CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2014-XXXX

FOR

ROOT CREEK WATER DISTRICT
RIVERSTONE WASTEWATER TREATMENT FACILITY
MADERA COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to California Water Code (CWC) section 13267.

The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP. Changes to sample location shall be established with concurrence of Central Valley Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with ***Standard Provisions and Reporting Requirements for Waste Discharge Requirements***, dated 1 March 1991 (Standard Provisions).

Field test instruments (such as pH) may be used provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer or in accordance with manufacturer instructions.

Analytical procedures shall comply with the methods and holding times specified in the following: *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA); *Test Methods for Evaluating Solid Waste* (EPA); *Methods for Chemical Analysis of Water and Wastes* (EPA); *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA); *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the State Water Resources Control Board, Division of Drinking Water Environmental Laboratory Accreditation Program. The Discharger may propose alternative methods for approval by the Executive Officer.

If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after at least 12 months of monitoring, the Discharger may request this MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency.

A glossary of terms used within this MRP is included on page 10.

The District shall monitor the following locations to demonstrate compliance with the requirements of this Order:

Monitoring Location Name	Monitoring Location Description
INF-001	Location where a representative sample of the influent to the Wastewater Treatment Facility (WWTF) can be collected prior to any WWTF return flows or treatment processes.
EFF-001	Location where a representative sample of the effluent from the Initial Plant can be obtained prior to discharge to the percolation/evaporation ponds.
EFF-002	Location where a representative sample of the effluent from the Tertiary Plant can be obtained after all treatment, prior to discharge to the Effluent Storage Pond Complex or Use Areas.
PND-001 through PND-00X	Effluent storage ponds (includes percolation/evaporation ponds for the Initial Plant, and ponds at the Effluent Storage Pond Complex).
SPL-001	Source water supply
UVS-001	Ultraviolet light disinfection system
GW-001 through GW-00X	Groundwater monitoring wells
BIO-001	Sludge monitoring

INFLUENT MONITORING

The District shall monitor domestic influent to the WWTF at INF-001 as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	mgd	Meter
Monthly	BOD_5[1]	mg/L	Grab
Monthly	TSS[2]	various	Grab

1. 5-day Biochemical Oxygen Demand.
2. Total Suspended Solids.

INITIAL PLANT EFFLUENT MONITORING

The District shall monitor treated effluent from the Initial Plant at EFF-001 as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	mgd	Meter
Weekly	pH	pH Units	Grab

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	EC	umhos/cm	Grab
Weekly	BOD_5	mg/L	24-hour composite
Weekly	TSS	mg/L	24-hour composite
Monthly	Total Dissolved Solids	mg/L	Grab
Monthly	Nitrate as nitrogen	mg/L	Grab
Monthly	Nitrite as nitrogen	mg/L	Grab
Monthly	Ammonia as nitrogen	mg/L	Grab
Monthly	Total Kjeldahl Nitrogen	mg/L	Grab
Monthly	Total Nitrogen	mg/L	Computed
Annually	General Minerals[1]	mg/L	Grab
Annually	Metals[2]	various	Grab

1. General minerals analysis shall include, alkalinity (as CaCO3), bicarbonate (as CaCO3), boron, calcium, carbonate (CaCO3), chloride, hardness, iron, magnesium, manganese, nitrate as nitrogen, potassium, sodium, sulfate, and TDS. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.
2. Metals analysis shall include; antimony, arsenic, barium, beryllium, cadmium, cobalt, copper, lead, mercury, molybdenum, silver, thallium, vanadium, and zinc. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

TERTIARY PLANT EFFLUENT MONITORING

The Discharger shall monitor treated effluent from the Tertiary Plant at EFF-002 as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	mgd	Meter
Continuous	Turbidity	NTU	Grab
Daily	Total Coliform	MPN/100 mL	Grab
Weekly	pH	pH Units	Grab
Weekly	EC	umhos/cm	Grab
Weekly	BOD_5	mg/L	24-hour composite
Weekly	TSS	mg/L	24-hour composite
Monthly	Total Dissolved Solids	mg/L	Grab
Monthly	Nitrate as nitrogen	mg/L	Grab
Monthly	Nitrite as nitrogen	mg/L	Grab
Monthly	Ammonia as nitrogen	mg/L	Grab
Monthly	Total Kjeldahl Nitrogen	mg/L	Grab
Monthly	Total Nitrogen	mg/L	Computed
Annually	General Minerals[1]	various	Grab
Annually	Metals[2]	various	Grab

1. General minerals analysis shall include, alkalinity (as CaCO3), bicarbonate (as CaCO3), boron, calcium, carbonate (CaCO3), chloride, hardness, iron, magnesium, manganese, nitrate as nitrogen, potassium, sodium, sulfate, and TDS. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.
2. Metals analysis shall include; antimony, arsenic, barium, beryllium, cadmium, cobalt, copper, lead, mercury, molybdenum, silver, thallium, vanadium, and zinc. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

POND MONITORING

The District shall monitor the effluent percolation/evaporation and storage ponds at PND-001 through PND-00X as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	Dissolved Oxygen	mg/L	Grab[1]
Weekly	Freeboard	Feet[2]	Grab

1. Samples shall be collected at a depth of one foot from the surface of the pond, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.
2. Freeboard shall be monitored to the nearest tenth of a foot.

In addition, the District shall inspect the condition of the ponds once per week and write visual observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water, along the bank, and their location; whether dead algae, vegetation, scum, or debris are accumulating in the pond; and color of water in the pond (e.g., dark sparkling green, dull green, yellow, gray, tan, brown, etc.) A **summary** of the entries made in the log during each month shall be submitted along with the quarterly monitoring report.

SOURCE WATER MONITORING

The District's source water supply shall be monitored at SPL-001. If the source water is from more than one source, the results shall be presented as a flow-weighted average of all sources.

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	EC	mg/L	Grab
1/three years[1]	General Minerals[2]	various	Grab

1. Sample to be collected and analyzed for general minerals once following start up of the Initial Plant than once every three years.
2. General minerals analysis shall include, alkalinity (as CaCO3), bicarbonate (as CaCO3), boron, calcium, carbonate (CaCO3), chloride, hardness, iron, magnesium, manganese, nitrate as nitrogen, potassium, sodium, sulfate, and TDS. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

ULTRAVIOLET LIGHT DISINFECTION SYSTEM MONITORING

The District shall monitor the Ultraviolet (UV) disinfection system at UVS-001 as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	mgd	Meter
Continuous	Number of UV light banks in operation	Number	Meter
Continuous	UV Transmittance	Percent (%)	Meter
Continuous	UV Power setting	Percent (%)	Meter
Continuous	UV Intensity	mW-sec/cm	Meter
Continuous	UV lamp hours of operation	Hours	Meter
Continuous	UV Dose	mW-sec/cm^2	Meter

In addition, the District shall monitor the following: status of each UV reactor (on/off); status of each UV lamp (on/off); cumulative number of reactor (on/off cycles); cumulative UV disinfection system power consumption; reactor power set point (if system has variable power inlet to lamps); liquid level in the UV disinfection reactor trains (if system has free water surfaces and where UV lamps can be exposed to air); and ground fault interruption.

The District shall also monitor the UV disinfection system for any additional parameters in accordance with a UV Disinfection System Operations Plan approved by the State Water Resources Control Board, Division of Drinking Water (DDW).

GROUNDWATER MONITORING

After measuring water levels and prior to collecting samples, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 well casing volumes.

The District shall monitor the wells in its monitoring well network GW-001 through GW-00X and any subsequent additional monitoring wells as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly/Semiannually[1]	Depth-to-Water	Feet[2]	Measured
Quarterly/Semiannually[1]	Groundwater Elevation	Feet[3]	Calculated
Quarterly/Semiannually[1]	pH	pH units	Grab
Quarterly/Semiannually[1]	EC	umhos/cm	Grab
Quarterly/Semiannually[1]	TDS	mg/L	Grab
Quarterly/Semiannually[1]	Nitrate as nitrogen (NO_3-N)	mg/L	Grab
Quarterly/Semiannually[1]	General Minerals[4]	various	Grab
Quarterly/Semiannually[1]	Total Organic Carbon	mg/L	Grab

1. Monitoring wells to be sampled quarterly the first year following adoption of this Order and then semiannually.
2. To the nearest hundredth foot.
3. Groundwater elevation shall be calculated based on depth-to-water measurements from a surveyed measuring point.
4. General minerals analysis shall include, alkalinity (as CaCO3), bicarbonate (as CaCO3), boron, calcium, carbonate (CaCO3), chloride, hardness, iron, magnesium, manganese, nitrate as nitrogen, potassium, sodium, sulfate, and TDS. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

The District shall maintain its groundwater monitoring well network. If a groundwater monitoring well(s) is dry for more than four consecutive sampling events, the District shall submit a work plan and proposed time schedule to replace the well(s). The well(s) shall be replaced following Executive Officer approval of the work plan and time schedule.

SLUDGE MONITORING

To ensure that industrial and other discharges to the WWTF are not interfering with treatment processes, the District shall collect a composite sample of the sludge annually, as set forth by Title 40 CFR Part 503.16. Any Notice of Necessary Information (NANI) form prepared for submittal to the United States Environmental Protection Agency shall be forwarded to the Central Valley Water Board.

Composite samples shall be collected at BIO-001 in accordance with the Environmental Protection Agency's *POTW Sludge Sampling and Analysis Guidance Document* (EPA/ 833B89100, August 1989) and tested for the following metals:

Arsenic	Lead	Nickel
Cadmium	Mercury	Selenium
Copper	Molybdenum	Zinc

The control of pathogens and the reduction of vector attraction shall be achieved in accordance with the Environmental Protections Agency's *Control of Pathogens and Vectors in Sewage Sludge* (EPA/625-R-92/013, July 2003).

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

REPORTING

All monitoring results shall be reported in **Quarterly Monitoring Reports,** which are due by the first day of the second month after the calendar quarter. Therefore, monitoring reports are due as follows:

First Quarter Monitoring Report:	**1 May**
Second Quarter Monitoring Report:	**1 August**
Third Quarter Monitoring Report:	**1 November**
Fourth Quarter Monitoring Report:	**1 February**.

The Central Valley Water Board has gone to a Paperless Office System. All regulatory documents, submissions, materials, data, monitoring reports, and correspondence should be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be emailed to: centralvalleyfresno@waterboards.ca.gov. Documents that are 50MB or larger should be transferred to a disk and mailed to the appropriate regional water board office, in this case 1685 E Street, Fresno, CA, 93706.

To ensure that your submittals are routed to the appropriate staff, the following information block should be included in any email used to transmit documents to this office:

Program: Non-15, WDID: 5B10NC00072, Facility Name: Riverstone WWTF, Order: R5-2014-XXXX

In reporting monitoring data, the District shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner that illustrates clearly, whether the discharge complies with waste discharge requirements, and shall discuss any violations that occurred during the reporting period and all actions taken or planned for correcting violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions or a time schedule for implementing the corrective actions, reference to the previous correspondence is satisfactory.

In addition to the details specified in Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the Reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

Laboratory analysis reports do not need to be included in the monitoring reports; however, the laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. For a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

All monitoring reports that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

In the future, the State or Central Valley Water Board may notify the District to electronically submit and upload monitoring reports using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site http://www.waterboards.ca.gov/ciwqs/index.html or similar system.

A. All Quarterly Monitoring Reports shall include the following:

Wastewater Reporting:

1. The results of influent and effluent monitoring specified on pages 2 and 3. For the Tertiary Plant, effluent monitoring will also include the running 7-day median total coliform calculation, maximum coliform detection, maximum turbidity, and 95th percentile turbidity.

2. For each month of the quarter, calculation of the maximum daily flow, monthly average flow, and cumulative annual flow.
3. For each month of the quarter, calculation of the average monthly effluent BOD, TSS, and EC.

Pond Reporting:

1. The results of the routine monitoring specified on page 4.

Source Water Reporting:

1. The results of the source water monitoring specified on page 4. If multiple sources are used the Discharger, shall calculate the flow-weighted average concentrations for the specified constituents. Results must include supporting calculations, if required.

Ultraviolet Light Disinfection Reporting:

1. The results of the routine monitoring specified on pages 4 and 5. For each day of the month include the minimum UV operations dose, and minimum UV transmittance.
2. Provide table with results of daily total coliform testing, running 7-day median calculation for total coliform, maximum daily total coliform reading for previous month(s), results of four hour turbidity readings, average daily effluent turbidity reading, and maximum daily effluent turbidity reading.

Groundwater Reporting:

1. The results of groundwater monitoring specified on page 5. If there is insufficient water in the well(s) for sampling, the monitoring well(s) shall be reported as dry for that quarter.
2. For each monitoring well, a table showing groundwater depth, elevation, and constituent concentrations for the five previous years, up through the present quarter.
3. A groundwater contour map based on groundwater elevations for that quarter. The map shall show the gradient and direction of groundwater flow. The map shall also include locations of all monitoring wells and wastewater storage and application areas.

B. Fourth Quarter Monitoring Reports, in addition to the above, shall include the following:

Facility Information:

1. The names and general responsibilities of all persons in charge of wastewater treatment and disposal, include telephone numbers of persons to contact regarding the discharge for emergency and routine situations.
2. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (Standard Provision C.4).

3. A summary of any changes in processing that might affect waste characterization and/or discharge flow rates.

Sludge Monitoring Reporting:

1. Annual production totals in dry tons or cubic yards.
2. A description of disposal methods, including location, and Order number of regulatory permit (if appropriate). If more than one method is used, include the percentage disposed of by each method.
3. Include results of monitoring specified on page 6.
4. Include a demonstration that off-site disposal of biosolids is consistent with Title 27, division 2.

The Discharger shall implement the above monitoring program following start up of the WWTF.

Ordered by: _____

PAMELA C. CREEDON, Executive Officer

_____

(Date)

GLOSSARY

BOD_5	Five-day biochemical oxygen demand
CBOD	Carbonaceous BOD
DO	Dissolved oxygen
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
NTU	Nephelometric turbidity unit
TKN	Total Kjeldahl nitrogen
TDS	Total dissolved solids
TSS	Total suspended solids
Continuous	The specified parameter shall be measured by a meter continuously.
24-Hour Composite	Unless otherwise specified or approved, samples shall be a flow-proportioned composite consisting of at least eight aliquots.
Daily	Samples shall be collected every day.
Twice Weekly	Samples shall be collected at least twice per week on non-consecutive days.
Weekly	Samples shall be collected at least once per week.
Twice Monthly	Samples shall be collected at least twice per month during non-consecutive weeks.
Monthly	Samples shall be collected at least once per month.
Bimonthly	Samples shall be collected at least once every two months (i.e., six times per year) during non-consecutive months
Quarterly	Samples shall be collected at least once per calendar quarter. Unless otherwise specified or approved, samples shall be collected in January, April, July, and October.
Semiannually	Samples shall be collected at least once every six months (i.e., two times per year). Unless otherwise specified or approved, samples shall be collected in March and September.
Annually	Samples shall be collected at least once per year. Unless otherwise specified or approved, samples shall be collected in October.
mg/L	Milligrams per liter
mL/L	Milliliters [of solids] per liter
µg/L	Micrograms per liter
µmhos/cm	Micromhos per centimeter
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
General Minerals	Analysis for General Minerals shall include at least the following:

Alkalinity (as CaCo3)	Carbonate (as CaCO3)	Magnesium	Sodium
Bicarbonate (as CaCO3)	Chloride	Manganese	Sulfate
Boron	Hardness	Nitrate	TDS
Calcium	Iron	Potassium	

General Minerals analyses shall be accompanied by documentation of cation/anion balance.