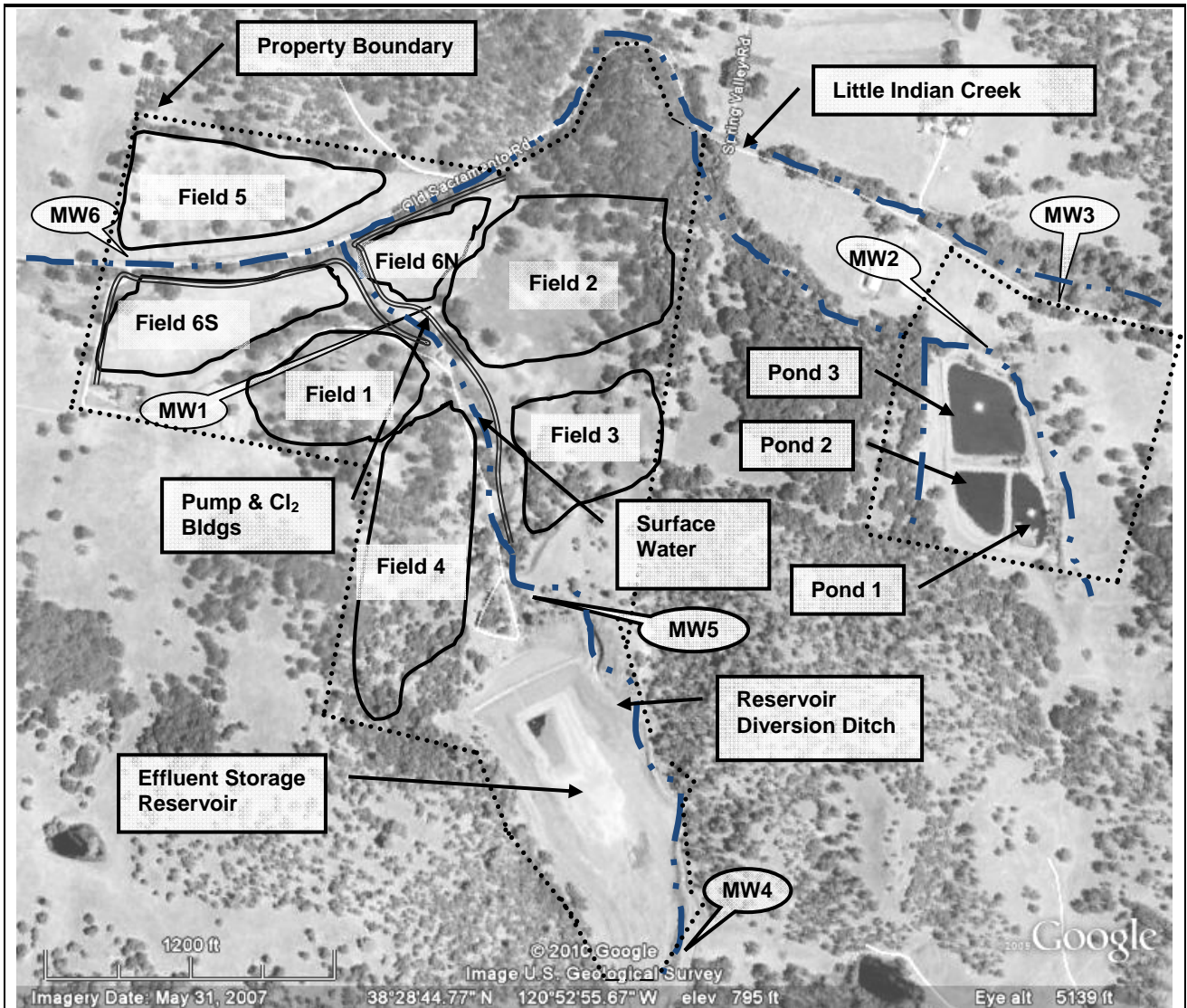
LOCATION MAP

City of Plymouth  
Wastewater Treatment Plant  
Amador County



1 in = 2,000 ft.





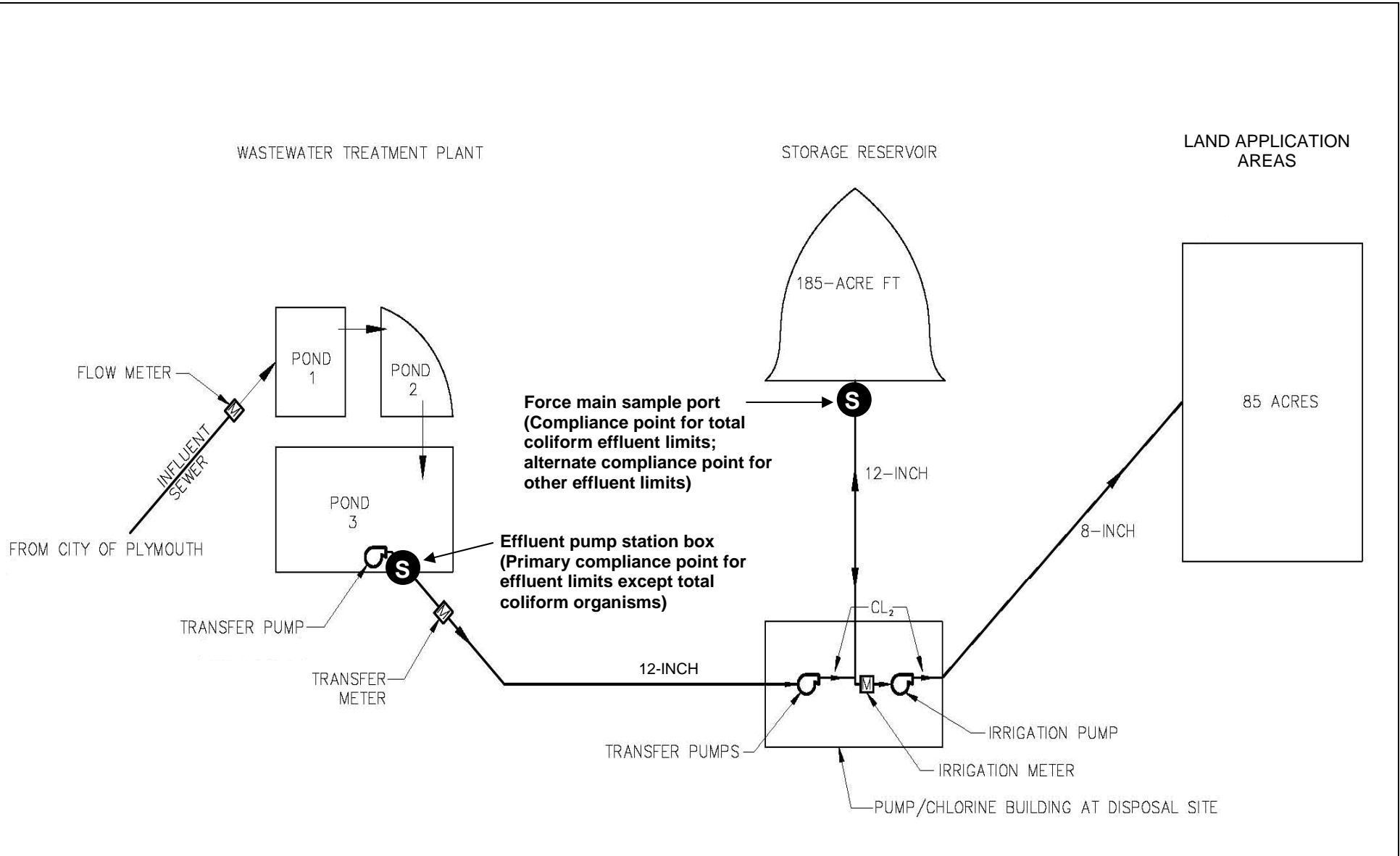
Legend:

- Monitoring Well
- Earthen Containment Berm (Fields 2, 3 & 6)
- Surface Water
- Property Boundary
- LAA Boundary

Drawing Reference:  
RWD Supplemental  
August 2011, City of Plymouth

SITE PLAN  
City of Plymouth WWTF  
Amador County

Approximate Scale  
1"=1,370'



Drawing Reference:  
 City of Plymouth  
 Report of Waste Discharge Supplemental  
 Figure 4, October 2009

**PROCESS SCHEMATIC**  
 City of Plymouth WWTF  
 Amador County



**ORDER NO. R5-2011-0092**  
**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 site specific 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