INFORMATION SHEET

R5-2012-XXXX
CARUTHERS RAISIN PACKING COMPANY, INC.
RAISIN PROCESSING PLANT
AND MR. JON ROBINSON
FRESNO COUNTY

Background
Caruthers Raisin Packing Company (Caruthers Raisin) has owned and operated a raisin packing plant (Plant) near Caruthers, since 1985, where it receives, washes, stores, packages, and distributes raisins from local growers.

The Report of Waste Discharge (RWD) Caruthers Raisin submitted in 1985 was for the discharge of raisin process wastewater to the adjacent vineyards. Due to its small size and because Fresno County had a program in place to regulate food processing discharges, the Central Valley Water Board elected to waive Waste Discharge Requirements (WDRs) for the proposed discharge under Resolution 82-036.

In December 1992, Central Valley Water Board staff inspected the Plant in response to several odor complaints. The resulting inspection report transmittal letter required Caruthers Raisin to submit a RWD, but made no mention of the previous waiver. In September 1993, Caruthers Raisin submitted a RWD. The RWD stated that Caruthers Raisin generated an average of 80,000 gallons per day (gpd) of raisin process wastewater, which was discharged to approximately 5 acres of cleared land to the northwest of the Plant.

Following an August 2003 complaint inspection of the Plant, Central Valley Water Board staff required Caruthers Raisin to submit a revised RWD. Staff reiterated the request in August 2004 at which time, Caruthers Raisin's consultant requested an extension. Caruthers Raisin submitted the RWD in November 2004, but it was determined to be incomplete. Caruthers Raisin submitted several addendums on 14 October 2004, 9 December 2004, 22 December 2005, and 31 March 2009.

Between 2004 and 2006 Caruthers Raisin hauled its wastewater to the Selma-Kingsburg-Fowler Wastewater Treatment Facility (SKF) for disposal. However, this ceased in 2006 when SKF stopped accepting the wastewater. During this period Caruthers Raisin completed many upgrades and improvements, including installation of new processing and packaging lines intended to improve efficiency and generate less wastewater. Along with these upgrades, Caruthers Raisin added screening and aeration to improve wastewater quality and increased its reuse area to 12 acres. In 2009, Caruthers Raisin leased a portion of land owned by Mr. Jon Robinson, increasing the reuse area to 27 acres and switched to sprinkler irrigation to improve irrigation efficiency and to facilitate even distribution of wastewater.

Wastewater

Wastewater at the Plant is generated in batches from rinsing raisins and washing down the equipment lines. The wastewater drains into a concrete standpipe from which it is pumped through a slotted rotating drum screen to remove fine solids. Following the screen, the wastewater is aerated in a series of three, 9,000-gallon aboveground tanks. Aeration in the tanks is intended to control odors and reduce the biochemical oxygen demand (BOD) of the wastewater. The treatment appears to have a side benefit in the reduced nitrogen concentration of the wastewater.

Typical raisin wash water contains high concentrations of BOD and total dissolved solids (TDS) as a result of the high sugar content of the raisins. The following depicts Caruthers Raisin's average wastewater concentrations based on analytical data from 2006 through 2010:

Constituent/Parameter	Units	2006	2007	2008	2009	2010
pH	s.u.	6.7	7.0	6.1	6.9	6.4
EC	µmhos/cm	900	800	750	630	650
BOD	mg/L	7,300	4,500	5,200	3,500	3,700
Nitrate as Nitrogen (NO_3-N)	mg/L	4.2	3.5	3.8	4.2	4.0
Total Nitrogen (TN)	mg/L	60	40	31	31	41
Total Dissolved Solids (TDS)	mg/L	7,100	4,000	4,000	3,000	3,100
Fixed Dissolved Solids (FDS)	mg/L	575	436	440	300	250

Chemicals added to the wastewater include Liquid Optomizer and lime, which are added for odor and algae control and pH adjustment. In addition, Hasa-Chlor, a sodium hypochlorite solution, is used during the wash down to clean the equipment.

Source Water: Source water is provided by two on-site wells. The 2008 Consumer Confidence Report indicates that the source water is relatively good, with an average EC of about 300 µmhos/cm, and nitrate as nitrogen of 2.8 mg/L. There are two additional supply wells on-site. One is an irrigation well and the other is a non-potable well used to supply an emergency eye wash station.

Disposal Methods

Solids and screenings: Screenings removed from the wastewater are collected in storage bins and sold for use as cattle feed.

Reuse: After treatment, the wastewater is distributed to an irrigation system and used to irrigate about 27 acres of cropland, 15-acres of which are owned by Mr. Jon Robinson who is also named as a Discharger. The Reuse Area is divided into two distinct areas identified as LAA-1 and LAA-2. LAA-1 consists of approximately 12-acres of land owned by Caruthers Raisin and includes the previous five acre disposal area adjacent to the Plant. Reuse Area LAA-2 consists of the approximately 15-acres of land leased from Mr. Jon Robinson. Both

areas are double cropped with sudan grass and a winter mix of wheat and oats. The crop in LAA-1 is harvested and sold as cattle feed, while LAA-2 is used as a pasture for cattle and horses.

The irrigation system is divided into seven sections of approximately three to six acres each. Irrigation is rotated between sections on a seven day cycle. During the summer, additional irrigation water may be applied in order to meet crop demands.

Groundwater Conditions

Regional groundwater in the area is encountered at about 130 feet below ground surface (bgs) and flows to the southwest according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer* (DWR, Spring 2009).

Three monitoring wells were installed at the site in July 2005. Data collected from these wells indicates groundwater flow has been consistently to the southwest, which is also consistent with regional groundwater flow. Based on groundwater flow direction, monitoring well MW-1 was an up-gradient and monitoring wells MW-2 and MW-3 were down-gradient of the Plant and Reuse Area LAA-1. Since these monitoring wells were installed, groundwater levels have dropped 10 to 15 feet. By October 2008, all three monitoring wells were reported as dry. Following a recent rise in groundwater, Caruthers Raisin was able to sample two of its monitoring wells in 2011. The following table compares average constituent concentrations for groundwater samples collected from 2005 to 2008 to concentrations reported during the May 2011 sampling event:

		Up-Gradient		Down-Gradient			
Constituent	Units	MW-1		MW-2		MW-3	
		Average	2011	Average	2011	Average	2011
EC	µmhos/cm	840	950	1,200	1,300	1,200	ns
TDS	mg/L	540	600	730	780	730	ns
Alkalinity	mg/L	230	230	640	680	500	ns
Nitrate (NO_3-N)	mg/L	20	24	0.07	< 0.02	2.3	ns
Chloride	mg/L	48	50	52	38	69	ns
Sulfate	mg/L	60	74	40	26	55	ns
Calcium	mg/L	95	150	120	160	110	ns
Sodium	mg/L	69	68	132	95	136	ns
Magnesium	mg/L	22	56	35	58	28	ns
Iron	mg/L	1.8	< 0.05	3.0	< 0.05	5.4	ns
Manganese	mg/L	0.05	< 0.01	2.3	0.41	0.6	ns
Arsenic	ug/L	2.0	< 2	5.5	< 2	2.6	ns

The data show that historic discharges from the Plant have degraded groundwater down-gradient of LAA-1with salinity and metals. Down-gradient groundwater EC is about 350 µmhos/cm higher than up-gradient, and down-gradient TDS is about 200 mg/L higher than up-gradient. In addition, elevated concentrations of iron, manganese, and arsenic as well as low nitrate and sulfate concentrations in down-gradient monitoring wells, indicates that historic discharges have resulted in organic overloading of the soil causing reducing conditions and leaching metals from the soil.

The implementation of the treatment described above, expansion of the reuse area, and the switch to spray disposal has resulted in groundwater quality improvements. The May 2011 sampling shows that groundwater iron, manganese, and arsenic concentrations in MW-2 (down-gradient) have decreased significantly compared to previous sampling events, showing an improvement in groundwater quality. In May 2011, iron and arsenic concentrations in MW-2 were both below water quality objectives, and manganese concentrations, while still above the secondary MCL of 0.05 mg/L, at 0.41 mg/L was almost six times lower than during previous sampling events. EC and TDS concentrations in MW-2 at 1,300 umhos/cm and 780 mg/L increased slightly and still exceed recommended lower secondary MCLs, but are below the upper secondary MCLs. EC and TDS also increased in MW-1 (up-gradient) by the same magnitude as MW-2, indicating a possible source other than the discharge.

With the treatment added in 2006 to reduce the BOD concentration of the wastewater and expansion of the Reuse Area, the organic load from the discharge is significantly less than in the past. It is anticipated that with the reduced organic load and implementation of best management practices (BMPs) established by Caruthers Raisin to prevent odor and nuisance conditions and minimize the potential for reducing conditions in soil, that water quality beneath the site will continue to improve over time.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition,* revised January 2004 (hereafter Basin Plan) designates beneficial uses, establishes narrative and numerical water quality objectives, contains implementation plans and policies for protecting all waters of the Basin, and incorporates, by reference, plans and policies of the State Water Resources Control Board (State Water Board). Pursuant to Water Code section 13263(a), these requirements must implement the Basin Plan.

The Basin Plan indicates the greatest long-term problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man's activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. The Central Valley Water Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental EC limitation of 500 µmhos/cm over source water or a maximum of 1,000 µmhos/cm, as the measure of the permissible addition of salt constituents through use. In addition, discharges to areas that may recharge good quality

groundwater shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, or a boron content of 1.0 mg/L.

Treatment and Control Practices
Caruthers Raisin provides treatment and control of the discharge that incorporates: (a) dry sweeping to remove solids and reduce the amount of wastewater, (b) screening to remove excess solids from the waste stream, (c) hauling solids offsite for use as cattle feed, (d) aeration to reduce effluent BOD concentrations, (e) sprinkler irrigation to more evenly distribute the wastewater, (f) rest periods between applications to allow for reaeration of the soil, (g) tilling between crop harvests to maintain soil structure, permeability, and treatment capacity; (h) organic loading rates consistent with those recommended by the California League of Food Processors as unlikely to cause unacceptable groundwater degradation; (i) application of nitrogen at agronomic rates; (j) hydraulic loading at rates to preclude standing water on the land application area; and (k) groundwater monitoring to monitor the impact of the discharge on groundwater.

These treatment and control measures represent a higher level of water quality protection measures than those employed by other raisin processors in the Central Valley, and are consistent with the recommendations of the California League of Food Processors. In combination with the requirements of this Order, these treatment and control measures represent BPTC.

Anitdegradation
The antidegradation directives of State Water Board Resolution No. 68-16, "*Statement of Policy With Respect to Maintaining High Quality Waters in California*," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Policy and procedures for complying with this directive are set forth in the Basin Plan.

Constituents of concern that have the potential to cause degradation include, in part, organics, nutrients and salts.

a. To reduce the organic load of its discharge, since 2006, Caruthers Raisin has added treatment and reduced the strength of its wastewater by almost 50%, expanded its Reuse Area, and implemented BPTC measures (switching to sprinkler irrigation, establishing resting periods of 7-days between applications, and disking between harvests), significantly reducing the organic load to the Reuse Area and minimizing the potential for anoxic or reducing conditions in soil. These measures are expected to prevent odor and nuisance conditions and to preclude iron and manganese degradation of groundwater from organic loading. Groundwater iron and manganese concentrations from historic operations have improved in recent years, and are expected to continue to improve over time. This Order requires Caruthers Raisin to expand the Plant's groundwater monitoring well network to

monitor this improvement and to complete a 2-year loading study to evaluate site BOD loading capacity.

b. For nitrogen, shallow groundwater up-gradient of the Reuse Area already contains nitrate in excess of water quality objectives. Reduction of nitrogen through treatment and application of wastewater at agronomic rates for both nutrient and hydraulic loading should preclude degradation of groundwater by nitrates from the discharge. Groundwater down-gradient of the discharge does not exceed the MCL for nitrate as nitrogen (NO_3-N) of 10 mg/L, and is not expected to exceed it in the future.

c. For salinity, with an average source water EC of about 300 µmhos/cm, the discharge with an average EC of 600 to 750 µmhos/cm meets the Basin Plan limits for EC of 500 µmhos/cm over source or 1,000 µmhos/cm maximum for discharges to areas that may recharge good quality groundwaters. In addition, a portion of the EC of the discharge is from organic sources or from nutrients beneficial for plant growth (i.e., calcium, magnesium, and potassium), which will be further treated in the soil profile and removed by crops, and as such is not anticipated to result in the degradation of groundwater exceeding water quality objectives.

While the discharge is consistent with Basin Plan limits for salinity, groundwater monitoring data shows increases in EC and TDS concentrations over background in down-gradient monitoring wells. It is believed that the elevated EC and TDS concentrations are, in part, the result of increased bicarbonate, calcium, and magnesium in down-gradient wells, due to past organic overloading of the reuse area. The reduced organic load and implementation of BPTC measures are expected to preclude the discharge from causing continued increases in bicarbonate alkalinity in groundwater.

This Order establishes groundwater limitations that allow some degradation, but that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan.

The discharge and the potential for groundwater degradation allowed by the proposed Order (specifically for nitrates and EC) is consistent with the Antidegradation policy since: (a) Caruthers Raisin has implemented BPTC to minimize degradation, (b) the limited degradation allowed by this Order will not unreasonably affect present and anticipated beneficial uses of groundwater, or result in water quality less than water quality objectives, and (c) the limited degradation is of maximum benefit to people of the State, as the facility employs 100 to 140 people, supports the local economy, and provides a needed service to local raisin growers. In addition, the use of process wastewater for irrigation in place of higher quality groundwater will preserve a needed resource, which is of further benefit to people of the State.

Title 27

Unless exempt, the release of designated waste is subject to full containment pursuant to Title 27 requirements. Here, the discharge is exempt from the requirements of Title 27 pursuant to the wastewater exemption found at Title 27, section 20090(b) and pursuant to the reuse exemption found at Title 27, section 20090(h).

CEQA

On 27 July 1989, Fresno County adopted a Negative Declaration in conjunction with a Conditional Use Permit (CUP) for commercial operation of the existing raisin processing plant at 12797 S. Elm Avenue. The operation as specified in the Negative Declaration would generate approximately 10,000 gallons per day of wastewater, which would be used to irrigate the adjacent vineyard. Central Valley Water Board staff did not comment on this Negative Declaration

On 24 March 2005, Fresno County, adopted a Mitigated Negative Declaration with revision of the CUP for upgrades to the existing raisin processing plant, to include new processing and packaging lines, and reuse of process wastewater for irrigation on crops. The Mitigated Negative Declaration concluded that the new equipment would improve efficiency and generate less wastewater, and included the following mitigation measures:

1. All parking, circulation, and storage areas shall be covered with an asphalt concrete surface;

2. The applicant shall submit a complete Report of Waste Discharge to the Central Valley Water Board prior to discharging to the land; and

3. All onsite discharge of liquid waste materials (i.e., wastewater) shall be done in such a manner as to not adversely impact groundwater supplies or create conditions of nuisance, and “Best Practicable Treatment or Control” shall be utilized as approved by the Central Valley Water Board in such a way as to preclude potential odor and vector nuisance and adverse groundwater quality impacts.

Central Valley Water Board staff reviewed and concurred with the findings in the Mitigated Negative Declaration. The proposed Order includes specific conditions intended to mitigate or avoid environmental effects on water quality. Specifically, the proposed Order:

a. Sets limits for flow, EC, chloride, and BOD loading;

b. Requires application of wastewater at agronomic rates;

c. Establishes groundwater limits;

d. Establishes a monitoring and reporting program; and

e. Requires Caruthers Raisin to prepare a Nutrient and Wastewater Management Plan, a Salinity Control Plan, and complete a 2-year loading study.

Although the Mitigated Negative Declaration does not specifically address the reuse of wastewater on Mr. Robinson's property, this discharge has been ongoing since 2009, and the sprinkler system has already been installed. This Order imposes additional regulatory requirements on the discharge of waste to this LAA, and no additional construction is authorized by this Order. Therefore, the imposition of additional regulatory requirements for this existing discharge is exempt from the requirements of CEQA in accordance with California Code of Regulations, title 14, section 15301.

Proposed Order Terms and Conditions

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions
The proposed Order prohibits discharge to surface waters and drainage courses.

The proposed Order sets a monthly average flow limit of 0.13 mgd with an annual flow limit of 25 million gallons, which is consistent with current practices.

The proposed Order sets an EC limit such that the 12-month rolling average EC of the discharge shall not exceed the average EC of the source water plus 500 µmhos/cm and sets a monthly average EC limit of 1,000 µmhos/cm. In addition, the proposed Order sets specific numerical effluent limits for chloride and boron of 175 mg/L and 1.0 mg/L, respectively consistent with the Basin Plan, and requires Caruthers Raisin to prepare and implement a Salinity Control Plan to control the salinity of the discharge to the extent practicable.

To address the potential for the discharge to impact groundwater quality due to organic loading or the creation of nuisance conditions, the proposed Order will set a cycle average BOD loading limit to the Reuse Areas of 150 lbs/acre/day and includes a provision requiring Caruthers Raisin to complete a 2-year site specific loading study to determine the capacity of its reuse areas. It also requires Caruthers Raisin to expand its groundwater monitoring network to ensure that changes in groundwater quality associated with historic and ongoing discharges are quantified.

The proposed Order also requires the Discharger to provide an engineering analysis of the capacity of its wastewater treatment units.

Samples of the wastewater contain high concentrations of total and fecal coliform organisms often in excess of 1600 MPN/100 mL. The source of the bacteria in the waste stream has yet to be determined. Though the likely presence of birds and other animals attracted to the raisins as well as open aeration tanks and open surfaces around the processing equipment are possible sources. The proposed Order includes continued monitoring and a Provision requiring Caruthers Raisin to identify the source and nature of the bacteria in the waste stream and ensure that it does not represent a hazard to human health or the environment.

The proposed Order would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedances of these objectives or natural background water quality, whichever is greater. The proposed Order sets site specific groundwater limits for nitrate and EC. The nitrate as nitrogen limit is set as the Primary MCL of 10 mg/L. The predominant crops for the area, specifically grapes and almonds, can tolerate irrigation water with an EC up to 1,000 µmhos/cm with no reduction in crop yield. Considering predominant crop types and irrigation methods the proposed Order sets a groundwater limit for EC of 1,000 µmhos/cm, which should preclude impairment of agricultural beneficial uses and is within the range of the secondary MCL for EC consistent with beneficial uses for municipal and domestic supply.

Monitoring Requirements

Water Code section 13267 authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Water Code section 13268 authorizes the assessment of administrative civil liability where appropriate.

The proposed Order includes influent and effluent monitoring requirements, soil sampling, and groundwater monitoring. In addition, the proposed Order requires monitoring of the Reuse Areas and loading calculations for organics, nutrients, and salts. This monitoring is necessary to characterize the discharge, evaluate compliance with effluent limitations and discharge specifications prescribed in the Order.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. It may be appropriate to reopen the Order if new technical information is provided or if applicable laws and regulations change.

KC/WDH: 12/27/11