CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2012-XXXX
FOR
CITY OF LAKEPORT MUNICIPAL SEWER DISTRICT
LAKEPORT WASTEWATER TREATMENT FACILITY
LAKE COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring the influent flow, effluent, treatment pond and storage reservoir, land application areas, groundwater, water supply, and sludge. 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.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form.

Field test instruments (such as those used to test pH and electrical conductivity) may be used provided that:

1. The user is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated prior to monitoring events at the frequency recommended by the manufacturer;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the “Reporting” section of this MRP.

INFLUENT FLOW MONITORING

Influent flow monitoring shall include, at a minimum the following:

Constituent	Units	Type of Sample	Sample Frequency	Reporting Frequency
Flow	gpd	Continuous	Daily	Monthly

EFFLUENT MONITORING

Effluent samples shall be representative of the treated wastewater prior to discharge to the land application areas after full chlorine contact has been achieved. The time of collection of grab samples shall be recorded. Effluent monitoring shall include at least the following:

Constituent	Units	Type of Sample	Sample Frequency	Reporting Frequency
Flow to the Storage Reservoir	mgd	Continuous	Daily	Monthly
pH	std units	Grab	Weekly	Monthly
BOD_5[1]	mg/L	Grab	Weekly	Monthly
Total Coliform Organisms[2]	MPN/100 mL	Grab	Daily[3]	Monthly
TDS	mg/L	Grab	Monthly	Monthly
Nitrate (as N)	mg/L	Grab	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Monthly
Standard Minerals[4]	mg/L	Grab	Annually	Annually

1 5-day biochemical oxygen demand @ 20 degrees C.
2 Most probable number (MPN) per 100 mL.
3 Samples shall be obtained daily Monday through Friday.
4 Standard minerals shall include, at a minimum, the following: boron, chloride, iron, magnesium, sodium, and sulfate. Samples shall be filtered with a 0.45 micron filter prior to digestion, preservation, and analysis

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 and the effluent 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 both treatment ponds and the storage reservoir shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Oxygen	mg/L	Grab	Weekly	Monthly
pH	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Berm Seepage[1]	--	Observation	Weekly	Monthly
Sludge Depth	inches	Measurement	Annually	Annually

1 Containment berms shall be observed for signs of seepage or surfacing water along the exterior toe of the berms.

LAND APPLICATION AREA MONTIORING

Monitoring of the land application areas (LAAs) shall be conducted **daily during operation** when the disposal areas are used, and the results shall be included in the monthly monitoring reports. If irrigation does not occur during a reporting period, the monitoring report shall so state. Monitoring of the land application areas shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Effluent Flow to each LAA	gallons	Continuous	Daily	Monthly
Rainfall[1]	inches	Measurement	Daily	Monthly
Acreage Applied[2]	acres	Calculated	Daily	Monthly
Water Application Rate	inches/day	Calculated	Daily	Monthly
Nitrogen Loading Rate[3]	lbs/ac/month	Calculated	Monthly	Monthly
TDS Loading Rate	lbs/ac/month	Calculated	Monthly	Monthly

[1] Rainfall data collected from the weather station that is nearest to the LAA or a properly maintained onsite rain gauge.
[2] Specific LAAs shall be identified.
[3] Including contributions from applied fertilizer.

The nitrogen loading rate shall be determined using the following formula:

$$M = \frac{C \times V \times (8.345)}{A} + \frac{M_{fertilizer}}{A}$$

Where M = total nitrogen mass in pounds per acre per month (lb/ac/month);
C = average of total nitrogen monitoring results for calendar month in mg/L;
V = total effluent discharged to the field during calendar month in MG;
A = area of the field irrigated in acres,
$M_{fertilizer}$ = total monthly mass from any other source in pounds; and
Total nitrogen = (nitrate as nitrogen + TKN) in mg/L.

The TDS loading rate shall be determined using the following:

$$M = \frac{C \times V \times (8.345)}{A}$$

Where M = total TDS mass in pounds per acre per month (lb/ac/month);
C = total TDS monitoring results for calendar month in mg/L;
V = total effluent discharged to the field during calendar month in MG; and
A = area of the field irrigated in acres.

At least **once per week** when treated wastewater is being applied to the LAAs, the entire application area shall be inspected and observations from those inspections shall be documented for inclusion in the monthly monitoring reports. If no irrigation with wastewater takes place during a given month, then the monthly monitoring report shall so state and the monitoring below is not necessary. The following items shall be documented:

1. Evidence of erosion;
2. Containment berm condition;
3. Soil saturation;
4. Ponding;
5. Potential runoff to off-site areas;
6. Potential and actual discharge to surface waters; and
7. Odors that have the potential to be objectionable at or beyond the property boundary.

GROUNDWATER MONITORING

The Discharger shall establish a semi-annual and annual sampling schedule for groundwater monitoring. This monitoring program applies to all existing monitoring wells. Prior to construction and/or sampling of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for approval. Once installed, all new wells shall be added to the monitoring network and shall be sampled and analyzed according to the schedule below.

All samples shall be collected and analyzed using approved EPA methods, the latest edition of *Standard Methods*, or as approved by the Executive Officer. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated to determine groundwater gradient and direction of flow. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to Groundwater	±0.01 feet	Measurement	Semi-annually	Semi-annually
Groundwater Elevation	±0.01 feet	Calculated	Semi-annually	Semi-annually
Gradient	feet/feet	Calculated	Semi-annually	Semi-annually
Gradient Direction	degrees	Calculated	Semi-annually	Semi-annually
pH	pH units	Grab	Semi-annually	Semi-annually
Total Coliform Organisms[1]	MPN/ 100 mL	Grab	Semi-annually	Semi-annually
Nitrate (as N)	mg/L	Grab	Semi-annually	Semi-annually
TDS	mg/L	Grab	Semi-annually	Semi-annually
Standard Minerals[2]	mg/L	Grab	Annually	Annually

[1] Coliform limits are effective on 1 October 2012.

[2] Standard minerals shall include, at a minimum, the following: boron, chloride, iron, manganese, sodium, and sulfate. Samples shall be filtered with a 0.45 micron filter prior to digestion, preservation, and analysis.

WATER SUPPLY MONITORING

The Discharger shall monitor the community water supply well as required by the California Department of Public Health, and shall report the following minimum monitoring data for each water supply well to the Central Valley Water Board.

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Volume pumped to community distribution system	MG	--	--	Annually
TDS	mg/L	Grab	Annually	Annually
Electrical Conductivity	umhos/cm	Grab	Annually	Annually
Nitrate (as N)	mg/L	Grab	Annually	Annually
Standard minerals [1]	mg/L	Grab	Annually	Annually
Metals[2]	ug/L	Grab	Annually	Annually

[1] Standard Minerals shall include, at a minimum, the following: boron, bromide, calcium, chloride, fluoride, magnesium, phosphate, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness as $CaCO_3$.

[2] Metals shall include, at a minimum, the following: arsenic, copper, lead, iron, manganese, nickel, and zinc.

SLUDGE MONITORING

The Discharger shall keep records regarding sludge generated by the treatment processes, including any analytical test results; the quantity of sludge removed for disposal; the quantity of sludge removed from the ponds and temporarily stored on site; and steps taken to prevent nuisance conditions. Records shall be stored onsite and available for review during inspections. If sludge is transported off-site for disposal, then the Discharger shall submit records identifying the hauling company, the amount sludge transported, the date removed form the facility, the disposal facility name and address, and copies of all analytical data required by the entity accepting the waste. These records shall be submitted as part of the Annual Monitoring Report.

REPORTING

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

As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, all groundwater monitoring reports shall be prepared under the direct supervision of a registered professional engineer or geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Central Valley Water Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the monthly monitoring reports shall include:

1. Results of the influent flow, effluent, treatment ponds and effluent storage reservoir, and land application area monitoring, including calculated values for the weekly 7-day median effluent total coliform organism result and land application area TDS and nitrogen loading rates.

2. A comparison of monitoring data to the discharge specifications and effluent limitations, disclosure of any violations of the WDRs, and an explanation of any violation of those requirements. Data shall be presented in tabular format.

3. Copies of laboratory analytical report(s).

4. Copies of current calibration logs for all field test instruments.

B. Semi-Annual Monitoring Report

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 **1st day of the second month after the semi-annual event** (i.e., the January-June Semi-Annual Report is due by 1 August each year). The Semi-annual Monitoring Reports shall include the following:

1. Results of the semi-annual monitoring of groundwater.

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 tends, 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 Monitoring Report

An annual report shall be prepared. The Annual Monitoring Report shall be submitted to the Central Valley Water Board by **1 February each year**. The Annual Monitoring Report shall include the following:

1. Calculated values for the total annual influent flow and average dry weather influent flow.

2. A statement of whether cattle were grazed on the land applications areas during the year.

3. Analytical results from the annual monitoring of the groundwater.

4. Analytical results from the annual water supply monitoring. The Discharger's Consumer Confidence Report (or Annual Water Quality Report) may be submitted to comply with this requirement.

5. Sludge monitoring results, if sludge was removed during the year.

6. **Effective 2012**, and every five years thereafter, an evaluation of sludge depth and sludge removal plans pursuant to Discharge Specification B.18.

7. Tabular and graphical summaries of all data collected during the year.

8. An annual intra-well analysis to determine compliance with the groundwater limitations prepared in accordance with the approved plan submitted pursuant to Provision H.1.e. For constituents where no further degradation is allowed, a statistical analysis of temporal trends within each well is required. For constituents with a numeric

groundwater limit, historical data shall be analyzed and the statistic shall be compared to the numeric value.

9. An evaluation of the performance of the WWTP which demonstrates the facility's ability to consistently meet treatment standards for recycled water use as specified in Division 4 of Title 22 of the California Code of Regulations.

10. An evaluation of the performance of the WWTP, including discussion of capacity issues, infiltration and inflow rates, pond sludge layer thickness, nuisance conditions, and a forecast anticipated in the next year.

11. An evaluation of the groundwater quality beneath the wastewater treatment facility and the land application area.

12. 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 means of off-site disposal.

13. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

14. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

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 agents, 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:_____
PAMELA C. CREEDON, Executive Officer

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(Date)

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