

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2012- XXXX

FOR  
CARUTHERS RAISIN PACKING COMPANY, INC.  
RAISIN PROCESSING PLANT  
AND  
MR. JON ROBINSON  
FRESNO COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to Water Code section 13267 and is incorporated in Waste Discharge Requirements Order [R5-2012-XXXX](#).

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 California Department of Public Health's 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 9](#).

### INFLUENT MONITORING

Influent samples shall be collected prior to treatment and shall include at least the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Weekly	pH	pH Units	Grab
Weekly	EC	µmhos/cm	Grab
Weekly <sup>1</sup>	BOD <sub>5</sub>	mg/L	24-hr Composite
Monthly	Nitrate as N (NO <sub>3</sub> -N)	mg/L	24-hr Composite
Monthly	Ammonia as N (NH <sub>4</sub> -N)	mg/L	24-hr Composite
Monthly	TKN	mg/L	24-hr Composite
Monthly	Total Nitrogen	mg/L	Computed
Monthly	TDS	mg/L	24-hr Composite
Monthly	FDS	mg/L	24-hr Composite

1. For the first year following adoption of this Order and twice monthly thereafter.

### EFFLUENT MONITORING

Effluent samples shall be collected after treatment, just prior to discharge to the Reuse Area, and shall be collected on the same day as influent samples for direct comparison. Effluent monitoring shall include at least the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	Mgd	Meter <sup>2</sup>
Weekly	pH	pH Units	Grab
Weekly	EC	µmhos/cm	Grab
Weekly <sup>1</sup>	BOD <sub>5</sub>	mg/L	24-hr Composite
Monthly	Nitrate as N (NO <sub>3</sub> -N)	mg/L	24-hr Composite
Monthly	Ammonia as N (NH <sub>4</sub> -N)	mg/L	24-hr Composite
Monthly	TKN	mg/L	24-hr Composite
Monthly	Total Nitrogen	mg/L	Computed
Monthly	TDS	mg/L	24-hr Composite
Monthly	FDS	mg/L	24-hr Composite
Monthly	Fecal Coliform	MPN/100mL	Grab
Monthly	Total Coliform Organisms	MPN/100mL	Grab
Quarterly	General Minerals	mg/L	24-hr Composite

1. For the first year following adoption of this Order and twice monthly thereafter.
2. A flow meter shall be installed within 90 days following adoption of this Order to monitor wastewater discharge flow from the treatment system, and absent blending waters, to the reuse areas. A written report describing installation and calibration of the meter shall be provided in the monthly self monitoring report due following the date of installation.

### 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 volumes of the standing water within the well casing and screen, or filter pack pore volume.

The Discharger shall monitor all wells in its Groundwater Monitoring Well Network, and any subsequent additional wells, for the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Quarterly	Depth to groundwater	Feet <sup>1</sup>	Measured
Quarterly	Groundwater Elevation	Feet <sup>2</sup>	Computed
Quarterly	pH	pH Units	Grab
Quarterly	eH	mV	Grab
Quarterly	EC	µmhos/cm	Grab
Quarterly	Nitrate as N	mg/L	Grab
Quarterly	TKN	mg/L	Grab
Quarterly	Ammonia as N	mg/L	Grab
Quarterly	Total Nitrogen	mg/L	Computed
Quarterly	Arsenic <sup>3</sup>	µg/L	Grab
Quarterly	Iron <sup>3</sup>	µg/L	Grab
Quarterly	Manganese <sup>3</sup>	µg/L	Grab
Quarterly	Total Organic Carbon	mg/L	Grab
Quarterly	General Minerals <sup>3</sup>	mg/L	Grab

<sup>1</sup> To nearest tenth of a foot

<sup>2</sup> Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point.

<sup>3</sup> Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

### SOURCE WATER MONITORING

For each source (either well or surface water supply), the Discharger shall calculate the flow-weighted average concentrations for the specified constituents utilizing monthly flow data and the most recent chemical analysis conducted in accordance with Title 22 drinking water requirements. Alternatively, the Discharger may establish representative sampling stations within the distribution system serving the same area as is served by the Plant.

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Quarterly	Flow-Weighted EC	µmhos/cm	Computed average
Annually	General Minerals	mg/L	Grab

### REUSE AREA MONITORING

The Discharger shall perform the following routine monitoring and loading calculations for the Reuse Area. In addition the Discharger shall keep a log of routine monitoring observations for example: areas of ponding, broken sprinklers, odors and/or flies within the Reuse Area. Data shall be collected and presented in tabular format and shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Daily	Application Area	Field # / Acreage	n/a
Daily	Wastewater flow	Gallons	Metered
Daily	Wastewater loading	inches/day	Calculated
Daily	Supplemental irrigation	Gallons	Metered
Daily	Precipitation	inches	Rain gage <sup>1</sup>
	BOD loading rate <sup>2</sup>		
Daily	day of application	lbs/acre	Calculated
Daily	cycle average	lbs/acre-day	Calculated
	Nitrogen loading		
Monthly	from wastewater <sup>3</sup>	lbs/acre	Calculated
Monthly	from fertilizer	lbs/acre	Calculated
Annually	Cumulative Nitrogen loading	lbs/acre-year	Calculated
Monthly	Salt loading <sup>3</sup>	lbs/acre	Calculated
Annually	Cumulative Salt loading	lbs/acre-year	Calculated

<sup>1</sup> National Weather Service data from the nearest weather station is acceptable.

<sup>2</sup> Loading rates to be calculated using the applied volume of wastewater, applied acreage, and average of the three most recent concentrations for BOD. The BOD loading rate shall be divided by the #days between applications to determine cycle average.

<sup>3</sup> Nitrogen and salt loading shall be calculated using the applied volume of wastewater, applied acreage, and average of the three most recent concentrations for total nitrogen and FDS.

### SOIL MONITORING

The Discharger shall establish with the concurrence of Central Valley Water Board staff, at least five soil profile monitoring locations within the Reuse Area and at least two representative background location(s) (i.e., that historically have not received process wastewater). The Discharger shall submit a map to the Central Valley Water Board with the identified sample locations no fewer than **60 days** prior to the first sampling event in October following adoption of this Order. The samples shall be collected and analyzed for the constituents and frequencies specified below:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Annually	Moisture Content	% volume	6 feet <sup>1</sup>
Annually	Cation Exchange Capacity	meq/100 grams	6 feet <sup>1</sup>
Annually	Soil pH	pH units	6 feet <sup>1</sup>

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Annually	Buffer pH	mg/kg as CaCO <sub>3</sub>	6 feet <sup>1</sup>
Annually	Sodium	mg/kg	6 feet <sup>1</sup>
Annually	Chloride	mg/kg	6 feet <sup>1</sup>
Annually	Nitrate as N	mg/kg	6 feet <sup>1</sup>
Annually	TKN	mg/kg	6 feet <sup>1</sup>

<sup>1</sup> Samples to be analyzed shall be collected at 6-inches, 2, 4, and 6 feet.

## 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.**

**A transmittal letter shall accompany each monitoring report.** The transmittal letter 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.

The following information is to be included on all monitoring and annual reports, as well as any report transmittal letters, submitted to the Central Valley Water Board:

Discharger: Caruthers Raisin Packing Company  
Facility: Caruthers Raisin Processing Plant  
MRP: R5-2012-XXXX  
Contact Information (telephone number and email): \_\_\_\_\_

In reporting monitoring data, the Discharger 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 Discharger complies with waste discharge requirements.

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.

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.

**A. All Quarterly Monitoring Reports**, shall include the following:

#### **Wastewater reporting**

1. The results of influent and effluent monitoring specified on [page 2](#).
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 calculate the 12-month rolling average EC of the discharge and compare it to the 12-month average EC of the source water.
4. For each month of the quarter, calculation of the average monthly effluent BOD, nitrogen, TDS, and FDS concentrations.

#### **Groundwater reporting**

1. The results of groundwater monitoring specified on [page 3](#). 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 at least five previous years, up through the current quarter.
3. A groundwater contour map based on groundwater elevations for that quarter. The map shall show the gradient and direction of groundwater flow under/around the Plant and/or Reuse Area(s). The map shall also include the locations of all monitoring wells and wastewater storage and/or discharge areas.

#### **Source Water reporting**

1. For each quarter including the results of monitoring for EC and General Minerals specified on [page 3](#).

#### **Reuse Area reporting**

1. The results of the routine monitoring and loading calculations for BOD, nitrogen, and salts as specified on [page 4](#).

2. Provide a Site Map of the Reuse Areas showing predominant features, and include field numbers and applied acreages.
3. For each month of the quarter, calculation of the monthly hydraulic load on each individual section for wastewater and supplemental irrigation water in millions of gallons.
4. A summary of the notations made in the Reuse Area monitoring log during each quarter. The entire contents of the log do not need to be submitted.

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

#### **Wastewater**

1. The names and general responsibilities of all persons in charge of wastewater treatment and disposal.
2. The names and telephone numbers of persons to contact regarding the Plant for emergency and routine situations.
3. 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).
4. A summary of any changes in processing that might affect waste characterization and/or discharge flow rates.

#### **Solids/Sludge Monitoring**

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.

#### **Soil Sampling**

1. The results of soil monitoring specified on [pages 4 and 5](#). The analytical results should be presented in tabular form and include depth of sample. If no sample is collected at a specified depth it should be noted in the table along with the reason no sample was collected.
2. A site map showing the location of each sampling point. The map shall also include the locations of all monitoring wells and wastewater storage and/or discharge areas.

#### **Reuse Area**

1. The type of crop(s) grown, planting and harvest dates, and the quantified nitrogen and fixed dissolved solids uptakes (as estimated by technical references or, preferably, determined by representative plant tissue analysis). Include any soil and/or tissue sampling results.

2. The monthly and annual discharge volumes during the reporting year expressed as million gallons and inches.
3. A monthly balance for the reporting year that includes:
  - a. Monthly crop uptake
    - i. Crop water utilization rates are available from a variety of publications available from the local University of California Davis extension office.
    - ii. Irrigation efficiency – Frequently, engineers include a factor from irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value.
  - b. Monthly average precipitation – this data is available at <http://www.cimis.water.ca.gov/> or at <http://www.ncdc.noaa.gov/oa/climate/online/ccd/nrmlprcp.html>.
  - c. Monthly average and annual average discharge flow rates.
  - d. Monthly estimates of the amount of wastewater percolating below the root zone (i.e., amount of wastewater applied in excess of crop requirements)
4. A summary of average and cycle BOD loading rates.
5. The total pounds of nitrogen applied to the reuse area(s), as calculated from the sum of the monthly loadings, and the total annual nitrogen loading to the reuse area(s) in lbs/acre-year.
6. The total pounds of fixed dissolved solids (FDS) that have been applied to the reuse area(s), as calculated from the sum of the monthly loadings, and the total annual FDS loading to the reuse area(s) in lbs/acre-year.

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 \_\_\_\_\_.

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PAMELA C. CREEDON, Executive Officer

## GLOSSARY

BOD <sub>5</sub>	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-hr Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.															
Daily	Samples shall be collected every day except weekends or holidays.															
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 April and October.															
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 all major cations and anions including but not limited to at least the following:															
	<table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Alkalinity</td> <td style="width: 33%;">Chloride</td> <td style="width: 33%;">Potassium</td> </tr> <tr> <td>Bicarbonate</td> <td>Hardness</td> <td>Sodium</td> </tr> <tr> <td>Boron</td> <td>Magnesium</td> <td>Sulfate</td> </tr> <tr> <td>Calcium</td> <td>Phosphorus</td> <td>TDS</td> </tr> <tr> <td>Carbonate</td> <td></td> <td></td> </tr> </table>	Alkalinity	Chloride	Potassium	Bicarbonate	Hardness	Sodium	Boron	Magnesium	Sulfate	Calcium	Phosphorus	TDS	Carbonate		
Alkalinity	Chloride	Potassium														
Bicarbonate	Hardness	Sodium														
Boron	Magnesium	Sulfate														
Calcium	Phosphorus	TDS														
Carbonate																

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