

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER R5-2013-XXXX

WASTE DISCHARGE REQUIREMENTS

FOR  
THE GARLIC STORAGE COMPANY, LLC  
SHAFTER GARLIC PROCESSING PLANT  
KERN COUNTY

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

1. The Garlic Storage Company, LLC (hereafter "Garlic Company" or "Discharger"), owns and operates the Shafter Garlic Processing Plant ("Plant") at 18602 Zerker Road in Shafter, Kern County (within Sections 14 and 23, T28S, R26E, MDB&M). The Garlic Company's 35-acre parcel (Assessor's Parcel Number 091-130-22) encompasses the Plant and a 16.8-acre wastewater discharge area ("Use Area") for irrigation of sudan grass and winter wheat with garlic processing wastewater. The Plant consists of a whole garlic processing facility, a garlic puree facility, cold storage unit, storm water pond, and a wastewater treatment system, including screens and an unlined aerated pond. The Plant and Use Area are shown on Attachment A, which is attached hereto and a part of this Order.
2. On 1 December 1997, the Garlic Company submitted a Report of Waste Discharge (RWD) describing the ongoing discharge of garlic processing wastewater to percolation ponds. An updated RWD in February 2001 also describes discharge to percolation ponds. In 2006, the Garlic Company submitted a revised RWD in support of significant changes to the Plant, including discharge to a cropped Use Area. On 23 January 2012, the Garlic Company submitted a revised RWD describing a scenario with increased flows and higher concentrations of waste from the Plant, with an expanded 40-acre Use Area. The proposed additional Use Area was only conceptual, and no additional acreage was made available to accommodate the expanded discharge.
3. On 26 September 2012, the Garlic Company submitted another RWD, describing discharge consistent with the 2006 RWD, but with the addition of a 6.5-acre Use Area on an adjacent property owned by Union Pacific Railroad Company ("Union Pacific"). In February 2013, Central Valley Water Board staff issued a Notice of Violation of Water Code section 13264 when the Garlic Company indicated it had begun discharging to the Union Pacific land in January 2013 without having submitted a Form 200 signed by Union Pacific or waiting 140 days following submittal of the RWD. The Garlic Company indicated it would submit an updated RWD for improved wastewater treatment, installation of a lined wastewater pond, and expansion of its Use Area by 15 March 2013. The Garlic Company submitted such a RWD on 23 September 2013, but the project to install a pipeline and discharge to the proposed 99-acre parcel south of the Plant still requires an environmental review pursuant to the California Environmental Quality Act (CEQA). The City of Shafter is the lead agency for the CEQA process involving the installation of the pipeline and the discharge to the new parcel. This Order relies upon some of the updated information, but does not authorize a discharge to proposed new Use Area acreage nor associated increases in discharge flow.

4. The Garlic Storage Company, LLC, owns and operates the Plant that generates the waste and the land to which it is discharged (Use Area) and is responsible for compliance with these Waste Discharge Requirements.

#### **Facility and Discharge**

5. The primary activity at the Plant is to produce whole, peeled garlic, a process that consists of initial break-up of cloves, blowing skin off (pneumatic), and rinsing in a flume during transport to sorting, grading, and packing facilities. The Plant produces from 35 to 50 million pounds of garlic per year. The Plant also produces garlic puree, which requires operation of a boiler, and a limited amount of pickled garlic. For about six weeks per year, typically between May and July, the Plant also processes peppers (1.5 to 2.5 million pounds per year). Attachment B, a part of this Order, is a process flow diagram for the Plant.
6. Sources of wastewater include daily waste of flume water (for initial cleaning and transmission of the raw garlic), cleaning of processing equipment, boiler blowdown, cooling water, and pickling brine disposal. The Garlic Company uses various industrial cleaning and maintenance chemical products at the Plant, including boiler water anti-scalant, cooling tower corrosion inhibitor and microbiocide, alkaline cleaner, acid cleaner, quaternary ammonium sanitizer, and sodium hydroxide.
7. During the garlic harvesting season (June through December), the Plant operates five days per week for 12 hours per day. January through June is considered the off-season, when operation is typically reduced to 8 to 10 hours per day. However, production at the Plant depends on multiple factors, including the quantity required by customers, whether there is sufficient unprocessed garlic in storage for processing, and whether there is sufficient storage available to house the processed garlic product. The flow of wastewater is highly variable, ranging from 25,000 to over 100,000 gallons per day (gpd), with an average discharge of about 54,000 gpd in 2012.
8. The table below summarizes the results of effluent sample analyses for the last five years (2008 to 2013). Samples were collected from a point in the wastewater system between the wastewater pond and land application.

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Range</u>	<u>Average</u>
pH	su	3.9 - 7.8	6.9
Biochemical Oxygen Demand	mg/L	24 - 1,100	190
Nitrate as Nitrogen	mg/L	< 0.05 - 2.7	1.1
Total Kjeldahl Nitrogen	mg/L	< 1.0 - 120	33
Ammonia as Nitrogen	mg/L	< 0.2 - 24	2.6
Total Nitrogen	mg/L	1.2 - 120	33
Chloride	mg/L	460 - 530	490
Sodium	mg/L	440 - 480	460
Sulfate	mg/L	310 - 590	480

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Range</u>	<u>Average</u>
Specific Conductance	µmhos/cm	1,290 - 3,412	2,800
Total Dissolved Solids	mg/L	1,700 - 1,900	1,800
Fixed Dissolved Solids	mg/L	110 - 2,000	1,500

9. The unlined aerated wastewater pond is approximately 16.5 feet deep with a capacity of approximately 940,000 gallons with four feet of freeboard. Information submitted with the RWD indicates percolation from the wastewater ponds is estimated to be 10.2 inches per year. During a meeting with Central Valley Water Board staff, the Garlic Company submitted draft plans for a new wastewater pond with a 0.060-inch thick high-density polyethylene (HDPE) liner at the Plant site. By phone on 26 April 2013, a consultant for the Garlic Company indicated that it would not construct the lined pond as proposed on the Plant property, but would line a pond it intends to propose for use at an expanded Use Area. As described in Finding 3, the Garlic Company recently submitted a RWD for the proposed improvements.
10. All storm water at the Plant is diverted to an approximately 470,000-gallon storm water pond in the southeast corner of the Plant.
11. Wastewater is applied evenly to the Use Area by sprinkler irrigation.
12. The water balance submitted with the 2006 RWD was used to model storage and disposal capacity and utilized an estimated 100-year return frequency wet year, assuming at least two feet of freeboard will remain in the wastewater pond. The model indicates the pond and Use Area provide sufficient storage and disposal capacity to accommodate the wastewater flow allowed by this Order. However, the scenario described by the model (i.e., crop selection, proposed pond design, etc.) is not identical to the Garlic Company's most recent plans. Provision G.7 of this Order requires an updated water balance to demonstrate that the Garlic Company can continuously comply with Discharge Specifications C.5 and C.6 of this Order regarding wastewater containment.
13. Solid waste removed during processing and wastewater screening is hauled off-site for animal feed.
14. Domestic wastewater is discharged separately to an on-site septic tank/leachfield regulated by Kern County.

### **Site-Specific Conditions**

15. The Plant and Use Area are at an elevation of approximately 410 feet. The climate is arid, with hot summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation and evaporation (Class 'A' pan) in the area are about 6.0 inches and 64.8 inches, respectively, according to information published by the California Department of Water Resources (DWR). The California Irrigation Management Information System (CIMIS) database reports an annual average potential evapotranspiration (ET<sub>o</sub>) of 57 inches for Shafter.

16. Soil in the vicinity of the pond and Use Area is a Wasco sandy loam according to United States Department of Agriculture, Natural Resources Conservation Service soil survey maps. These soils are described as nonsaline, very deep, well drained, and moderately rapidly permeable. The land capability classification of the soil for irrigation is II-s, which has little or no restrictions on cultivation.
17. A 2006 Kern County land use survey from the Department of Water Resources indicates land in the vicinity of the Plant is used to grow apples, almonds, pistachios, cotton, beans (dry), grain and hay crops, alfalfa, potatoes, flowers, carrots, wine grapes, and nursery crops. County pesticide permits from 2011 also show onions and cherries are grown within about 2 miles of the Plant. The Plant is bordered to the west and south by vineyards and to the northeast by the Union Pacific Railroad and State Highway 99. Across Highway 99 from the Plant is agricultural land used to cultivate alfalfa.
18. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit because all storm water runoff is retained onsite and does not discharge into a water of the United States.
19. According to Federal Emergency Management Agency (FEMA) maps, the Plant and Use Area lay outside of the 100-year and 500-year return frequency flood zones.

#### **Groundwater Considerations**

20. The Plant is in the North Kern Hydrologic Area (No. 558.80) of the South Valley Floor Hydrologic Unit, as depicted on hydrologic maps prepared by State Water Resources Control Board in August 1986.
21. Regional groundwater underlying the area is first encountered at about 290 feet below ground surface (bgs) and flows north according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 2010. There are no groundwater monitoring wells onsite and no site-specific groundwater gradient information is available. On 23 August 2013, the Executive Officer issued an Order pursuant to Water Code section 13267 requiring the Garlic Company to install and maintain a groundwater monitoring well network by early 2014 (135 days following approval of a Groundwater Monitoring Well Installation Work Plan due 18 October 2013).
22. Kern County Water Agency Annual Water Supply Reports include a map with lines of equal concentration for total dissolved solids based on data from samples of first encountered groundwater collected prior to 1991. The map shows that a zone of groundwater in the vicinity of the Garlic Company, approximately 10 miles long and 6 miles wide, has elevated total dissolved solids ranging from about 500 mg/L to 2,500 mg/L. Based on the map, groundwater beneath the Plant has a concentration of total dissolved solids between 2,000 mg/L and 2,500 mg/L, which corresponds to an EC of about 3,000 umhos/cm to 4,000 umhos/cm. The source of the elevated salinity has not been identified, but is likely historical oil field discharges. Published data from nearby groundwater wells show the high concentrations of saline constituents (largely sulfate and chloride) in the vicinity of the Plant date back to at least 1936.

23. The table below summarizes regional water quality data from the United States Environmental Protection Agency (EPA), United States Geological Survey (USGS), and North Kern Water Storage District groundwater quality databases for groundwater wells of varied construction within about two miles of the Plant. Wells exhibiting excellent water quality appear to be heavily influenced by seepage from adjacent canals.

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Range</u>	<u>Average</u>
pH	pH Units	6.0 - 9.0	7.7
Nitrate as Nitrogen	mg/L	< 0.05 - 115	8.9
Chloride	mg/L	7.0 - 1,120	230
Sodium	mg/L	1.0 - 660	190
Specific Conductance	µmhos/cm	170 - 5,200	1,700
Sulfate	mg/L	18 - 1,300	300
Total Dissolved Solids	mg/L	120 - 2,900	930

24. One onsite supply well (Well #2) provides source water for the Plant. The 16-inch well has two screened sections: one from about 560 feet bgs to 700 feet bgs, the other from about 740 feet bgs to 870 feet bgs. The source water is high in salinity and generally of poor quality. However, nitrate concentrations in the supply well are typically not in the detectable range (less than about 2 mg/L as nitrogen). The table below summarizes the results of Plant source water monitoring for the last five years (2008 to 2013).

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Range</u>	<u>Average</u>
Nitrate as Nitrogen	mg/L	< 0.2 - 2.2	< 1.0
Chloride	mg/L	360 - 440	400
Sodium	mg/L	300 - 350	340
Specific Conductance	umhos/cm	1,999 - 2,488	2,300
Sulfate	mg/L	450 - 580	510
Total Dissolved Solids	mg/L	1,200 - 1,600	1,400

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

25. The *Water Quality Control Plan for the Tulare Lake Basin*, Second 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 Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.
26. The Plant is in Detailed Analysis Unit 256 within the Kern County Basin hydrologic unit. The Basin Plan designates the beneficial uses of groundwater in this DAU as municipal and domestic supply, agricultural supply, and industrial service and industrial process supply.

27. The Basin Plan states that in instances where uncontrollable factors have already resulted in water quality objectives being exceeded, controllable factors are not allowed to cause further degradation of water quality. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to the authority of the State Water Board or a regional water board, and that may be reasonably controlled.
28. Discharges of waste prior to startup of this Plant caused groundwater to be degraded beyond current water quality objectives for salinity. This occurred many years ago, prior to enactment of the Porter-Cologne Water Quality Control Act (1969) and the Dickey Water Pollution Act (1949). The degradation is considered to have been caused by uncontrollable factors, as described above. Pursuant to the Basin Plan, discharge from the Plant in the manner described herein may not cause further degradation of groundwater with saline waste constituents.
29. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. The 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. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.
30. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until a mechanism to carry salts out of the basin is established. To limit the degradation, the Basin Plan establishes several salt management requirements, including:
  - a. Industrial dischargers shall be required to limit the increase in EC of a point source discharge to surface water or land to a maximum of 500 umhos/cm. A lower limit may be required to assure compliance with water quality objectives.
  - b. Discharges to areas that may recharge good quality groundwater shall not exceed an EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or a boron content of 1.0 mg/L. As indicated in Finding 22, groundwater in the vicinity of the Plant is saline and generally of poor quality. As such, the effluent limits for EC and chloride do not apply. The concentration of boron in receiving water is unknown, but the discharge does not threaten to exceed 1.0 mg/L with wastewater concentrations of about 0.1 mg/L.
31. The Basin Plan allows an exception to the EC limit of source water plus 500 umhos/cm when the discharger technically demonstrates that allowing a greater net incremental increase in EC will result in lower mass emissions of salt and in conservation of water, provided that beneficial uses are protected. The Garlic Company has reportedly implemented water saving measures that result in lower mass emissions of salt at the Plant. However, the Garlic Company has yet to submit sufficient technical justification to warrant the exception.

32. The Basin Plan also allows an exception to the EC limit of source water plus 500 umhos/cm where the discharge exhibits a disproportionate increase in EC over the EC of source water due to unavoidable concentrations of organic dissolved solids from the raw food product, provided water quality objectives are met. The difference between the average total dissolved solids (TDS) and average fixed dissolved solids (FDS) concentrations in the effluent indicates approximately 7% of the EC could be the result of organic compounds from the raw garlic. Though a relatively small fraction of the total EC, the FDS may represent almost a 200-umhos/cm contribution to EC. As such, the discharge meets the incremental EC limit exception of the Basin Plan. This Order limits the 12-month rolling average EC of the discharge to no more than the 12-month flow weighted average EC of the source water plus 600 umhos/cm. It also requires the Discharger to monitor effluent FDS and TDS to verify the EC limit exception continues to be applicable to this discharge.
33. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). 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.
34. In the absence of specific numerical water quality limits, objectives for receiving waters must be considered case-by-case. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 umhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 umhos/cm if sufficient additional water (leaching fraction) is provided to maintain soil salinity within the tolerance of the crop.
35. The list of crops in Finding 17 is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but it is representative of current and historical agricultural practices in the area. The list includes salt-sensitive crops.
36. The discharge is to cropland and any surface drainage would be to Valley Floor Waters. The beneficial uses of Valley Floor Waters within the subject hydrologic area (Antelope Plain Hydrologic Area No. 558.60) are agricultural and industrial service and process supply; water contact and non-contact water recreation; wildlife and warm freshwater habitat; groundwater recharge; and preservation and enhancement of rare, threatened, and endangered species.
37. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, 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.

### Antidegradation Analysis

38. State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (*Anti-Degradation Policy*) prohibits degradation of groundwater unless it has been shown that:
- The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives;
  - The discharger employs best practicable treatment or control (BPTC) to minimize degradation;
  - The degradation will not unreasonably affect present and anticipated future beneficial uses; and
  - The degradation is consistent with the maximum benefit of the people of the State.
39. Constituents of concern that have the potential to cause degradation include nutrients, organic material, and salts.
- Low receiving groundwater nitrate concentrations (less than 10 mg/L) contrast with the average total nitrogen concentration of 32 mg/L in wastewater. Without further treatment or control, most of the nitrogen in the discharge would likely convert to nitrate and cause groundwater degradation with nitrate beyond the MCL. There are two potential paths for nitrate to reach groundwater: the unlined pond and the cropped Use Area. The Garlic Company submitted draft plans for a geomembrane-lined pond, which would address the issue of nitrogen percolating from the existing unlined pond. This Order requires the Garlic Company, in accordance with a time schedule, to either line the pond as proposed or otherwise demonstrate that pond seepage will not cause or contribute to groundwater containing concentrations of waste constituents in excess of groundwater limits (Groundwater Limitation F.1). The Garlic Company reports it is double-cropping the Use Area with sudan grass and winter wheat on the 16.8-acre Use Area. Considering 10 percent yield reduction due to the elevated salinity of the discharge, nitrogen uptake is about 408 lbs/acre/year. The average annual flow associated with this maximum nitrogen uptake is about 0.070 mgd.
- Wastewater flow exceeds crop water demand from November through March. In a 100-year wet year, the cropped area could be irrigated with up to 4 inches of excess water per month over the winter. Since wastewater nitrogen is almost exclusively in the form of organic nitrogen (30 mg/L out of 32 mg/L), it is expected to be relatively immobile in soil until it converts to nitrate. Organic nitrogen discharged to the Use Area during periods when no crops are being grown is expected to be taken up by crops during subsequent months as it converts to nitrate and advances through the root zone.
- With regard to organic material (BOD), excessive application can deplete oxygen in the vadose zone and lead to anoxic conditions. At the ground surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen is present below the ground surface, anaerobic decay of the organic matter can create reducing conditions that convert metals that are naturally present in the soil as relatively immobile (oxidized) forms to more mobile reduced forms.

In the 1990s, the Garlic Company overloaded the soil with organic waste, resulting in nuisance odor conditions and potential groundwater degradation. The Garlic Company has since reduced wastewater BOD concentrations, increased the area of land receiving wastewater (Use Area), and installed sprinklers for uniform application. The current Garlic Company discharge typically results in low daily BOD loading. For July 2012 to June 2013, the two highest BOD loading rates associated with BOD results from monthly wastewater sampling and the peak daily flow for each month were 145 lbs/acre/day and 32 lbs/acre/day. The 145 lbs/acre/day peak is based on a BOD concentration that is arguably a statistical outlier and may not represent actual loading conditions. While the Garlic Company does not implement regular irrigation cycles with a resting period (to optimize soil pore oxygen concentrations), monthly average BOD loading rates are generally less than 5 lbs/acre/day. For a sprinkler-irrigated Use Area with well-drained soils and vadose zone thickness over 200 feet, the potential for groundwater degradation due to organic loading at these rates is minimal.

- c. For salinity, the EC of the discharge (about 2,900 umhos/cm) is comparable to the EC of receiving groundwater (about 3,000 umhos/cm) and is not expected to cause degradation. Salt loading from discharge to the Use Area is quite high (21,000 lbs/acre/year), which may contribute to soil salinization without proper management. Provision G.9 requires the Discharger to address salt loading and more in a Salinity and Nutrient Management Plan.
  - d. As indicated in Finding 22, groundwater in the vicinity of the Plant is saline and generally of poor quality since before 1968. Given compliance with the provisions of this Order, the discharge is not anticipated to further degrade groundwater quality.
40. Degradation of groundwater by some of the typical waste constituents associated with discharges from a food processing plant, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the State, given that the Discharger's operation provides 120 full time and 100 seasonal jobs and supports employment of those who provide ancillary services including growing, harvesting, and transporting garlic and peppers. The economic prosperity of Central Valley communities is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

### **Treatment and Control Practices**

41. The Discharger provides treatment and control of the discharge that incorporates:
  - a. Water conservation measures (i.e., recirculating flume) that result in a lower mass discharge of salt;
  - b. Mechanical solids removal (wastewater screening);
  - c. Organic loading rates consistent with EPA recommendations and unlikely to cause unacceptable groundwater degradation;
  - d. Application of nitrogen at agronomic rates;

- e. Limited wastewater pond seepage required by Provision G.7; and
- f. Implementation of the Salinity and Nutrient Management Plan required by Provision G.9.

### **Antidegradation Conclusions**

- 42. Though there is potential for the discharge to result in groundwater degradation, this Order includes provisions to limit the potential for degradation and establishes groundwater limitations that do not allow the discharge to further degrade groundwater with constituents of concern.

### **Water Reuse**

- 43. The Basin Plan encourages the reuse of wastewater and identifies crop irrigation as a reuse option where the opportunity exists to replace an existing or proposed use of fresh water with recycled water.

### **California Environmental Quality Act**

- 44. In 1990, when the Garlic Company began operating the existing Plant, the location was in an unincorporated area of Kern County zoned exclusively for agriculture. The zoning allowed for fruit, vegetable, and plant product processing (cold storage, packing, preserving, canning, and shipping) facilities. Kern County's zoning ordinance requires only a ministerial plot plan review for construction and operation of such processing facilities. Because no discretionary permit was issued by the County, the project was considered exempt from California Environmental Quality Act (CEQA) requirements (Cal. Code Regs., tit. 14, § 15268). The Air District gave the Garlic Company an Authority to Construct (a temporary permit) for an air quality control device, but did not find that the project required a CEQA document.
- 45. In 1997, the City of Shafter expanded the sphere of influence of the City east to Highway 99 and south to the Friant-Kern Canal, an area that includes the Plant and Use Area. The City assigned industrial zoning to the parcel and did not require any discretionary permits that require an environmental review pursuant to CEQA.
- 46. As indicated in Finding 2, the Discharger has submitted additional information in 1997, 2001, 2006, and 2012 updating the status of the Plant's continued operation. This Order, though it relies on some of the updated information, does not authorize a discharge to the proposed new Use Area acreage nor does it authorize an increase in discharge flow. Therefore, the issuance of this Order for an existing facility is exempt from the requirements of the California Environmental Quality Act in accordance with California Code of Regulations, title 14, section 15301.

### **Other Regulatory Considerations**

- 47. Based on the assessed threat to water quality and complexity (Cal. Code Regs., tit.23, § 2200), the discharge is classified 2B as defined below:
  - a. Category 2 threat to water quality: "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water

quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”

- b. Category B complexity, defined as: “Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units.”

48. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt wastewater and reuse. Title 27, section 20090 states in part:

The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:

...

(b) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:

- (1) the applicable RWQCB has issued WDRs, reclamation requirements, 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.

...

49. The discharge authorized herein is exempt from the requirements of Title 27 because:

- a. The Central Valley Water Board is issuing WDRs.
- b. The discharge is in compliance with the Basin Plan, and;
- c. The treated effluent discharged to the ponds does not need to be managed as hazardous waste.

50. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit 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. All storm water from the plant is collected and allowed to percolate on-site and does not discharge into a water of the United States. The Discharger is, therefore, not required to obtain coverage under NPDES General Permit CAS000001.

51. Water Code section 13267(b) states:

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 ... 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 R5-2013-XXXX are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the Plant that discharges the waste subject to this Order.

52. 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**

53. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated herein, were considered in establishing the following conditions of discharge.

54. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

55. All comments pertaining to the discharge were heard and considered in a public hearing.

**IT IS HEREBY ORDERED** that The Garlic Storage Company, LLC, 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:

**A. Discharge Prohibitions**

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.
3. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

**B. Effluent Limitations**

1. The 12-month rolling average EC of the discharge shall not exceed the 12-month flow weighted average EC of the source water plus 600 umhos/cm. Compliance with this effluent limitation shall be determined monthly.
2. The pH of the discharge shall not be less than 6.5 or greater than 8.5 pH units.

**C. Discharge Specifications**

1. The discharge from the Plant shall not exceed the following: a monthly average discharge of 0.083 mgd from January through June, a monthly average discharge of 0.125 mgd from July through December, a maximum daily discharge of 0.180 mgd, and a total annual discharge of 25.5 million gallons (0.070 mgd average).
2. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of this Order.
3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.
4. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.
5. The discharge shall remain within the permitted wastewater pond, conveyance structures, and the Use Area at all times.
6. The Plant and wastewater pond shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
7. Objectionable odors shall not be perceivable beyond the limits of the wastewater pond or the Use Area at an intensity that creates or threatens to create nuisance conditions.
8. The discharge of process wastewater shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications.
9. The pond and open containment structures shall be managed to prevent breeding of mosquitoes.
10. The Discharger shall periodically monitor solids accumulation in the wastewater pond and shall remove solids to maintain adequate storage capacity.

**D. Use Area Specifications**

1. Crops shall be grown in the Use Area. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize uptake.

2. Application of waste constituents to the Use Area shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the Use Area, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the annual crop demand.
3. Hydraulic loading of wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the percolation of wastewater and irrigation water below the root zone (i.e., deep percolation).
4. The BOD loading to the Use Area calculated as a cycle average and as instantaneous load, as determined by the methods described in the attached Monitoring and Reporting Program, shall not exceed 50 pounds per acre per day and 150 pounds per acre per day, respectively.
5. The resulting effect of the discharge on soil pH shall not exceed the buffering capacity of the soil profile.
6. The Discharger shall not discharge process wastewater to the Use Area when soils are saturated (e.g., during or after significant precipitation).
7. Any irrigation runoff shall be confined to the Use Area and shall not enter any surface water drainage course or storm water drainage system.
8. Discharge of process wastewater to any land not having a fully functional tailwater/runoff control system is prohibited.
9. Irrigation pipelines shall be flushed with fresh water after wastewater application as often as needed to ensure continuous compliance with Discharge Specification C.7.
10. The Use Area shall be managed to prevent breeding of mosquitos. More specifically:
  - a. All applied irrigation water must infiltrate completely within 48-hours;
  - b. Ditches not serving as wildlife habitat shall be maintained free of emergent, marginal, and floating vegetation; and
  - c. Low-pressure and unpressurized pipeline and ditches accessible to mosquitos shall not be used to store recycled water.

**E. Solids Disposal Specifications**

1. Any drying, handling, and storage of solids at the Plant shall be temporary, and controlled and contained in a manner that precludes the development of nuisance odor conditions and minimizes leachate formation and infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations of this Order. Solids removed during garlic processing shall be collected and shipped off-site as a commodity. Solids removed from the wastewater pond shall be disposed of offsite at a facility permitted to accept the waste, or in accordance with a technical report

(including a thorough characterization of the solids and assessment of potential groundwater degradation resulting from disposal) prepared by a civil engineer licensed in California and approved by the Executive Officer.

2. Any proposed change in solids use or disposal practices shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

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

1. Release of waste constituents associated with the discharge shall not cause or contribute to groundwater containing concentrations of waste constituents in excess of concentrations specified below or background water quality, whichever is greater.
  - a. Nitrate (as nitrogen) of 10 mg/L.
  - b. For constituents identified in Title 22, concentrations in excess of the MCLs quantified therein.

#### **G. Provisions**

1. The Discharger shall comply with Monitoring and Reporting Program R5-2013-XXXX, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.
2. 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 a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provisions."
3. As a means of discerning compliance with Discharge Specification C.7, the dissolved oxygen (DO) content in the upper one foot of any wastewater storage unit (i.e., the wastewater pond) shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any 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.
4. The Discharger shall install and maintain a representative groundwater monitoring well network consistent with the requirements of the Order issued pursuant to Water Code section 13267 by the Executive Officer in a letter to the Garlic Company dated 23 August 2013, and applicable well standards described in Finding 37 of this Order.
5. The Discharger shall operate and maintain all wastewater storage units sufficiently to protect the integrity of containment dams and berms 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 (measured vertically from the lowest possible point of overflow). As a means of

management and to discern compliance with this Provision, the Discharger shall install and maintain in each pond permanent markers with calibration that indicates the water level at design capacity and enables determination of available operational freeboard.

6. On or about **1 October** of each year, available wastewater storage capacity shall at least equal the volume necessary to comply with Provisions G.5.
7. **By 1 June 2014**, the Discharger shall provide a technical report for Executive Officer approval demonstrating that pond seepage of waste will not cause or contribute to groundwater containing concentrations of waste constituents in excess of groundwater limits (Groundwater Limitation F.1). As-built drawings and leakage testing results for a completed, lined wastewater pond (comparable to the geomembrane-lined pond proposed in February 2013) would satisfy this requirement.
8. **By 1 June 2014**, the Discharger shall provide a technical report that includes an updated water balance for each month of a 100-year return frequency wet year. The technical report shall demonstrate the Plant and wastewater pond comply with Discharge Specifications C.5 and C.6 and Provision G.5 of this Order and are designed, constructed, operated, and maintained to:
  - a. Prevent inundation or washout due to floods with a 100-year return frequency; and
  - b. Maintain sufficient storage capacity for a 100-year wet year with associated ancillary inflow and infiltration during the winter and reduced crop water demand.
9. **By 1 June 2014**, submit a technical report that describes a Salinity and Nutrient Management Plan. The technical report shall be consistent with the reports required by Provisions G.7 and G. 8 and include a:
  - a. Salinity Control Plan, with salinity source reduction goals and a time schedule to meet the goals. The Salinity Control Plan should also identify any additional methods that could be used to further reduce the salinity of the discharge to the maximum extent feasible, include an estimate on load reductions that may be attained through the methods identified, and provide a description of the tasks, cost, and time required to investigate and implement various elements in the Salinity Control Plan.
  - b. Nutrient Management Plan, which shall include at a minimum:
    - i. a description of the disposal area and storage facilities;
    - ii. a description of the types of crops to be grown with their water and nutrient uptake rates and the required leaching fraction;
    - iii. supporting data and calculations for monthly and annual water, nutrient, and salt balances, including the mass of water, nutrients, and salt expected to leach below the root zone;
    - iv. specific management practices that will ensure wastewater, irrigation water,

- and commercial fertilizers are applied at agronomic rates optimized to limit groundwater degradation;
- v. a coordinated sampling and analysis plan for monitoring soils, wastewater, and plant tissue to verify the nutrient and salt balance; and
  - vi. a system of record keeping.
10. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.
  11. 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.
  12. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.
  13. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board 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 the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
  14. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger only when the operation is necessary to achieve compliance with the conditions of this Order.

15. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.
16. 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.
17. 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.
18. In the event of any change in control or ownership of the plant, 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 the Central Valley Water Board.
19. 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. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.
20. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the Plant for reference by operating personnel. Key operating personnel shall be familiar with its contents.
21. If the Central Valley Water Board determines that the discharge has a reasonable potential to cause or contribute to an exceedance of a water quality objective, or to create a condition of nuisance or pollution, this Order may be reopened for consideration of additional requirements.
22. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan amendment that will establish a salt and nitrate management plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objectives are to be interpreted for the protection of agricultural use. If new information or evidence indicates that groundwater limitations different than those prescribed herein are appropriate, this Order will be reopened to incorporate such limits.
23. 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 XX December 2013.

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PAMELA C. CREEDON, Executive Officer

Order Attachments:

- A. Site Map
- B. Process Flow Diagram

Monitoring and Reporting Program R5-2013-XXXX  
Information Sheet  
Standard Provisions (1 March 1991)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013- XXXX

FOR  
THE GARLIC STORAGE COMPANY, LLC  
SHAFTER GARLIC PROCESSING PLANT  
KERN COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to Water Code 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 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 sampling events, 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.

### PRE-SCREEN MONITORING

Samples shall be collected of the waste stream immediately before it enters the wastewater settling and screening process. The samples should be representative of the volume and nature of the discharge. Time of collection of a grab sample shall be recorded. Pre-screen monitoring shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	mgd	Meter
Monthly	BOD <sub>5</sub>	mg/L	Grab
Monthly	TSS	mg/L	Grab

### EFFLUENT MONITORING

Effluent samples shall be collected after the wastewater pond and prior to discharge to the Use Area. Effluent samples shall be collected prior to mixing wastewater with irrigation water. 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
Weekly	pH	pH Units	Grab
Weekly	EC	umhos/cm	Grab
Weekly	12-Month Running Average EC <sup>1,2</sup>	umhos/cm	-
Weekly	BOD <sub>5</sub>	mg/L	Grab
Weekly	TSS	mg/L	Grab
Weekly	Nitrate as N (NO <sub>3</sub> -N)	mg/L	Grab
Weekly	TKN	mg/L	Grab
Weekly	Total Nitrogen <sup>1</sup>	mg/L	-
Weekly	TDS	mg/L	Grab
Weekly	FDS	mg/L	Grab
Monthly	General Minerals <sup>3</sup>	mg/L	Grab
Once <sup>2</sup>	Metals <sup>3,4</sup>	mg/L	Grab

<sup>1</sup> Calculated value.

<sup>2</sup> The EC readings for the current month averaged with EC readings for the previous 11 months.

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

<sup>4</sup> Sample collection for metals analysis shall be collected the first year following the adoption of the Order, concurrent with General Minerals sampling in July. Metals analysis shall include: aluminum, arsenic, trivalent and hexavalent chromium, copper, iron, lead, manganese, molybdenum, nickel, uranium, vanadium and zinc.

### POND MONITORING

Permanent markers (e.g., staff gages) shall be placed in the pond. The markers shall have calibrations indicating water level at the design capacity and available operational freeboard. Wastewater pond monitoring shall include at least the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Weekly <sup>1</sup>	DO	mg/L	Grab
Weekly	Freeboard	Feet <sup>2</sup>	Grab
Annually <sup>3</sup>	Solids Depth <sup>4</sup>	Feet <sup>2</sup>	Grab

<sup>1</sup> If offensive odor is detected by or brought to the attention of the Garlic Company, the Discharger shall monitor the potential source pond at least daily until dissolved oxygen > 1.0 mg/L, consistent with Provision C.7.

<sup>2</sup> To nearest tenth of a foot.

<sup>3</sup> In October.

<sup>4</sup> Thickness of settled solids at the bottom of the pond.

The Discharger shall inspect the condition of the wastewater pond weekly and record visual observations in a bound Pond Monitoring Log. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether grease, dead algae, vegetation, scum, or debris are accumulating on the pond surface and their location; whether burrowing animals or insects are present; and the color of the reservoirs (e.g., dark green, dull green, yellow, gray, tan, brown, etc.). A summary of the entries made in the log shall be included in the subsequent monitoring report.

### SOURCE WATER MONITORING

For each source, 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>
Weekly	EC	umhos/cm	Grab
Weekly	Flow-weighted EC <sup>1</sup>	umhos/cm	-
Monthly	12-Month Running Average EC <sup>2</sup>	umhos/cm	-
Quarterly	General Minerals	mg/L	Grab

<sup>1</sup> If water is from more than one source (e.g., both onsite wells), the EC reported shall be the calculated flow-weighted average results from analyses of grab samples.

<sup>2</sup> The flow-weighted EC results for the current month averaged with flow-weighted EC results for the previous 11 months.

### USE AREA MONITORING

The Discharger shall perform the following routine monitoring and loading calculations for the Use Area. In addition the Discharger shall keep a bound Use Area Monitoring log of routine monitoring observations of the Use Area, for example: areas of ponding, broken irrigation pipes, odors and/or flies within the Use 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 location	n/a	n/a
Daily	Application area	acres	n/a
Daily	Wastewater flow	mgd	Metered
Daily	Wastewater loading <sup>1</sup>	inches/day	-
Daily	Supplemental irrigation	mgd	Metered
Daily	Precipitation	inches	Rain gage <sup>2</sup>
	BOD loading rate <sup>3</sup>		
Daily	day of application <sup>1</sup>	lbs/acre	-
Daily	cycle average <sup>1</sup>	lbs/acre-day	-
	Nitrogen loading		
Monthly	from wastewater <sup>1,4</sup>	lbs/acre	-
Monthly	from fertilizer <sup>1</sup>	lbs/acre	-
Annually	Cumulative nitrogen loading <sup>1</sup>	lbs/acre-year	-
Monthly	Salt loading <sup>1,4</sup>	lbs/acre	-
Annually	Cumulative Salt loading <sup>1</sup>	lbs/acre-year	-

<sup>1</sup> Calculated value.

<sup>2</sup> National Weather Service data from the nearest weather station is acceptable.

<sup>3</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>4</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.

## SOILS MONITORING

Representative locations shall be established for soil profile sampling. At least three locations shall be selected to represent Use Area soils. At least one sample location shall be selected to represent background soil conditions. The Discharger shall submit proposed sample locations to the Central Valley Water Board for staff approval before collecting samples. Soil samples shall be collected as follows:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Annually	Soil pH	pH Units	Grab <sup>1</sup>
Annually	Electrical Conductivity	µmhos/cm	Grab <sup>1</sup>
Annually	Nitrate	mg/kg	Grab <sup>1</sup>
Annually	Ammonia	mg/kg	Grab <sup>1</sup>
Annually	TKN	mg/kg	Grab <sup>1</sup>
Annually	Total Nitrogen	mg/kg	Grab <sup>1</sup>
Annually	Soil Organic Matter	% by dry weight	Grab <sup>1</sup>
Annually	Cation Exchange Capacity	meq/100g <sup>2</sup>	Grab <sup>1</sup>

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

<sup>2</sup> Milliequivalents per 100 grams

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

Upon completion of groundwater monitoring well installation and development, the Discharger shall monitor all wells in its Groundwater Monitoring Well Network, and any additional wells installed pursuant to this Order, 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 <sup>2</sup>	feet <sup>3</sup>	-
Quarterly	pH	pH Units	Grab
Quarterly	EC	umhos/cm	Grab
Quarterly	Nitrate	mg/L (as N)	Grab
Quarterly	Ammonia	mg/L (as N)	Grab
Quarterly	TKN	mg/L	Grab
Quarterly	Total Nitrogen <sup>2</sup>	mg/L	-
Quarterly	TDS	mg/L	Grab
Quarterly	SAR <sup>2</sup>	mg/L	-
Quarterly	Total Organic Carbon	mg/L	Grab
Quarterly	General Minerals	mg/L	Grab
Once <sup>4</sup>	Metals <sup>5</sup>	mg/L	Grab

<sup>1</sup> To nearest hundredth of a foot.

<sup>2</sup> Computed value.

<sup>3</sup> To nearest hundredth of a foot above Mean Sea Level.

<sup>4</sup> In July, immediately following adoption of this Order.

<sup>5</sup> Metals analysis shall include: aluminum, arsenic, trivalent and hexavalent chromium, copper, iron, lead, manganese, molybdenum, nickel, uranium, vanadium and zinc.

## 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:	<b>1 May</b>
Second Quarter Monitoring Report:	<b>1 August</b>
Third Quarter Monitoring Report:	<b>1 November</b>
Fourth Quarter Monitoring Report:	<b>1 February</b>

**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 report transmittal letters, submitted to the Central Valley Water Board:

Discharger: The Garlic Storage Company, LLC  
Facility: Shafter Garlic Processing Plant  
MRP: R5-2013-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.

At any time henceforth, the State or Central Valley Regional Water Board may notify the Discharger to electronically submit 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. Until such notification is given, the Discharger shall submit hard copy monitoring reports, with tabulated electronic data on attached digital media (e.g., compact disc) with Annual Monitoring Reports.

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

#### **Wastewater Reporting**

1. The results of Pre-Screen Monitoring, Effluent Monitoring, and Pond Monitoring specified on pages 2 and 3.

2. For each month of the quarter, calculation of the maximum daily flow, monthly average flow, and cumulative annual flow.
3. For each of the quarters, calculation of the 12-month rolling average EC of the discharge using the EC values for that month averaged with EC values for the previous 11 months. The report shall compare the result to the 12-month rolling average EC of the source water.
4. For each month of the quarter, calculation of the monthly average percent removal of BOD<sub>5</sub> and TSS compared to the pre-screen wastewater samples.
5. A summary of the notations made in the Pond Monitoring Log and Use Area Monitoring Log during each quarter. Paper copies of log pages covering the quarterly reporting period shall not be submitted unless requested by Central Valley Water Board staff.

### **Source Water Reporting**

1. The results of Source Water Monitoring specified on page 3.
2. For each month of the quarter, calculation of the flow-weighted 12-month rolling average EC of the source water using monthly flow data and the source water EC values.

### **Use Area Reporting**

1. The results of the routine monitoring and loading calculations specified on page 4.
2. For each month of the quarter, calculation of the monthly hydraulic load for wastewater and supplemental irrigation water in millions of gallons to each discrete irrigation area.
3. 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.

### **Groundwater Reporting**

1. The results of Groundwater Monitoring specified on pages 4 and 5.
2. For each monitoring well, a table showing parameters/constituent concentrations for at least five previous years, if available, up through the current sampling period.
3. A groundwater contour map based on groundwater elevations for that sampling event. The map shall show the gradient and direction of groundwater flow under/around the facility and/or effluent disposal area(s). The map shall also include the locations of monitoring wells and wastewater discharge areas. The map shall be certified by a licensed professional engineer or geologist.

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

**Wastewater Treatment Facility Information**

1. The names, certificate grades, 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 WWTF 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 statement whether the current operation and maintenance manual, sampling plan, and contingency plan, reflect the WWTF as currently constructed and operated, and the dates when these documents were last reviewed for adequacy.
5. The results of an annual evaluation conducted pursuant to Standard Provision E.4 and a figure depicting monthly average discharge flow for the previous five calendar years.
6. A summary and discussion of the compliance record for the reporting period. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with this Order.

**Soils Reporting**

1. The results of Soils Monitoring specified on page 4.
2. For each soil boring, a table showing sample depth and parameters/constituent concentrations for at least five previous years, if available, up through the current sampling period.

**Use Area Reporting**

1. The type of crop(s) grown in the Use Areas, 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).
2. The monthly and annual discharge volumes during the reporting year expressed as million gallons and inches.
3. A monthly water balance for the reporting year that includes:
  - a. Monthly average ETo (reference evapotranspiration) – Information sources include California Irrigation Management Information System (CIMIS)  
<http://www.cimis.water.ca.gov/>

- b. 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 for irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value.
  - c. 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>.
  - d. Monthly average and annual average discharge flow rate.
  - e. 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 daily and cycle average BOD loading rates.
  - 5. The total pounds of nitrogen applied to the Use Areas, as calculated from the sum of the monthly loadings, and the total annual nitrogen loading to the Use Areas in lbs/acre-year.
  - 6. The total pounds of fixed dissolved solids (FDS) that have been applied to the Use Areas, as calculated from the sum of the monthly loadings, and the total annual FDS loading to the Use Areas in lbs/acre-year.
  - 7. A summary of the notations made in the Use Area monitoring log during the year. The entire contents of the log do not need to be submitted.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: \_\_\_\_\_  
Pamela C. Creedon, Executive Officer

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

## 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-Hour Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.		
Daily	Samples shall be collected at least 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 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		
ug/L	Micrograms per liter		
umhos/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	Chloride	Sodium
	Bicarbonate	Hardness	Sulfate
	Calcium	Magnesium	TDS
	Carbonate	Potassium	Nitrate
	General Minerals analyses shall be accompanied by documentation of cation/anion balance.		

## INFORMATION SHEET

R5-2013-XXXX  
THE GARLIC STORAGE COMPANY, LLC  
SHAFTER GARLIC PROCESSING PLANT  
KERN COUNTY

### **BACKGROUND**

The Garlic Storage Company, LLC, a California-based business (hereafter Garlic Company or Discharger), operates a garlic processing Plant (Plant) at 18602 Zerker Road in Shafter, Kern County (Sections 14 and 23, T28S, R26E, MDB&M). The Garlic Company processes raw garlic into peeled garlic cloves, garlic puree, and pickled garlic product and employs approximately 120 full-time and 100 seasonal employees. The 35-acre parcel (Kern County Assessor's Parcel Number 091-130-22) consists of a whole garlic processing facility, a garlic puree facility, cold storage unit, storm water pond, wastewater treatment system (including screens and an unlined pond), and a 16.8-acre Use Area.

### **Compliance History**

The Garlic Company has operated the Plant since 1990, never regulated by Waste Discharge Requirements. The Garlic Company formerly disposed of Plant wastewater to unlined ponds. Central Valley Water Board staff first became aware of the Garlic Company discharge when the San Joaquin Valley Unified Air Pollution Control District inquired about the Plant in October 1997 regarding nuisance odor complaints. During an inspection, Central Valley Water Board staff observed very dark wastewater with a septic odor being discharged to unlined ponds at the southern end of the Plant. Staff issued a Notice of Violation, citing nuisance conditions and discharge without WDRs.

The Garlic Company submitted a RWD in 1997 and subsequently added screening and pond aeration to improve treatment and minimize odors. In August 2000, complaints of offensive odors resumed and subsequent inspection by staff revealed poor maintenance, material changes, evidence of overflow, and offensive odors. Staff issued a Notice of Violation in October 2000, citing violation of Sections 13260 and 13264 of the Water Code. The Garlic Company submitted a revised RWD in February 2001. Both RWDs were for continuous use of the unlined reservoir and continued discharge to unlined ponds. Staff response to the RWD noted the high strength of the wastewater in terms of nitrogen and salinity.

In July 2002, staff required the Garlic Company to assess the various waste streams at the Plant and submit work plans to characterize groundwater and assess a proposed land treatment unit. The Garlic Company characterized the salinity of the Plant waste streams, but because it did not follow through with plans to discharge to an off-site land treatment unit, did not submit land treatment unit study results or a work plan to characterize groundwater.

Pursuant to Water Code section 13267, the Garlic Company was issued MRP No. 5-01-802 in September 2002. The MRP includes wastewater, water supply, disposal area, and soil monitoring requirements. The Garlic Company has generally complied with MRP 5-01-802, with the exception of reports submitted late, failure to submit signatory statements, and incomplete general minerals analysis.

In October 2006, the Garlic Company submitted a RWD in support of discharge to a 16.8-acre cropped Use Area from the unlined pond. The Discharger was issued Revised MRP No. 5-01-802 in June 2008.

The Garlic Company submitted an updated RWD in January 2012 indicating it had increased production, resulting in higher wastewater flows with higher concentrations of waste than it had proposed to discharge in its 2006 RWD. The January 2012 update proposes a scenario of a 40-acre Use Area. However, the Garlic Company did not have any more land available than the existing 16.8-

acre Use Area. The Garlic Company reported it was working toward various plans to resolve the apparent deficiency in wastewater disposal capacity. Months later, when no concrete plans had been submitted, Central Valley Water Board staff issued a letter on 25 July 2012 indicating that discharge in a manner different than what had been described in the 2006 RWD (e.g., overloading the Use Area with nutrients) would be considered a violation of Water Code sections 13260 and 13264.

The Garlic Company agreed to adhere to the 2006 RWD, but submitted another incomplete RWD in September 2012 identifying 6.5 acres of Union Pacific Railroad Company land adjacent to the Plant as additional disposal area. The Garlic Company has reportedly maintained a lease agreement with Union Pacific that includes authorization to discharge waste to its land, but has been unable to provide a copy of the lease agreement for us to review. In February 2013, staff issued a Notice of Violation of Water Code section 13264 when the Garlic Company indicated it had begun discharging to the Union Pacific land in January 2013 without having submitted a Form 200 signed by Union Pacific or waiting 140 days following submittal of the RWD.

During a meeting with Central Valley Water Board staff on 28 February 2013, the Garlic Company said that because wastewater disposal capacity limitations have potential to constrain growth or even ongoing operation of the Plant, they had begun implementing numerous operational changes at the Plant in 2012. The result has been an improved discharge quality and a reduction in wastewater flow. It informally notified Central Valley Water Board staff that more significant changes are planned for implementation this year. The Garlic Company submitted draft construction plans for a geomembrane-lined wastewater pond at the February 2013 meeting with staff, but its consultant later indicated over the phone that the Garlic Company had modified the plans and would submit additional information with an updated RWD.

Self-monitoring reports for 2012 confirm that the Garlic Company was able to reduce wastewater flows by about half without affecting production or significantly increasing waste concentrations in its discharge. The most limiting factor for discharge flow is nitrogen loading. Based on nutrient removal from double-cropping sudan grass and winter wheat on its 16.8-acre application area, an annual average flow of 0.070 mgd would match crop uptake at about 408 lbs/acre/year. Garlic production was relatively high in 2012 and wastewater flow averaged only 0.054 mgd.

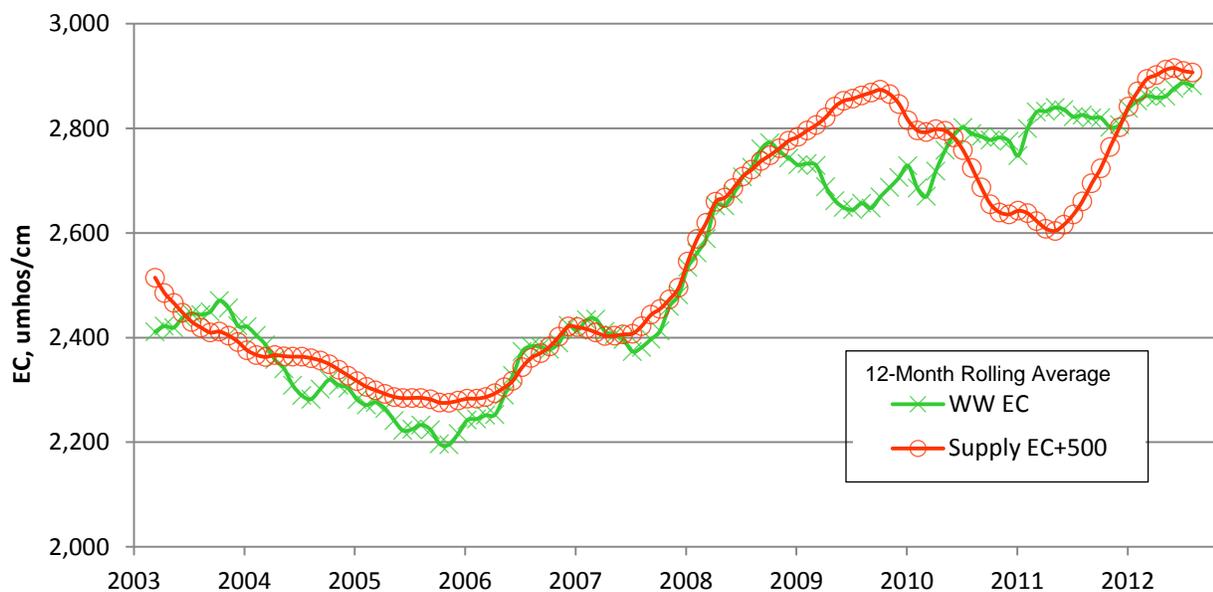
Since the February 2013 meeting, the Garlic Company reported that it would soon (i.e., by 15 March 2013) submit an updated Report of Waste Discharge describing the existing discharge and the planned discharge to 99 acres of additional agricultural land the Garlic Company owns south of the Plant adjacent to the Friant-Kern Canal. The Garlic Company has reportedly been planning with the City of Shafter, North Kern Water Storage District, and Grimmway Enterprises, Inc., to participate in a cost-sharing, joint infrastructure project that would allow the Garlic Company to construct a pipeline to convey wastewater from its Plant to the 99-acre property. The City intends to install fiber optic cable and Grimmway intends to install its own wastewater pipeline in the same trench. The joint infrastructure project is within the City limits of Shafter and the City is the lead agency for CEQA. Draft environmental documents are expected to be circulated in November.

The 2006 RWD is the most recent complete RWD for which CEQA requirements have been met. This Order includes updated information from more recent technical reports, but does not authorize proposed new Use Area acreage or increases in discharge flow for which the Garlic Company.

### **Wastewater**

The flow of wastewater ranges from about 0.0001 mgd to 0.367 mgd, with an average discharge of 0.054 mgd in 2012. During the garlic processing season (June through December), the Plant operates five days per week for 12 hours per day. In the off-season (January through June), the hours of operation are reduced to 8 to 10 per day. The Plant processes peppers for about six weeks per year, typically between May and July. The monthly average flow tends to be highest during the summer months.

The primary constituents of concern in the wastewater discharged from the Plant are nitrogen and salinity. Historically, the discharge had an average EC of 4,300  $\mu\text{mhos/cm}$ , an increase of over 2,000  $\mu\text{mhos/cm}$  over source water EC. Since 2003, when the Garlic Company stopped using sodium hydroxide to control wastewater pH, wastewater typically has not exceeded 2,900  $\mu\text{mhos/cm}$  or approximately 500  $\mu\text{mhos/cm}$  over the source water EC. The figure below depicts the 12-month rolling average wastewater EC compared with the 12-month rolling average supply water EC plus 500  $\mu\text{mhos/cm}$ .



### **Source Water**

The Plant's source water is poor quality groundwater from one well, with an average EC of about 2,300  $\mu\text{mhos/cm}$ , sulfate of 600 mg/L, chloride of 450 mg/L, and sodium of 350 mg/L. The well is screened from about 500 to 900 feet and the quality appears to change significantly with groundwater depth. Overall source water EC appears to have dropped as groundwater elevation dropped and increased as the groundwater level came back up.

Source water quality also varies significantly throughout the year, generally with poorer quality in the dry season and better quality in the wet season. The incremental increase in constituent concentrations in Plant wastewater over source water is also higher in the dry season and lower in the wet season. Staff has considered the idea that the swings in source water quality may be the result of groundwater degradation by the Garlic Company discharge. Though there is not enough groundwater

data to know for certain, based on the character of the source water, the assumed groundwater gradient, and the frequency of fluctuations, that does not appear to be the case.

The Garlic Company's use of poor quality groundwater at the Plant is the main reason it has a high strength discharge. In previous communications, staff suggested that the Garlic Company should obtain an alternative, better quality water source. The North Kern Water Storage District supplies good quality water to the area, which the Garlic Company (years ago) suggested as a possible source of water for the Plant. However, the Garlic Company is able to use poor quality groundwater at the Plant without production issues.

### **Use Area**

Wastewater will be applied at agronomic rates to sudan grass and winter wheat in the Use Area by sprinkler irrigation. The current system is a big gun solid set with six zones.

### **GROUNDWATER CONDITIONS**

The facility and discharge areas are in the Tulare Lake Basin. The depth to first groundwater is approximately 290 feet below ground surface. Based on regional maps, the groundwater gradient appears to be to the north. There are no groundwater monitoring wells onsite as of the date of this Order, and no site-specific groundwater gradient information is available. On 23 August 2013, the Executive Officer issued an Order pursuant to Water Code section 13267 requiring the Garlic Company to install and maintain a groundwater monitoring well network by early 2014 (135 days following approval of a Groundwater Monitoring Well Installation Work Plan due 18 October 2013). Historic groundwater data and maps prepared during the basin planning process in the 1970s suggest that historic oilfield discharges caused areal groundwater to contain saline waste constituents in high concentrations (EC ~3,000 umhos/cm) well before adoption of water quality plans and policies (pre-1968). The same set of maps shows nitrate as nitrogen was less than 10 mg/L; where EC is high in the area, nitrate is not necessarily high. While a few wells show nitrate as nitrogen above 10 mg/L (including one near the Plant at 27 mg/L in 1969), the data seems to indicate that areal groundwater, unaffected by discharges of waste since 1968, likely has nitrate as nitrogen less than 10 mg/L. Groundwater outside of areas thought to be impacted by saline waste discharges appears to be good quality in general (EC < 500 umhos/cm and sodium, chloride and sulfate less than 100 mg/L).

Kern County Water Agency Annual Water Supply Reports include a map with lines of equal concentration total dissolved solids based on data from samples of first encountered groundwater collected prior to 1991. The map shows a zone of groundwater in the vicinity of the Garlic Company, approximately 10 miles long and 6 miles wide, has elevated total dissolved solids ranging from about 500 mg/L to 2,500 mg/L. Based on the map, groundwater beneath the Plant has a concentration of total dissolved solids between 2,000 mg/L and 2,500 mg/L. The source of the elevated salinity has not been identified, but is likely oil field discharges from Fruitvale Oil Field or others.

The STORET (short for storage and retrieval) Data Warehouse is a repository for water quality, biological, and physical data maintained by the United States Environmental Protection Agency (US EPA). The STORET database includes groundwater quality monitoring data collected by the Department of Water Resources between 1936 and 1982 from 40 wells within about 2 miles of the Plant. The database does not include accurate well location information or well construction details, but provides the township, range, and section in which the well was installed. The data shows groundwater

was of poor quality in even the oldest well samples (e.g., sulfate at 1,300 mg/L in 1936), which predates the State Water Resources Control Board and adoption of policies regulating water quality.

## **REGULATORY CONSIDERATIONS**

### **Basin Plan**

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 umhos/cm over source water or a maximum of 1,000 umhos/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 umhos/cm, a chloride content of 175 mg/L, or a boron content of 1.0 mg/L.

The Basin Plan allows an exception to the EC limit of source water plus 500 umhos/cm where the discharge exhibits a disproportionate increase in EC over the EC of source water due to unavoidable concentrations of organic dissolved solids from the raw food product, provided water quality objectives are met. This exception appears to apply because, although the fraction of total dissolved solids that are volatile (versus fixed/inorganic dissolved solids) is about 7 percent, it represents almost a 200-umhos/cm contribution to EC.

The Plant and Use Area are in Detailed Analysis Unit (DAU) No. 256 within the Kern County Basin hydrologic unit. The Basin Plan designates the beneficial uses of groundwater in this DAU as municipal and domestic supply, agricultural supply, and industrial service and industrial process supply.

The Basin Plan includes a water quality objective for chemical constituents that requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Garlic Company discharge exceeds the Recommended and Upper MCLs for EC and TDS, and MCLs for chloride and sulfate.

The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective. With good quality groundwater and Class II-s soils (Wasco sandy loam) the area is suitable for most crop types including sensitive or moderately salt sensitive crops such as strawberries, melons, or stone fruit.

The Basin Plan states that in instances where uncontrollable factors have already resulted in water quality objectives being exceeded, controllable factors are not allowed to cause further degradation of water quality. Controllable water quality factors are those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject

to the authority of the State Water Board or the Regional Water Board, and that may be reasonably controlled.

Uncontrollable factors (i.e., historic oil field discharges) have resulted in groundwater water quality objectives for salinity being exceeded in the vicinity of the Plant. Pursuant to the Basin Plan, discharge from the Plant may not cause further degradation of groundwater with saline waste constituents, but the Garlic Company is not required to improve the quality of degraded groundwater.

### **Treatment and Control Practices**

The Garlic Company implements treatment and control of the discharge that incorporates: (a) water conservation measures (i.e., recirculating flume) that result in a lower mass discharge of salt; (b) mechanical solids removal (wastewater screening); (c) organic loading rates consistent with EPA recommendations and unlikely to cause unacceptable groundwater degradation; (d) application of nitrogen at agronomic rates; (e) geomembrane-lined, aerated wastewater pond required by Provision G.7; and (f) implementation of the Salinity and Nutrient Management Plan required by Provision G.9.

### **Antidegradation**

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 degrade groundwater include salinity and nutrients. Groundwater beneath the Plant was degraded beyond water quality objectives for salinity before establishment of the water quality objectives. The salinity of wastewater, with an average EC of 2,500  $\mu\text{mhos/cm}$ , is expected to be less than that of first encountered groundwater, which is thought to have an EC of approximately 3,000  $\mu\text{mhos/cm}$ . No degradation beyond existing conditions is expected. This Order establishes groundwater limitations that do not authorize degradation over this background quality.

Regarding nutrients, the receiving groundwater, according to regional maps and historic groundwater data, generally appears to have a nitrate as nitrogen concentration of less than 10 mg/L. In 2012, wastewater from the Plant had an average total nitrogen concentration of 32 mg/L. Without further removal, most of the nitrogen in the discharge would likely convert to nitrate and cause groundwater nitrate to exceed the MCL.

There are two potential sources for nitrate to reach groundwater. The first is percolation from the unlined pond. The second potential path is the cropped Use Area. The Garlic Company reports that it has switched crops from alfalfa to a double-cropping plan with sudan grass and winter wheat on the 16.8-acre Use Area. As mentioned above, the Garlic Company has not submitted an updated nitrogen balance. Staff typically accepts nitrogen uptake rate estimates of up to 440 lbs/acre/year for double-cropped sudan grass and winter wheat. However, nitrogen uptake estimates need to take into account yield reductions due to the elevated salinity of the discharge. For the purpose of nitrogen balance calculations, 90% of 440 lbs/acre/year (408 lbs/acre/year) is appropriate. This Order limits annual average wastewater flow to no more than 0.070 mgd, which is the flow associated with this estimated nitrogen uptake.

Wastewater flow exceeds crop water demand from November through March. In a 100-year wet year, the cropped area could be irrigated with up to 4 inches of excess water per month over the winter. Since wastewater nitrogen is almost exclusively in the form of organic nitrogen (30 mg/L out of 32 mg/L), it is expected to be relatively immobile in soil until it converts to nitrate. Organic nitrogen discharged to the Use Area during periods when no crops are being grown is expected to be taken up by crops during subsequent months as it converts to nitrate and advances through the root zone.

The mass of nitrogen that gets transmitted to groundwater through percolation from the wastewater pond is unknown. However, even if 50 percent denitrification occurs beneath the existing unlined pond, the discharge may still cause groundwater to exceed the MCL for nitrate. As mentioned above, the Garlic Company submitted plans for a lined pond, which would address the issue of nitrogen percolating from the existing unlined pond. This Order sets a groundwater limit of 10 mg/L nitrate as nitrogen or baseline groundwater quality, whichever is higher. In addition to flow limits to prevent BOD overloading and hydraulic overloading, this Order also includes a discharge specification that limits annual wastewater flow to no more than agronomic rates for nitrogen.

Provision G.7 of this Order requires implementation of a Salinity and Nutrient Management Plan and Provision G.6 requires construction of a lined pond (as proposed by the Discharger) according to a short time schedule. Implementation of a nutrient management plan including management practices that will ensure wastewater, irrigation water, and commercial fertilizers are applied at agronomic rates is considered BPTC for nitrogen and should preclude degradation of groundwater for nitrate from discharge to the Use Area.

### **Title 27**

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

### **California Environmental Quality Act**

The Garlic Company Plant and the associated wastewater discharge have been in existence at the current location, operating in a similar fashion for nearly 25 years. When the Garlic Company began operating the existing Plant in 1990, the location was an unincorporated area of Kern County zoned exclusively for agriculture. Zoning allowed for fruit, vegetable, and plant product processing (cold storage, packing, preserving, canning, and shipping) facilities and the County considered the project exempt from California Environmental Quality Act (CEQA) requirements. The Air District gave the Garlic Company an Authority to Construct (a temporary permit) for an air quality control device, but did not find that the project required a CEQA document.

In 1997, the City of Shafter expanded the sphere of influence of the City east to Highway 99 and south to the Friant-Kern Canal, an area that includes the Plant and Use Area. The City assigned industrial zoning to the parcel and did not require any discretionary permits that would trigger an environmental review pursuant to CEQA.

The Discharger submitted additional information in 1997, 2001, 2006, and 2012 updating the status of the Plant's continued operation. As such, the adoption of this Order for an existing facility is exempt from the requirements of the California Environmental Quality Act 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 the following effluent flow limits: monthly average discharge of 0.083 mgd from January to June, 2.3 mgd; monthly average discharge of 0.125 mgd from July to December; a maximum daily discharge of 0.183 mgd; and a total annual discharge of 25.5 million gallons.

The pH of the discharge shall not be less than 6.5 or greater than 8.5 pH units. The 12-month rolling average average EC of the discharge shall not exceed the 12-month flow weighted average EC of the source water plus 600 umhos/cm (reported on a monthly basis).

The proposed Order also requires the Discharger to provide a demonstration the Plant and wastewater ponds are designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency, have sufficient storage and disposal capacity to maintain 2 feet of freeboard over a 100-year return frequency wet year, and preclude seepage of waste constituents in a mass or concentration that could cause violation of Groundwater Limitations of the proposed Order.

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 BOD cycle average and instantaneous loading limit to the Use Area of 50 lbs/acre/day and 150 lbs/acre/day, respectively. In order for the BOD loading specification to be revised, the Discharger shall submit a technical report justifying how the revision will not degrade or threaten to degrade groundwater quality. Central Valley Water Board would consider any justified change through amendment of this Order.

In addition, application of waste constituents to the Use Area shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive loading of the Use Area, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the annual crop demand.

### **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 for failure to submit required monitoring and technical reports.

The proposed Order includes monitoring requirements for monitoring wastewater screening efficiency, effluent wastewater, pond operation, source water, soils in the Use Area, and groundwater quality through a groundwater monitoring well network. In addition, the proposed Order requires monitoring of the wastewater and solids loading calculations for organics, nutrients, and salts. This monitoring is necessary to characterize the discharge, and 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

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THE GARLIC STORAGE COMPANY, LLC  
SHAFTER GARLIC PROCESSING PLANT  
KERN COUNTY

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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.