CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2007-0139

REQUIRING
MUSCO FAMILY OLIVE COMPANY
AND
THE STUDLEY COMPANY
WASTEWATER TREATMENT AND LAND DISPOSAL FACILITY
SAN JOAQUIN COUNTY

TO CEASE AND DESIST
FROM DISCHARGING CONTRARY TO REQUIREMENTS

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

1. Musco Family Olive Company operates an olive brining and packaging plant south of Tracy, near Patterson Pass Road. The facility (Assessor's Parcel Numbers 209-11-18, 209-11-31, 209-11-32, 251-32-08, 251-32-09) is in Section 34, T2S, R4E, and Section 4 of T3S, R4E, MDB&M. Musco operates the facility on land leased from the Studley Company. The Studley Company is a limited liability partnership owned by the Musco family. Musco Family Olive Company and the Studley Company are hereafter referred to jointly as 'Discharger'.

2. Wastewater disposal at the facility is regulated by two separate Waste Discharge Requirements (WDRs). WDRs Order No. R5-2005-0024 regulates the discharge of concentrated brines to two Class II surface impoundments under Division 2, Title 27, California Code of Regulations (27 CCR or Title 27). These brines are classified as designated wastes pursuant to Title 27. WDRs Order No. R5-2002-0148 regulates the discharge of less concentrated wastewaters that are applied to land. This Order consolidates the Regional Water Board's previous requests and requirements for data and other information into a single enforcement order.

3. Wastewater is collected throughout the facility by floor drains and is piped to a central collection area from which it either is directed to the Class II surface impoundments or is pumped to a 200,000-gallon, covered, above-ground surge tank. This tank is a recent replacement for the unlined, million-gallon pond described in the land application WDRs.

4. Wastewater is pumped from the surge tank to an unlined, 84-million gallon storage reservoir prior to land application. The reservoir is equipped with aerators to reduce odors and provides some biological treatment. From the storage reservoir, wastewater is applied to approximately 200 acres of land application fields.

5. The discharge of the designated waste brines to the Class II surface impoundments was first regulated under Title 27 WDRs adopted in 1986. At that time, the facility had one impoundment with a capacity of 38.5 acre-feet (Pond A). In 1996, the Regional Water Board adopted revised WDRs to cover the addition of a second impoundment with a

capacity of 32.3 acre-feet (Pond B). On 27 January 2005, the Regional Water Board adopted the current Title 27 WDRs, Order No. R5-2005-0024, for the two surface impoundments.

6. The Regional Water Board first adopted WDRs for land application of process wastewater at the Musco facility in 1987. The first WDRs authorized the discharge of approximately 10,000 gallons per day (gpd) to 4.5 acres of land. In 1997, the Regional Water Board adopted revised WDRs, Order No. 97-037, to reflect the Discharger's increased process wastewater flow rate of 200,000 gallons per day, and authorized the discharge of 500,000 gpd to 200 acres of land. On 6 September 2002, the Regional Water Board adopted WDRs Order No. R5-2002-0148 to allow an increased flow rate of 800,000 gpd of olive processing wastewater to be applied to the same 200 acres of land. WDRs Order No. R5-2002-0148 included limitations to minimize pond odors, effluent limitations to limit salt loading rates to the land disposal areas, specifications to ensure the proper operation and maintenance of the land disposal areas, provisions requiring the performance of certain tasks and submittal of certain technical reports, and monitoring and reporting requirements.

7. The complex hydrogeology and incomplete background groundwater quality data resulted in the Regional Water Board establishing interim effluent limitations for total dissolved solids (TDS), sodium, and chloride in WDRs Order No. R5-2002-0148. These effluent limits were set above the presumed background groundwater concentrations, and the Order required the Discharger to (a) complete a Background Groundwater Quality Study, and (b) propose final background groundwater concentrations and final effluent limitations within two years. The Order stated that the final effluent limitations were expected to be more restrictive than the interim effluent limitations.

8. On 30 January 2007, the Discharger submitted an *Amended Report of Waste Discharge* (Amended RWD). The Amended RWD included a request for revision of the current WDRs, as well as proposals for completion of technical studies and projects. Regional Water Board staff determined that the Amended RWD was incomplete. This Order requires the Discharger to comply with its current WDRs (with the exception of the interim effluent limitations), provide additional data, and submit a revised RWD. This Order also consolidates outstanding requirements from WDRs Order No. R5-2002-0148 for submittal of reports.

Previous and Current Orders

9. On 17 November 2000, the Executive Officer issued Cleanup and Abatement Order (CAO) No. 5-00-717 due to wastewater spills to surface waters and surface water drainage courses. Although the Discharger submitted most of the technical reports required by the CAO, the treatment system improvements were not constructed. Therefore, the Discharger failed to comply with its WDRs and CAO.

10. On 25 January 2002, the Regional Water Board adopted Time Schedule Order (TSO) No. R5-2002-0014 pursuant to Section 13308 of the California Water Code (CWC), requiring the Discharger to submit delinquent reports required by WDRs No. 97-037 and the CAO.

11. On 9 April 2002, the Executive Officer issued Administrative Civil Liability (ACL) Complaint No. R5-2002-0502 in the amount of $150,000, which addressed civil liabilities for failure to comply with the CAO from the date of the CAO issuance through issuance of TSO No. R5-2002-0014. The Discharger paid the liability in full.

12. On 6 June 2002, the Regional Water Board revised TSO No. R5-2002-0014 to extend some compliance dates and to require completion of additional tasks. The revised Time Schedule Order was renumbered to R5-2002-0014-R01.

13. On 6 September 2002, the Regional Water Board adopted WDRs Order No. R5-2002-0148 and CAO No. R5-2002-0149. The CAO required the Discharger to achieve full compliance with WDRs by 6 September 2004. Because the Discharger could not immediately comply with certain interim effluent limits contained in the new WDRs, the CAO contained a two-year schedule to attain compliance.

14. On 6 August 2004, the Executive Officer issued ACL Complaint No. R5-2004-0534 in the amount of $493,500 for violations of revised TSO No. R5-2002-0014-R01 through 31 May 2004. It is anticipated that ACL No. R5-2004-0534 will be settled at the same time that this Order is adopted.

15. On 18 May 2007, Regional Water Board staff distributed a draft revised monitoring and reporting program (MRP) for public review. It is anticipated that the revised MRP will be signed by the Executive Officer in October 2007.

Basis for this Order

16. As described in Findings below, the Discharger has violated numerous Discharge Prohibitions, Discharge Specifications, Effluent Limitations, and Land Application Areas Specifications contained in WDRs Order No. R5-2002-0148, as well as the Effluent Limitations in CAO Order No. R5-2002-0149.

17. The specific items violated in WDRs Order No. R5-2002-0148 are as follows:

    a. Discharge Prohibition A.1 states: “The direct or indirect discharge of wastes to surface waters or surface water drainage courses is prohibited.”

    b. Discharge Prohibition A.2 states: “Unless specifically allowed by the Executive Officer, the direct or indirect discharge of wastes within 100 feet of a surface water or surface water drainage course is prohibited.”

    c. Discharge Prohibition A.3 states: “Bypass or overflow of unscreened waste, or overflow of untreated or partially treated waste, is prohibited.”

d. Discharge Specification B.1 states: "The monthly average flow of wastewater and stormwater from the facility to the 1-million gallon settling pond shall not exceed 800,000 gpd." (It is noted that the 1-million gallon pond has been replaced by a surge tank, but that this flow limit is still applicable as it is the only flow limit in the WDRs).

e. Discharge Specification B.4 states: "Nuisance odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger."

f. Discharge Specification B.5 states: "As a means of discerning compliance with Discharge Specification No. B.4, the wastewater from 1 to 2 feet below the surface of the 1-million and 84-million gallon ponds shall maintain the following at all times:
   a. A dissolved oxygen concentration greater than 2 mg/l;
   b. A dissolved sulfide concentration less than 0.1 mg/l; and
   c. A pH between 7.5 and 8.5 standard pH units."

g. Discharge Specification B.6 states: "The discharge to conveyance systems, settling basins, ponds, or land application areas not adequately maintained to prevent off-site odor nuisance, fly breeding, or mosquito breeding is prohibited."

h. Discharge Specification B.9 states: "Pond freeboard shall never be less than two feet in any pond as measured vertically from the water surface to the upper surface of the lowest adjacent dike or levee."

i. Effluent Limitation C.1 states: "Wastewater discharged into the 1-million gallon settling pond shall not exceed the following interim effluent limits. Upon completion of the site-specific background groundwater quality study described in the Provisions, the Discharger may submit a Report of Waste Discharge requesting modified effluent limitations.

Constituent	Concentration
Total Dissolved Solids	2,047 mg/l
Sodium	597 mg/l
Chloride	601 mg/l"

(This effluent limitation was modified by CAO No. R5-2002-0149 as described in Finding No. 18, below; it did not take effect until 6 September 2004).

j. Effluent Limitation C.2 states: "The maximum total nitrogen loading to the LTUs shall not exceed 480 lbs/ac•year, or if the crop uptake is lower, the nitrogen loading shall not exceed the agronomic rate for the crop grown. Plant available nitrogen shall be calculated as 100-percent of the total nitrogen content of the waste, unless and until the Discharger demonstrates that another proportion is technically justified, as described in the Provisions."

k. Effluent Limitation C.3 states: "The maximum BOD_5 loading to the LTUs shall not exceed any of the following:
   a. 300 lbs/acre on any single day;
   b. 100 lbs/acre•day as a 7-day average;
   c. The maximum loading rate that ensures that the discharge will not create a nuisance."

l. Effluent Limitation C.4 states: "Wastewater discharged to the LTUs shall not have a pH of less than 6.5 or greater than 8.5. "

m. Land Area Application Specification D.1 states: "The discharge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications."

n. Land Area Application Specification D.2 states; "Crops shall be grown on the application areas. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, and consumptive use of water and irrigation requirements. Cropping activities shall be sufficient to take up all the nitrogen applied. Crops shall be harvested and removed from the land application areas."

o. Land Area Application Specification D.7 states: "Irrigation with process wastewater shall not be performed within 24 hours of a forecasted storm, during a precipitation event, 24 hours after a precipitation event, or when the ground is saturated."

p. Land Area Application Specification D.9 states: "The discharge of process wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the land application areas."

q. Land Area Application Specification D.12 states: "Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives."

r. Land Area Application Specification D.13a states: "The land application area shall be managed to prevent breeding of mosquitoes. More specifically: (a) all applied irrigation water must infiltrate completely within 24 hours."

s. Land Area Application Specification D.14 states: "Discharges to the land application area shall be managed to minimize both erosion and runoff from the land application area."

t. Land Area Application Specification D.15 states: "There shall be no standing water in the land application areas 24 hours after wastewater is applied, except during periods of heavy rains sustained over two or more consecutive days."

18. The specific item violated in CAO Order No. R5-2002-0149 is as follows: "The Discharger shall comply with the following effluent limitations according to the time schedule as shown in the table below:

Constituent	6 Sept 2002	6 Sept 2003	6 Sept 2004
Total Dissolved Solids	4,700 mg/L	3,373 mg/L	2,047 mg/L
Sodium	739 mg/L	668 mg/L	597 mg/L"

19. Following an inspection of the Musco facility on 9 October 2002, Regional Water Board staff issued a Notice of Violation for violations of WDRs No. R5-2002-0148 and TSO No. R5-2002-0014-R01. Violations included an ongoing discharge of wastewater to a surface water drainage course from the million-gallon pond, the bypass of unscreened waste, discharge to a pond with inadequate freeboard, nuisance odors noted at a private residence off-site of the Musco property, dissolved oxygen concentrations and pH in million-gallon pond outside the permitted range, fly breeding, discharge of designated waste to land, and failure to grow crops in the 95-acre land application area.

20. Following an inspection of the Musco facility on 12 March 2003, Regional Water Board staff issued a Notice of Violation for violations of WDRs No. R5-2002-0148. Violations included dissolved oxygen concentrations and pH in pond and reservoir outside of the permitted range, poor operations of systems and equipment, and exceedance of the effluent limitation for chloride. The Notice of Violation also described threatened violations of land application and solids disposal specifications, including application of wastewater to areas with poor crop condition, excessive erosion and runoff, and overloading of soils with solid waste application rates.

21. On 10 July 2003, Regional Water Board staff issued a Notice of Violation for the detection of nuisance odors in the area surrounding the Musco facility on 30 May 2003. The detection of nuisance odors off-site of the Musco property violated WDRs No. R5-2002-0148 and TSO No. R5-2002-0014-R01.

22. On 1 March 2004, Regional Water Board staff issued a Notice of Violation for violations of monitoring and reporting requirements contained in WDRs No. R5-2002-0148 and TSO No. R5-2002-0014-R01.

23. On 28 April 2004, the Executive Officer issued a Notice of Violation for violation of WDRs No. R5-2002-0148, Discharge Prohibition A.1, which prohibits the discharge of waste to a surface water drainage course, and TSO No. R5-2002-0014-R01, Task 16, which required submission of a report describing the reservoir construction details and showing that a liner adequate to prevent the stored wastewater from impacting the groundwater had been installed. Although the Discharger did not agree that the seepage from the 84-million gallon reservoir constituted a discharge of waste, the Discharger agreed to capture seepage below the dam and place it back into the reservoir.

24. Following an inspection of the Musco facility on 23 June 2004, Regional Water Board staff issued a Notice of Violation for violations of WDRs No. R5-2002-0148. Violations included discharge of wastewater to a surface water drainage course, overspray of

wastewater to off-site property, discharge of wastewater at rates in excess of agronomic uptake, lack of crop growth and lack of nitrogen uptake, excessive erosion and runoff from land application areas.

25. Following inspections of the land application areas on 23 March, 18 May, and 12 October 2006, Regional Water Board staff issued a Notice of Violation that transmitted inspection reports for the three inspections. The Discharger was cited for the discharge of wastes to surface water drainage courses, bypass or overflow of untreated or partially treated waste, application of wastewater to land treatment units not having a fully functional tailwater/runoff control system, discharge of wastewater to the prohibited 'irrigation checks' area, discharge to conveyance systems and land application areas not maintained to prevent fly breeding, failure to operate all systems and equipment to maximize treatment of wastewater and optimize the quality of discharge, failure to grow crops on the application area, over-application of wastewater at rates such that water did not infiltrate completely within 24 hours, failure to manage discharges to the land application area to minimize both erosion and runoff from the land application area, and standing water in the land application areas more than 24 hours after wastewater was applied.

26. During its 12 October 2006 inspection, Regional Water Board staff observed standing, and sometimes fermenting, water in sumps, tailwater return ditches, and erosion rills at various land application areas/land treatment units throughout the site. As documented in the inspection report, large numbers of flies were seen clustered about the edges of several sumps and the eucalyptus grove. Tailwater conveyance, storage, and return systems were inadequate to allow for proper drainage of the fields. Given assertions by Musco staff that no wastewater had been applied for two to three days prior to the inspection, applied irrigation water had not infiltrated completely within 24 hours, as required by the WDRs. While a grass crop (NyPa Forage) had been planted on two-foot centers on the application areas, the grass was not actively growing on the majority of the fields receiving wastewater.

27. Following sampling inspections conducted on 6 and 14 April 2007, Regional Water Board staff issued a Notice of Violation on 7 May 2007 that transmitted inspection reports, including sample results, for the two inspections. The NOV cited the Discharger for discharge of wastewater outside the designated disposal areas and failure to manage discharges to the land application area to minimize both erosion and runoff from the land application area.

Groundwater Quality

28. WDRs Order No. R5-2002-0148 includes Provision G.2.f, which requires submittal of a *Background Groundwater Quality and Percolate Quality Report* by 6 September 2004. The report was to include a summary of monitoring data, a calculation of the concentrations in background monitoring wells and lysimeters, and a comparison of background groundwater quality to that in wells and lysimeters used to monitor all land application areas.

29. The Discharger submitted a *Background Groundwater Quality Report*, dated 30 July 2004, in partial fulfillment of WDRs Order No. R5-2002-0148, Provision G.2.f. The report contained no information regarding percolate quality. The Discharger submitted a workplan for installation of lysimeters in its RWD dated 30 July 2004. The Discharger did not receive comments or approval of that workplan from the Regional Water Board and did not proceed with the lysimeter installations. To date, no lysimeters have been installed on-site in the land application areas.

30. To comply with Title 27, WDRs Order No. R5-2005-0024 required the Discharger to submit a Water Quality Protection Standard (WQPS). Although this document was submitted in May 2005, additional investigative work regarding background groundwater conditions is ongoing, and the WQPS has not yet been established.

31. In a memorandum dated 12 December 2006, and transmitted to the Discharger on 15 December 2006, Regional Water Board staff provided an evaluation of groundwater quality at the Musco site. This evaluation was conducted to determine whether the discharge of waste had impacted the quality of the groundwater underlying the site and to evaluate recommendations made in Musco's *Background Groundwater Quality Report*. Regional Water Board staff arrived at the following conclusions:

    a. On-site monitoring well data was not collected prior to the initiation of land discharge; therefore, pre-discharge groundwater quality at the Musco property cannot be established using on-site monitoring wells. Off-site monitoring wells are necessary to determine background groundwater quality and to develop a Water Quality Protection Standard.

    b. Process wastewater storage and application has resulted in increases in groundwater concentrations over time, causing degradation or pollution of the underlying groundwater. Although background groundwater concentrations have not yet been determined, the data clearly shows that the continuing current discharge loading rate to land does not protect water quality. Additional monitoring wells are needed to assess the extent of groundwater impacts.

32. Regional Water Board staff's 15 December 2006 letter requested the Discharger to do the following:

    a. Install shallow groundwater monitoring wells at specified locations to establish background groundwater concentrations in the shallow zone.

    b. Install off-site groundwater monitoring wells at specified locations to assess the extent of groundwater impacts.

    c. Commence sampling of a nearby artesian well.

    d. Perform an analysis of sulfate concentrations in specified wells to determine the origin of the elevated concentrations.

e. Propose, by 31 January 2007, measures to prevent further leakage of wastewater from the million-gallon pond and the 84 million-gallon reservoir.

f. Submit, by 31 January 2007, a proposed schedule for completing the above five items.

g. Develop and submit a Water Quality Protection Standard (WQPS) by 31 January 2008.

33. The Discharger has proposed a phased approach to install the wells. The first phase wells were installed in May and June 2007, while the second phase wells will be installed in May 2008. This Order incorporates those dates. Regional Water Board staff and the Discharger have met recently to discuss the geologic conceptual site model and to determine the most appropriate actions to fill in the data gaps.

34. To eliminate the groundwater impacts from the unlined million-gallon pond, the Discharger proposed to replace the pond with a 200,000-gallon, powder-coated steel above-ground tank to be used as a pumping station. The replacement should be completed by mid-September 2007. This Order incorporates the Discharger's time schedule, and requires that the soils beneath the million-gallon pond be characterized.

Land Treatment Units and Reservoir

35. The areas where wastewater is applied to land at the Musco facility are referred to in WDRs Order No. R5-2002-0148 as either "land application areas" or "land treatment units." As noted in the WDRs, the term "land treatment unit" or "LTU" has a special meaning under Title 27. The term refers to a type of Class II waste management unit where designated wastes are applied to land to be degraded, transformed, or immobilized in the upper five feet of soil.

36. The current WDRs required certain reports to demonstrate that the discharge of wastewater to the land application areas either meets the Title 27 criteria for a LTU or is properly subject to exemption from Title 27 because the discharge complies with the Basin Plan and State Water Board Resolution 68-16 (the anti-degradation policy).

37. WDRs Order No. R5-2002-0148 includes Provision G.2.b, which requires the submittal of a workplan to characterize the percolate quality under the LTUs. The Discharger submitted a workplan for the required technical report. Following discussions with Regional Water Board staff (Finding 45), the Discharger agreed to submit a revised workplan and schedule in July 2007. This Order requires the work to be completed, and an analysis of the assimilative capacity of the land disposal areas be submitted.

38. As described earlier, the land disposal areas have had significant issues with erosion; significant volumes of eroded material have entered the 84-million gallon reservoir. The Discharger has estimated that the reservoir's storage capacity has been reduced by two million gallons since its completion in January 2003. A 22 November 2006 Notice of Violation required, in part, that the Discharger submit a *Wastewater Treatment Facility*

Capacity Evaluation Report by 10 January 2007. In response, the Discharger submitted a request for an extension to 30 September 2007 to allow time for a licensed land surveyor to survey the current geometry of the reservoir and to determine the amount of solids accumulation. This Order allows the time extension. This Order also requires a facility improvement plan if the capacity has diminished to the point of non-compliance with the WDRs.

Amended Conceptual Compliance Plan

39. The Discharger submitted an *Amended Conceptual Compliance Plan* dated 13 September 2006. This Plan examined potential options to comply with the WDRs, including the use of salt-tolerant NyPa Forage to achieve a net reduction of salts in site soils, source reduction, enhanced evaporation, the use of NyPa Forage as a bio-fuel, discharge to the City of Tracy's wastewater treatment plant, and direct discharge to the Sacramento River from the Discharger's currently closed Orland facility.

40. On 14 December 2006, Regional Water Board staff responded to Musco's *Amended Conceptual Compliance Plan*. Regional Water Board staff's response requested that additional information regarding the use of NyPa Forage as a means of achieving compliance and encouraged Musco to evaluate additional means of compliance, including treatment and Title 27 containment. The Discharger was requested to submit, by 31 January 2007, (a) the referenced initial testing and (b) mass balances on sodium, chloride, and total and fixed dissolved solids, including descriptions of assumptions regarding applied wastewater rates, runoff, infiltration, and NyPa Forage uptake and (c) a discussion of the anticipated effect(s) of precipitation and sprinkler irrigation on retention of salts in the NyPa Forage foliage.

41. The Discharger's *Soil Profile and Agronomic Report* for 2006, dated 31 January 2007, stated that "[b]*ased on sodium and chloride in NyPa forage samples, removal of more salt than applied is not projected*." Therefore, the use of NyPa does not appear to be viable as the exclusive means of compliance for continued land application of olive-processing wastewater, and therefore this Order requires the Discharger to evaluate additional methods of disposing of its wastewater.

42. The Discharger has proposed, in its *Amended Conceptual Compliance Plan* and *Amended Report of Waste Discharge,* to investigate enhanced evaporation systems as an economical means of reducing the salt loading to the land application areas. The Discharger conducted a laboratory-scale enhanced evaporation study in June 2006 and constructed and operated a pilot-scale enhanced evaporation unit in the summer of 2007.

43. Regional Water Board staff met with representatives of the Discharger on 1 June 2007 to discuss elements of the Amended Conceptual Compliance Plan and work that needed to be completed in the summer of 2007. As recorded in a 4 June 2007 follow-up letter from the Regional Water Board, the Discharger agreed to do the following:

a. Compile and submit constituent concentrations for new process waste streams through June 2007 by 16 July 2007;

b. Submit a *Million Gallon Pond Soil Characterization Workplan* to assess any impacts to the soils underlying the million-gallon pond. This workplan has been submitted;

c. Survey the 84-million gallon reservoir in September 2007;

d. Submit a revised Pan Lysimeter Installation Schedule and Workplan for installation of either pan lysimeters or alternative monitoring devices for assessing the migration of water and waste constituents through the soil column. This workplan has been submitted;

e. Assess the capacity of its existing pumps, sumps, tailwater ditches, and conveyance structures for each disposal field during summer 2007; and

f. Install and assess the performance of the pilot-scale enhanced evaporation unit.

Salt Limitations

44. WDRs Order No. R5-2002-0148 includes interim effluent limitations for total dissolved solids (TDS), sodium, and chloride of 2,047 mg/L, 597 mg/L, and 601 mg/L, respectively, pending the Discharger's completion of a site-specific background groundwater quality study. The WDRs intended that final effluent limits be developed in 2004, after determination of background groundwater concentrations. The WDRs stated that the final limits would likely be more restrictive than the interim limitations.

45. The interim effluent limitations in the WDRs were based on data from a facility water supply well using the mean concentration plus two standard deviations for certain constituents. Regional Water Board staff's recent review of the groundwater monitoring data (Finding 31) shows that it is not appropriate to use two standard deviations to develop background data, and that the interim effluent limits may not protect groundwater quality.

46. Because the Discharger could not immediately comply with the interim effluent limitations contained in the WDRs, Cleanup and Abatement Order No. R5-2002-0149 included a time schedule allowing the Discharger two years to comply with the interim limitations contained in the WDRs (as described in Finding No.18).

47. Since 6 September 2004, TDS and sodium concentrations in the discharge have averaged 3,600 mg/L and 670 mg/L, respectively, in violation of the WDRs. The Discharger has asked that future effluent limitations be based only on fixed dissolved solids, which is one component of TDS. However, the Discharger has not shown that a fixed dissolved solids limit will result in compliance with the TDS groundwater limitation. This Order provides an opportunity for the Discharger to make that demonstration.

48. In its Amended Report of Waste Discharge, the Discharger stated that 24-hour composite sampling and analysis of wastewater using a new processing method resulted in the following salt concentrations:

Constituent	Average	Range
Total Dissolved Solids	2,894 mg/L	2,020 - 3,490 mg/L
Fixed Dissolved Solids	1,897 mg/L	1,240 - 2,360 mg/L
Sodium	603 mg/L	371 - 803 mg/L

49. In the 1 August 2007 comments to the tentative Cease and Desist Order, the Discharger stated that the above values were not appropriate for setting effluent limitations, as they were from a limited data set. In response, staff evaluated the weekly monitoring conducted by the Discharger as part of its MRP. The table below provides the data from the period of 1 January 2007 through 30 May 2007 for samples collected from the million gallon pond (i.e., effluent samples). Weekly values were averaged to provide the monthly average concentration or mass load; the monthly averages were then averaged to provide the data in the table.

	Concentration, mg/l		Mass Loading, lbs/day	
Constituent	Average	Range	Average	Range
Total Dissolved Solids	3,146	2,710 to 3,522	7,320	4,316 to 8,515
Fixed Dissolved Solids	2,166	1,740 to 2,745	4,742	2,805 to 5,776
Sodium	686	529 to 869	1,520	813 to 1,945

50. In its 27 September 2007 comments to the revised tentative Cease and Desist Order, the Discharger stated that it could not meet the above mass loading limits due to anticipated increased production rates, and requested increased limits. This Order allows the requested mass loading rates, but these rates have not been reviewed in relation to potential water quality impacts. It is anticipated that these revised interim effluent limits will have no bearing on the effluent limits that will be developed as a result of the water quality studies required by this CDO.

51. This Order allows an extended schedule to comply with the interim effluent limitations in the WDRs, and sets performance-based effluent limits. While the revised interim effluent limitations contained in this Order are similar to those in CAO No. R5-2002-0149, the Discharger has reduced its water usage. Therefore, the mass loading of the constituents is less than would be allowed under the CAO. It is appropriate to set performance-based effluent limits based on both concentration and mass loading.

52. It is appropriate to provide an extended compliance schedule to comply with the interim effluent limits in WDRs Order No. R5-2002-0148 for several reasons. First, the Discharger spent significant time investigating reverse osmosis technology to reduce

wastewater salinity before concluding that it was not feasible at this facility. This delayed other compliance strategies. The Discharger is attempting to grow salt tolerant grasses at the site and has not yet been fully successful. This lack of success limits the assessment of how this grass can be used to manage salt in the land application areas. The Discharger continues to investigate groundwater conditions and has not yet established background concentrations in groundwater.

53. This Order rescinds Cleanup and Abatement Order No. R5-2002-0149 (except for the purpose of enforcement) and includes new revised interim effluent limitations for TDS, fixed dissolved solids, and sodium. These new limits are based solely on the Discharger's new processing method. The tasks required by this Order will be used to determine whether these new revised interim effluent limitations are protective of groundwater quality or whether other effluent limits will be necessary.

Site Runoff Water Quality

54. The results of the Discharger's 2006 annual soil sampling of multiple locations within the land discharge area are tabulated below, and are contrasted with a soil sample collected by Regional Water Board staff from a property adjoining the Discharger's. All samples are of the uppermost six inches of soil.

	Results, mg/kg	
Constituents	Discharger's land disposal area	Adjoining property
Sodium, average	3,628	6.9
Sodium, min-max	439-11,242	-
Chloride, average	2,695	32
Chloride, min-max	425 – 7,906	

55. Staff's inspections and the Discharger's data have shown that soil at the Musco site contains elevated concentrations of sodium, chloride, and other constituents. Salts are readily soluble in water and are likely to be dissolved by, and carried with, stormwater. Samples of stormwater runoff were collected from two of the land application areas during Regional Water Board staff's 14 April 2007 inspection. Analytical results showed chloride ranging from 750 mg/l to 1,600 mg/l, iron from 15 mg/l to 23 mg/l, sodium from 1,900 to 3,600 mg/l, total dissolved solids from 5,600 to 11,000 mg/l, and fixed dissolved solids from 6,800 to 14,000 mg/l. Given this data, stormwater runoff from the Musco site could reasonably be expected to contain salts in concentrations above water quality objectives.

56. The land application process used by the Discharger, the attendant concentration of salt in soil, and the threat to surface water from runoff are such that significant, active control measures are necessary to prevent the discharge of stormwater runoff from the site. WDRs Order No. R5-2002-0148 prohibits the discharge of stormwater. The Discharger is a private entity that, unlike public utilities, has the flexibility and capability to terminate its operations or remove them from the current site. Current means of controlling stormwater runoff, erosion, and sedimentation at the Musco site include the installation of wattles made of biodegradable material and the pumping of stormwater runoff from

sumps into the reservoir. Each of these measures must be actively maintained and/or renewed each winter. Should the Discharger cease operations at the Musco site without removing the affected soil, the site must still be maintained to prevent the discharge of contaminated stormwater off-site or to surface water drainage courses. For this reason, Stipulated Administrative Civil Liability Order and Penalty Order No. R5-2007-0138 addresses the issue of financial assurances, and requires that the Discharger provide cost estimates, a financial assurance mechanism, and a proposed schedule for funding the financial assurances. This Order requires that the financial assurances be maintained and funded as described in Order No. R5-2007-0139, and that the Discharger provides annual updates to the cost estimate for each financial assurance item.

Time Schedule Order

57. Time Schedule Order No. R5-2002-0014-R01 contains Task No. 16, which required the Discharger to, in part, submit a report showing that a liner, adequate to prevent the stored wastewater from impacting the groundwater, had been installed in the 84-million-gallon reservoir. A liner has not been installed and staff is continuing to evaluate technical data to determine whether the Discharger has achieved compliance with the objective, if not the letter, of Task 16.

58. ACL Complaint No. R5-2004-0534 specifically excluded accrued penalties for violations of Task No. 16, stating that "[s]*ubsequent violations of the WDRs or TSO, if any, in addition to confirmed violations of Task 16, will be addressed in a future complaint, as appropriate*." This Order rescinds the TSO, except for the purpose of enforcement, and carries forward the requirements of Task 16.

Regulatory Considerations

59. As a result of the events and activities described in this Order, the Regional Water Board finds that the Discharger has caused or permitted waste to be discharged in such a manner that it has created, and continues to threaten to create, a condition of pollution or nuisance. The Regional Water Board also finds that the Discharger is discharging waste in violation of WDRs No. R5-2002-0148.

60. The Regional Water Board's Basin Plan designates beneficial uses, including water quality objectives to protect the beneficial uses, and includes implementation plans to implement the water quality objectives.

61. The majority of the surface water drainage from the facility is toward the Sacramento San Joaquin Delta. Existing and potential beneficial uses of the Sacramento San Joaquin Delta include municipal and domestic supply; agricultural supply, including irrigation and stock watering; industrial process supply; industrial service supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; warm and cold migration of aquatic organisms; warm spawning, reproduction and/or early development; and navigation. Some surface water has the potential to drain into the California Aqueduct, which is a drinking water source for Southern California.

The beneficial uses of the California Aqueduct include municipal and domestic supply; agricultural supply, including irrigation and stock watering; industrial process supply; industrial service supply; hydropower generation; water contact recreation, including canoeing and rafting; non-contact water recreation; and wildlife habitat.

62. Section 13301 of the California Water Code states in part: "*When a regional board finds that a discharge of waste is taking place or threatening to take place in violation of the requirements or discharge prohibitions prescribed by the regional board or the state board, the board may issue an order to cease and desist and direct that those persons not complying with the requirements or discharge prohibitions (a) comply forthwith, (b) comply in accordance with a time schedule set by the board, or (c) in the event of a threatened violation, take appropriate remedial or preventive action*."

63. Section 13267(b) of the California Water Code 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 waste within its region, or any citizen or domiciliary, or political agency or entity of this state person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report 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*."

64. The Discharger owns and operates the facility subject to this Order. Monitoring reports and other technical reports are necessary to determine compliance with the Waste Discharge Requirements and this Order.

65. The issuance of this Order is an enforcement action by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act, pursuant to Section 15321(a)(2), Title 14, California Code of Regulations.

66. On 26 October 2007, in Rancho Cordova, California, after due notice to the Discharger and all other affected persons, the Regional Water Board conducted a public hearing at which evidence was received to consider a Cease and Desist Order.

67. Any person affected by this action of the Regional Water Board may petition the State Water Resources Control Board to review the action in accordance with Section 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, CA, 95812-0100, within 30 days of the date on which the Regional Water Board action took place. Copies of the law and regulations applicable to filing petitions

are available at www.waterboards.ca.gov/wqpetitions/index.html and will be provided upon request.

IT IS HEREBY ORDERED that Revised Time Schedule Order No. R5-2002-0014-R01 and Cleanup and Abatement Order No. R5-2002-0149 are hereby rescinded, except for the purpose of enforcement, and, pursuant to Sections 13301 and 13267 of the California Water Code, Musco Family Olive Company and the Studley Company, its agents, successors, and assigns, shall cease and desist from discharging and threatening to discharge contrary to Waste Discharge Requirements (WDRs) Order Nos. R5-2002-0148 and R5-2005-0024, and shall identify and implement facility improvements, in accordance with the scope and schedule set forth below to ensure long-term compliance with the two Orders, or any revisions to those Orders.

Each document submitted under this Order shall bear the following certification signed by the Discharger:

"*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment*."

Immediate Compliance

1. Effective **immediately**, the Discharger shall maintain compliance with Revised Monitoring and Reporting Program (MRP) No. R5-2002-0148 and with MRP No. R5-2005-0024, or any revisions to either document.

2. Effective i**mmediately**, the use of the surface water drainage course[1] crossing the Musco property to convey wastewater is prohibited.

3. Effective **immediately**, the direct or indirect discharge of stormwater that has contacted any surface used in any processing, treatment, storage, or has contacted any land application area at the Musco facility to any off-site location or surface water drainage[1] course is prohibited.

4. Effective **immediately**, no soil amendments, including fertilizer, shall be added to any land application area unless and until the Discharger submits a proposal describing the type and quantity of chemical amendment(s) to be used, the application rate, the conditions under which is will be used, the area over which it is to be used, and the anticipated effects on salt constituents within the soil column and groundwater. The

[1] The surface water drainage course referenced in this Prohibition is depicted by a blue line on the USGS topographic map

Discharger may submit one proposal covering many potential applications. The report shall be submitted 30 days prior to the first use of the selected soil amendment.

5. Effective **immediately**, the Discharger shall maintain full compliance with WDRs Order No. R5-2002-0148, except as provided below in Items 6 and 7.

6. Effective **immediately**, the Discharger shall comply with the following revised Interim Effluent Limitations for the wastewater discharged from the 200,000-gallon covered above-ground surge tank. These revised limits shall expire on 31 March 2010, at which time the Discharger shall comply with the Interim Effluent Limitations found in WDRs Order No. R5-2002-0148, or as otherwise ordered by the Regional Water Board.

Constituent	Monthly Average Concentration, mg/l	Monthly Average Mass Load, lb/day[1]
Total Dissolved Solids	3,200	14,900
Fixed Dissolved Solids	2,200	10,300
Sodium	700	3,300

[1] Mass loads shall be calculated each day an effluent sample was collected, using the sample data for that day and the flow for that day. The daily mass load values shall be averaged to arrive at the monthly average mass load.

7. Effective **immediately**, the Discharger shall maintain the pH of the wastewater from 1 to 2 feet below the surface of the 84-million gallon reservoir between 6.5 and 8.5 standard pH units at all times. These revised limitations shall expire on 31 March 2010, at which time the Discharger shall comply with the Interim Effluent Limitations found in WDRs Order No. R5-2002-0148 or as otherwise ordered by the Regional Water Board.

Former Million Gallon Pond

8. By **15 November 2007**, the Discharger shall submit a *Million Gallon Pond Replacement Report* documenting complete installation or construction of the replacement for the million-gallon pond with the tank described in Finding No. 34.

9. By **31 December 2007**, the Discharger shall submit a *Million Gallon Pond Soil Characterization Report* describing the results of the sampling program, including background samples and multiple vertical cores within the pond for total dissolved solids; fixed dissolved solids; sodium; chloride; total nitrogen; 5-day, 20ºC biochemical oxygen demand (BOD), total organic carbon, and iron. If the soils contain elevated concentrations compared to background and have the potential to adversely impact groundwater, then within **120 days** of the Executive Officer's request, the Discharger shall submit a remedial action plan.

Capacity

10. By **30 November 2007**, the Discharger shall submit an updated *Wastewater Treatment Facility Capacity Evaluation Report*. The report shall evaluate whether the entire treatment, storage, and disposal system has sufficient capacity to comply with the WDRs for the permitted flow rate of 800,000 gpd during the 100-year annual wet season and if not, what facility and/or operational improvements are necessary. If improvements are needed, the report shall provide an estimate of the time required for planning, designing, funding, and implementing those improvements, and shall describe the emergency measures that shall be taken to prevent any overflows from the reservoir or the fields. The report shall also provide a monthly water balance model, and shall include the following minimum factors:

    a. Current (2007) wastewater pond geometry as surveyed by a Professional Land Surveyor currently licensed in the state of California;

    b. Existing and anticipated solids (both organic solids and eroded sediments) accumulation in the 84-million-gallon reservoir;

    c. Maintenance of no less than two feet of freeboard in the reservoir at all times;

    d. Total crop uptake of nitrogen, given existing crop coverage of application areas;

    e. Compliance with BOD and nitrogen loading limitations;

    f. Historical local evaporation data (monthly average values);

    g. Local precipitation data with the 100-year annual total distributed monthly in accordance with mean monthly precipitation patterns;

    h. Projected long-term percolation rates (including consideration of percolation from the unlined reservoir and into the land application areas); and

    i. The effect on storage capacity due to the intake elevation on the decanter device used to withdraw wastewater from the 84-mgal reservoir.

Land Treatment Units/Land Disposal Areas

11. By **150 days from approval** of the *Work Plan for Assessment of Assimilative Capacity*, the Discharger shall submit an *Initial Status Report on Assimilative Capacity Study* documenting the installation and assessment of sampling and analytical methods proposed in the approved *Work Plan*.

12. By **15 January 2009**, the Discharger shall submit a *Final Report on Assimilative Capacity Study*. This report shall include, but not be limited to, measurements of soil and crop assimilative capacity for constituents of concern, including calcium, magnesium, sodium, potassium, bicarbonate, chloride, sulfate, total dissolved solids, and volatile dissolved solids, and an assessment of percolation quantity and quality. The report shall contain a salt loading balance, including salt concentrations in the applied wastewater, salt

removed by the NyPa grass, salt remaining in the soil, and salt which has the potential to move beyond the rooting zone. The report shall assess management practices needed to improve constituent assimilation, prevent salt buildup in soil, and provide complete breakdown of volatile dissolved solids in soil. In addition, the report shall assess the impacts and potential impacts of current and proposed waste application rates in the land disposal areas on groundwater quality.

Groundwater Characterization

13. By **15 February 2008**, the Discharger shall submit a *Report on the Phase I Groundwater Investigation and Work Plan for the Phase II Groundwater Investigation* as described herein.

The *Phase I Groundwater Investigation Report* shall include results from the hydrogeologic investigations and monitoring conducted in 2007. The report shall include the applicable information from Section 2 of Attachment A, *Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports* (which is attached hereto and made part of this Order by reference). The report shall assess the remaining information necessary to complete a *Water Quality Protection Standard Report* and identify work necessary to obtain that information.

The *Phase II Groundwater Investigation Work Plan* shall describe the work needed to complete the items listed below. The work plan shall include the information listed in Section 1 of Attachment A, but may include by reference those items in Attachment A previously submitted to the Regional Water Board, such as a sampling and analysis plan.

a. Conduct an off-site groundwater investigation east-northeast of the Musco site (Area 1).

b. Conduct an off-site groundwater investigation north-northeast of the 84 million gallon reservoir (Area 2).

c. Conduct a groundwater investigation and install a monitoring well in the area north of MW-8 and west of Field 18 North (Area 3).

d. Perform a groundwater analysis of sulfate concentrations associated with monitoring wells MW-7 and MW-12 to determine the origin of elevated concentrations of sulfate and other constituents of concern in these wells. This analysis shall incorporate data from all existing and newly constructed monitoring wells.

e. Any additional activities identified as a result of the Phase I evaluation or agreed to during discussions with Regional Water Board staff.

f. Additional work necessary to develop Water Quality Protection Standards.

g. Completed and signed access agreements for any proposed off-site well locations. If the Discharger is unable to secure signed access agreements by 15 January 2008, after exercising and documenting a full due diligence effort, the Discharger shall request the assistance of the Regional Water Board staff in

securing off-site access. If delays beyond Musco's control in securing off-site access are encountered, the Executive Officer may extend the reports due by Item No. 13 and/or Item No. 14 up to three months.

14. By **15 July 2008**, the Discharger shall submit a *Phase II Well Installation Report* certifying that the well installations required by Task 13 have been completed. The report shall include the information listed in Section 2 of Attachment A.

15. In the event that the Executive Officer determines, based on consideration of the available information, that groundwater has been impacted by the impoundment of process wastewater in the 84-million gallon reservoir, then within **six months** the Discharger shall submit a *Groundwater Impact Assessment Report*, including an anti-degradation analysis, if appropriate. The Report shall provide an analysis and recommendation of necessary abatement actions, including lining of the reservoir in accordance with Title 27 or reduction of constituent concentrations in waste stream(s) to prevent future impacts.

16. Within **two years** of the determination in Item 15, the Discharger shall complete implementation of its selected alternative described in the *Groundwater Impact Assessment Report*.

Stormwater and Tailwater Control

17. By **15 November 2007**, the Discharger shall submit a *Stormwater and Tailwater Capacity Evaluation Report*, evaluating whether pumps, sumps, tailwater ditches, and berms are adequately sized to prevent violation of this Order and the WDRs. The report shall evaluate the capacity of the drainage control systems to:

    a. Contain and convey, on-site and out of any surface water drainage course, all tailwater and stormwater runoff from each land treatment unit/land disposal area for (a) the permitted discharge rate of 800,000 gpd and (b) stormwater runoff generated by a 1,000-year, 24-hour precipitation event; and

    b. Prevent erosion, failure, overtopping, or washout of each pump, sump, tailwater ditch, and berm in each land treatment unit/land disposal area for (a) the permitted discharge rate of 800,000 gpd and (b) the stormwater runoff generated by a 1,000-year, 24-hour precipitation event.

    c. If the drainage control systems are not adequate to prevent violation of this Order or the WDRs under the conditions described herein, the report shall describe the specific improvements needed to ensure compliance.

18. If Section c. of the *Stormwater and Tailwater Capacity Evaluation Report* shows that improvements are required, then by **15 November 2008** the Discharger shall submit a report showing that the specific improvements have been completed.

19. Annually, prior to the anticipated rainy season, but no later than **30 September** of each year, the Discharger shall inspect the Musco site, including the Class II surface impoundments to assess the status of drainage control systems and other features required for compliance with this Order. Any necessary construction, maintenance, or repairs to stormwater runoff control measures shall be completed by **31 October**. By **15 November** each year, the Discharger shall submit a *Wet Season Preparation Report* describing the results of the inspection, and the measures implemented to prevent the discharge of wastewater and/or stormwater in violation of this Order. The Report shall include a wet season inspection schedule for the Discharger's staff to identify areas with erosion and sedimentation, and locations of any off-site and surface water drainage course discharges. The inspection schedule shall include daily inspections and photographs of stormwater monitoring stations and sumps during periods of precipitation. The Discharger shall make any improvements needed, based on wet weather inspection observations. The Report shall discuss any changes from control measures implemented the previous year.

20. For the fall 2007 wet season, the Discharger shall complete the annual inspection described above as soon as practical and shall submit the *Wet Season Preparation Report* by **1 December 2007**.

21. By **1 July** each year, the Discharger shall submit a *Wet Season Inspection Report of Results* describing the results of all wet season inspections and containing all photographs taken during the inspections.

Compliance Alternatives and Report of Waste Discharge

22. By **31 December 2007**, the Discharger shall submit an *Enhanced Evaporation Pilot Scale Study Evaluation Report* including a description of the project, the results, and an evaluation of the pilot-scale enhanced evaporation study. The report shall assess the feasibility of the technology and recommendations for any additional work.

23. By **31 March 2009**, the Discharger shall submit a revised Report of Waste Discharge, which shall evaluate the results of all tasks required by this Order and include the following minimum information:

    a. The results of the Phase II Groundwater Investigation, including an anti-degradation analysis if needed to support the Discharger's proposed effluent limitations;

    b. An updated *Water Quality Protection Standard Report* in accordance with Title 27;

    c. An updated assessment of treatment technologies and source control methods that could be implemented to reduce effluent concentrations discharged to land to levels that comply with the Basin Plan, the California Water Code, and the California Code of Regulations. One method that shall be assessed is the diversion of each individual waste stream currently discharged to land to a Class II surface impoundment (or equivalent).

d. A feasibility study for the technologies and methods identified in (b), including a cost-benefit analysis for each method showing the incremental cost and reduction in effluent concentrations and mass loading to land.

e. Based on the feasibility study, a detailed description of the proposed modifications to the wastewater treatment, storage and disposal system that will result in compliance with the Basin Plan, the California Water Code, and the California Code of Regulations.

f. An updated process waste stream characterization, including both volumetric and water quality data, based on a statistically significant number of sampling events for each waste stream generated by the facility.

g. If the Discharger proposes effluent limitations based on mass-loading rather than concentrations, then sufficient information shall be provided to support the calculation of mass-loading effluent limitations that are protective of water quality during all times of the year. Relevant information from the *Final Report on Assimilative Capacity Study* shall be included.

h. If the Discharger proposes that effluent limitations be based on fixed dissolved solids (FDS) concentrations rather than total dissolved solids (TDS), then a demonstration that an FDS effluent limitation will result in compliance with a TDS groundwater limitation. Site-specific data shall be used in this analysis (including concentrations of TDS, FDS, volatile dissolved solids [VDS], and BOD in the effluent, reservoir, and groundwater).

i. If the Discharger proposes that dissolved oxygen, dissolved sulfide, and pH concentrations in the reservoir be lower than those described in the June 2002 *Odor Minimization Report*, then a demonstration, with site specific data, of how lower limits will prevent nuisance odors in the pond and on the land disposal areas.

The Report of Waste Discharge shall contain all information necessary for revised WDRs, including a completed Form 200, and shall include a proposed time schedule for completion of any proposed activities. The Report of Waste Discharge shall also include a performance demonstration for any proposed Title 27 Class II liner systems.

24. The Discharge shall implement, maintain, and fully fund the financial assurances required by Order No. R5-2007-0138. By **30 April** of each year, the Discharger shall provide an annual update to the cost estimate for each of the four financial assurance items listed in Order No. R5-2007-0138.

25. **Beginning with the fourth quarter of 2007**, the Discharger shall submit a Quarterly Compliance Status Report. These reports shall describe all work completed during the calendar quarter to comply with this Cease and Desist Order; and any new, modified, or renovated component of the treatment and disposal system. These reports shall be

submitted by the **1st day of the second month following the quarter for which the report is prepared** (*e.g.*, the January-March quarterly report is due by May 1st).

In addition to the above, the Discharger shall comply with all applicable provisions of the California Water Code that are not specifically referred to in this Order. As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all technical reports shall be prepared by, or under the supervision of, a California Registered Engineer or Professional Geologist and signed/stamped by the registered professional.

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 or may issue a complaint for administrative civil liability.

Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of $1,000 to $10,000 per day of violation, depending on the violation, pursuant to the California Water Code, including sections 13268, 13350, and 13385. The Regional Water Board reserves its right to take any enforcement actions authorized by law.

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 26 October 2007.

original signed by
PAMELA C. CREEDON, Executive Officer

MRH/SER/WSW/FMC:6-Nov-07

Attachment A: Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports.

California Regional Water Quality Control Board
Central Valley Region
Karl E. Longley, ScD, P.E., Chair

Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
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ATTACHMENT A

ORDER NO. R5-2007-0139

REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:
   Purpose of the well installation project
   Brief description of local geologic and hydrogeologic conditions
   Proposed monitoring well locations and rationale for well locations
   Topographic map showing facility location, roads, and surface water bodies
   Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:
   On-site supervision of drilling and well installation activities
   Description of drilling equipment and techniques
   Equipment decontamination procedures
   Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):
   Diagram of proposed well construction details
   - Borehole diameter
   - Casing and screen material, diameter, and centralizer spacing (if needed)
   - Type of well caps (bottom cap either screw on or secured with stainless steel screws)

- Anticipated depth of well, length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):
Method of development to be used (i.e., surge, bail, pump, etc.)
Parameters to be monitored during development and record keeping technique
Method of determining when development is complete
Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):
Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
Datum for survey measurements
List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)

The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
  - General sampling techniques
  - Record keeping during sampling (include copies of record keeping logs to be used)
  - QA/QC samples
- Chain of Custody
- Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

A. General Information:
Purpose of the well installation project
Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
Number of monitoring wells installed and copies of County Well Construction Permits
Topographic map showing facility location, roads, surface water bodies
Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):
On-site supervision of drilling and well installation activities
Drilling contractor and driller's name
Description of drilling equipment and techniques
Equipment decontamination procedures
Soil sampling intervals and logging methods
Well boring log
- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
- Depth to first encountered groundwater and stabilized groundwater depth
- Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):
Well construction diagram, including:
- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:
Date(s) and method of development
How well development completion was determined
Volume of water purged from well and method of development water disposal
Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):
Identify the coordinate system and datum for survey measurements
Describe the measuring points (i.e. ground surface, top of casing, etc.)
Present the well survey report data in a table
Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix