

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**BOARD ORDER NO. R6V-2002-053A2
WDID NO. 6B190107017**

AMENDED WASTE DISCHARGE REQUIREMENTS

**FOR
LOS ANGELES COUNTY SANITATION DISTRICT NO. 14
LANCASTER WATER RECLAMATION PLANT**

Los Angeles County

The California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board) finds:

1. Discharger

The Los Angeles County Sanitation District No. 14 (Discharger) submitted information to the Lahontan Water Board as part of an application for a permit under Water Code section 13522.5 (for recycling of treated wastewater) and under Water Code section 13260 (for discharge of treated wastewater). The information submitted under Water Code section 13260 is also a Report of Waste Discharge. The application is for expansion and/or upgrading of the Discharger's facilities. On December 28, 2006, the Discharger completed its application. The documents that constitute the complete application are listed in Attachment D (References).

2. Order History

a. Board Order No. R6V-2002-053

On September 11, 2002, the Lahontan Water Board adopted Board Order No. R6V-2002-053 revising requirements for the Discharger's wastewater collection system, facilities located at the Lancaster Water Reclamation Plant (LWRP) site, and Piute Ponds. Facilities located at the LWRP site and regulated by Board Order No. R6V-2002-053 consist of a secondary treatment plant, the Antelope Valley tertiary treatment plant (AVTTP), and existing storage reservoirs (unlined). For the purposes of this Order, the LWRP site includes the Discharger's existing and proposed treatment and storage facilities described in this finding and Finding No. 3. Requirements regulating discharges of effluent to Piute Ponds are contained in Board Order No. R6V-2002-053. Requirements for disposal/recycling of the Discharger's treated wastewater at other authorized sites are contained in orders described below in this finding and in Finding No. 4.

b. Board Order No. R6V-2006-035

On September 14, 2006, the Lahontan Water Board adopted Board Order No. R6V-2006-035 establishing requirements for the pilot membrane bioreactor tertiary treatment plant (MBR treatment plant) located at the LWRP site and the Eastern Agricultural Site.

c. Other Orders

The "Order history" for other Orders is provided in Finding No. 4.

3. Reason for Action

The Lahontan Water Board is amending Board Order No. R6V-2002-053 to establish requirements for the discharge from (or to) the following facilities described in the Discharger's application:

- a. A new activated-sludge with nitrification/denitrification tertiary treatment plant that will expand the treatment capacity and upgrade the level of treatment so that the quality of effluent generated at the Lancaster Water Reclamation Plant site will be disinfected tertiary treated wastewater,¹ and
- b. An expansion of the Eastern Agricultural Site that will include additional areas to grow crops using treated wastewater as the irrigation water.

This Order does not regulate the ongoing discharge of secondary-treated wastewater from the existing oxidation ponds to Piute Ponds or Nebeker Ranch.

Board Order No. R6V-2002-053 is also being amended to incorporate requirements from Board Order No. R6V-2006-0035, which regulated the MBR treatment plant and Eastern Agricultural Site. Since this amendment incorporates those requirements from Board Order No. R6V-2006-0035, a provision is included herein rescinding that Order.

Modeling predictions in the Discharger's application show the treated wastewater applied at the Eastern Agricultural site through 2020 will remain in the vadose zone and therefore will not affect quality of the underlying groundwater. This amendment requires that the Discharger analyze the environmental conditions at the site annually to determine if application of treated wastewater at the site is behaving hydraulically in the vadose zone as predicted. If the evaluation indicates a discharge to groundwater is likely due to the application of treated wastewater, this

¹ For the purposes of this Order, disinfected tertiary treated wastewater is an oxidized, filtered and disinfected wastewater as defined in California Code of Regulations, title 22, sections 60301.230, 60301.320 and 60301.650.

Order requires the Discharger to evaluate its wastewater treatment and disposal operations and implement corrective action in sufficient time to prevent the discharge to groundwater.

If the Discharger can demonstrate there is potential for continued use of the East Agricultural Site beyond 2020, without causing a discharge to groundwater and the Discharger desires to extend the life of the site; this Order requires the discharger to submit to the Board by 2015 a proposal for a project.

Under this Order, the Discharger is authorized to recycle disinfected tertiary-treated wastewater at the Eastern Agricultural Site through 2020. If the Discharger intends to use the site after 2020, the Discharger must file a complete Report of Waste Discharge with the Lahontan Water Board; and obtain new or amended waste discharge requirements from the Lahontan Water Board for further use of the site.

4. History of Other Related Orders

a. Waste Discharge/Recycling Requirements

The Water Board adopted the following additional Orders (listed chronologically by date adopted):

- i. Board Order No. 6-85-35, adopted April 11, 1985, issuing revised requirements to the County of Los Angeles for use of AVTTP treatment plant effluent at Apollo Park, General William J. Fox Airfield and road sites owned by the County.
- ii. Board Order No. 6-86-58, adopted May 15, 1986, establishing requirements for use of un-disinfected secondary treated wastewater produced at the LWRP site to irrigate fodder crops at the Nebeker Ranch.
- iii. Board Order No. R6V-2002-053A1, which was adopted on July 13, 2005, amending Board Order No. R6V-2002-053 to include ammonia effluent limits for disinfected secondary-treated wastewater produced at the LWRP site and discharged to Piute Ponds.
- iv. Board Order No. R6V-2006-0009, adopted March 8, 2006, issuing Master Water Recycling Requirements for regulating use of the Discharger's disinfected tertiary-treated wastewater in the City of Lancaster, Division-Street Corridor Recycled Water project.
- v. Board No. R6V-2006-0051, adopted on November 8, 2006, establishing requirements for four proposed reservoirs located at the LWRP site. The reservoirs are for storage of disinfected tertiary-treated wastewater generated at the LWRP site.

b. Enforcement

On October 13, 2004, the Lahontan Water Board issued Cease and Desist Order No. R6V-2004-0038 to the Discharger for threatening to violate Waste Discharge Requirements prescribed in Board Order No. R6V-2002-053. The Cease and Desist Order includes a schedule for achieving compliance with waste discharge requirements.

5. Description of Conveyance and Treatment Facilities

a. General

This amendment regulates the:

- i. Discharge of disinfected tertiary-treated wastewater from the MBR treatment plant and proposed new activated sludge tertiary treatment plant to Piute Ponds, the Eastern Agricultural Site, and other permitted locations,
- ii. Treated wastewater conveyance system to the Eastern Agricultural Site, and
- iii. Use of treated wastewater at the Eastern Agricultural Site through December 31, 2020.

b. Conveyance System

Existing pump station facilities (which are located at the Lancaster Water Reclamation Plant (LWRP) site) and a pressurized pipeline convey treated wastewater a distance of seven miles to the Eastern Agricultural Site. The Discharger proposes to construct a permanent pump station and a steel storage tank that will also become part of the conveyance system. The permanent pump station will be located at the LWRP site, and the storage tank will be located near the Eastern Agricultural Site and have a storage capacity of two million gallons.

c. AS/NDN Treatment Plant

The Discharger proposes to construct a new activated sludge (AS) tertiary treatment plant. The proposed new treatment plant will include nitrogen removal using nitrification and denitrification (NDN) processes. For the purposes of this Order, the new treatment plant is referred to as the AS/NDN treatment plant. Treated wastewater produced by the AS/NDN treatment plant will have total annual average nitrogen concentrations less than 10 mg/L as nitrogen. The AS/NDN treatment plant will initially have a treatment capacity of 18 mgd. The plant will be expanded later to a treatment capacity of 21 million gallons per day. The AS/NDN treatment plant (when completed) will replace the existing secondary treatment facilities (oxidation ponds).

d. MBR Treatment Plant

The source of influent wastewater flow for the MBR treatment plant is effluent from the Discharger's primary treatment facility. The plant includes the following components and capacities:

MBR Plant Components and Capacities

Plant Components
Suspended-growth biological process
Membrane tanks
Ultraviolet disinfection systems (2)

Plant Capacities (MGD)	
Annual Average Flow	1.0
Maximum Daily Flow	1.75

The MBR treatment plant removes biochemical oxygen demand (BOD) and nitrogen using a single-sludge, suspended-growth biological treatment process with membrane tanks instead of conventional clarifiers. Activated sludge tanks provide suspended-growth biological treatment, with initial treatment in an anoxic zone followed by further treatment in an aerobic zone. Flow from the activated sludge tanks goes to the membrane tanks for further treatment, including filtration by membranes and removal of sludge. Removed sludge is either returned to the activated sludge tanks or conveyed to Oxidation Pond No. 1. Solids generated from oxidation pond cleaning will be hauled offsite for disposal/reuse at an authorized reuse or disposal site. Citric acid and sodium hypochlorite solutions are used for required periodic cleaning of the surfaces of membranes in the membrane tanks. Results of Discharger evaluation shows that the amount of solution used is minimal and will not adversely affect the plant effluent.

6. Description of Eastern Agricultural Site

a. General

The time frame for development of the Eastern Agricultural Site is based on the Discharger's needs for recycling of treated wastewater. For the purposes of planning, the Discharger has divided its current facilities planning period² into two phases, Phase I and II as shown in Table No. 1. Phase I is the period of time before the Discharger begins operation of the AS/NDN treatment plant and Phase II is the period after the plant begins operation.

The Eastern Agricultural Site consists of land identified by the Discharger in its 2020 Facilities Plan for the agricultural reuse of recycled water. The Discharger

²Lancaster Water Reclamation Plant 2020 Facilities Plan (Final), Los Angeles County Sanitation District No. 14, May 2004.

plans to own up to approximately 4,600 acres within nine sections (1.0-square-mile per section). For the purposes of planning and site development, the Discharger has divided the site into three, 3.0-square-mile (1,920-acre) areas referred to as Eastern Agricultural Sites 1, 2, and 3. The portions of the Eastern Agricultural Site that will be used under Phase I and II are shown in Attachment C and located in Eastern Agricultural Sites No. 1 and 2. The District owns the majority of the land within Eastern Agricultural site No. 1 and portions of the land within Eastern Agricultural site Nos. 2 and 3. Eastern Agricultural Site No. 1 includes land within Sections 23 and 24, Township No. 8 North, Range No.11 West (Sections 23 and 24, T8N, R11W) and Section 19, T8N, R10W, San Bernardino Base and Meridian (SBB&M). Eastern Agricultural Site No. 2 includes land within Sections 25 and 26, T8N, R11W and Section 30, T8N, R10W, SBB&M.

**Table No. 1
 Eastern Agricultural Site
 Planning Period (2020 Facilities Plan)³**

	Phase I of Planning Period	Phase II of Planning Period
Time Period	Portion of planning period <u>before</u> startup of the AS/NDN treatment plant	Portion of planning period <u>after</u> startup of the AS/NDN treatment plant
Source of Treated Wastewater	MBR and AVTTP treatment plants	MBR, AVTTP and AS/NDN treatment plants
Expected Flow of Treated Wastewater (Annual-Average) needing disposal/ recycling in million gallons per day	1.3 (Maximum)	6.0 to 21.0
Estimated Area within Agricultural Site No. 1 (acres)	1,280	1,920
Estimated Area within Agricultural Site No. 2 (acres)	0	0 to 1,280
Estimated Total Area (acres)	1,280	1,920 to 3,200
Estimated No. of Pivots	8	12 to 20
Estimated Area Covered by Pivots (acres)	928	1,392 to 2,320
<i>Note-</i> Each pivot covers an area of approximately 116 acres.		

³Lancaster Water Reclamation Plant 2020 Facilities Plan (Final), Los Angeles County Sanitation District No. 14, May 2004.

b. Treated Wastewater Uses

Treated wastewater is used at the Eastern Agricultural Site for construction-related purposes, site development and maintenance and for growing fodder crops (winter grains, Sudan grass and alfalfa). Use of the treated wastewater for construction-related purposes and site development includes use for soil compaction, backfilling, dust control, concrete mixing, and hydraulic testing of pipelines and irrigation systems.

c. Farm Management Plan

The Discharger has prepared a Farm Management Plan for operation of Phase I of its current facilities planning period (*LACSD14, 2005, Oct. 24*). A provision in this Order requires that the Discharger prepare a revised Farm Management Plan before implementation of Phase II of its current facilities planning period.

d. Groundwater and Vadose Zone Monitoring

The Discharger has completed installation and sampling of groundwater monitoring wells located adjacent to center pivot fields No. 1 through 8 (See Attachment C of this Order). Before beginning application of treated wastewater to grow crops in the remaining fields (fields No. 9 through 20), provisions of this Order require the Discharger to install additional groundwater monitoring wells in accordance with an acceptable workplan and complete a minimum number of sampling rounds at each well. The attached Monitoring and Reporting Program requires the Discharger to complete background soil sampling before beginning application of recycled water. Ongoing routine monitoring of all groundwater and vadose zone monitoring facilities is also required.

e. Abandoned Water Wells

The Discharger has: (1) completed an investigation to determine the locations of all abandoned wells within Agricultural Site No. 1; (2) destroyed abandoned wells in accordance with State and local regulations; and (3) submitted a report (*LACSD14, 2006, Nov 17*) to the Lahontan Water Board on the investigation and destruction of abandoned wells. Wells remaining within Agricultural Site No. 1 consist of 14 wells, 12 wells located on land owned by the Discharger and two active water supply wells located on privately owned residential land located within the site. Five of the Discharger's wells are used for monitoring of groundwater. The seven remaining wells owned by the Discharger are currently inactive. Areas proposed for irrigation with treated wastewater are located more than 50 feet from each of the Discharger's wells and more than 500 feet from the privately owned wells. (*LACSD14, 2006, Nov 17*)

Before using treated wastewater in other portions of the Eastern Agricultural Site, a provision of this Order requires the Discharger to complete an investigation to determine the locations of all abandoned wells, properly destroy the abandoned wells in accordance with State and local regulations and submit a report to the Lahontan Water Board on the investigation and destruction of abandoned wells.

7. Facilities Locations

The LWRP site is located approximately five miles north of central Lancaster, in the Lancaster Hydrologic Area of the Antelope Hydrologic Unit as shown in Attachment A, which is made a part of this Order. The address for the office at the LWRP site is 1865 W. Avenue D, Lancaster, California 93534. The Eastern Agricultural Site is located approximately seven miles east of the LWRP site as shown in Attachment B, which is made a part of this Order.

8. Recycling of Treated Wastewater

This Order includes water-recycling requirements and requires the Discharger to comply with Uniform Statewide Reclamation Criteria (California Code of Regulations (CCR), title 22, sections 60301 through 60355) established pursuant to Water Code section 13521. As required under CCR, title 22, section 60323, the Discharger has completed engineering reports that address the following facilities:

- a. AVTTP treatment plant;
- b. Eastern Agricultural Site; and
- c. MBR treatment plant with an auxiliary hypochlorite disinfection system.

The Discharger has submitted an engineering report for the MBR treatment plant (with ultraviolet disinfection) which has not yet been accepted by the California Department of Health Services, pending results of ultraviolet disinfection facilities commissioning tests which are ongoing. The Discharger has not completed an engineering report for the proposed new AS/NDN treatment plant. Provisions of this Order require that the Discharger not supply recycled water generated by these treatment plants to water recycling areas until approval of engineering reports by the Department of Health Services.

9. Land Ownership

The LWRP site and the portions of the Eastern Agricultural Site where recycling will take place are located on land owned by the Discharger.

10. Authorized Disposal/Recycling Site

The Authorized Disposal/Recycling Site under this Order consists of land which is owned by the Discharger and located within the Eastern Agricultural Site No. 1 and Section 25 and 30 of Eastern Agricultural Site No. 2. This Order authorizes use of disinfected tertiary treated wastewater at these sites through December 31, 2020. Under this Order, the sites are not permitted to receive treated wastewater after December 31, 2020.

The Discharger is authorized to use disinfected tertiary treated wastewater for non-potable uses within the Lancaster Water Reclamation Plant (LWRP) site defined in Finding No. 2.a. The non-potable uses include use for landscape irrigation, facility washdown, and soil compaction and dust control during construction of new facilities. The Discharger is also authorized to use disinfected secondary recycled water for soil compaction and dust control during construction of new facilities. The Discharger is authorized to supply disinfected tertiary treated wastewater for non-potable uses in the City of Lancaster Division-Street Corridor Recycled Water Project. Those uses are regulated under Board Order No. R6V-2006-0009.

11. Topography (Eastern Agricultural Site)

The direction of the ground-surface gradient at the Eastern Agricultural Site is toward Rosamond Dry Lakebed in a northwesterly direction. At the Eastern Agricultural Site, the slope of the gradient is 0.003 feet/foot.

12. Geology and Hydrogeology (Eastern Agricultural Site)

a. Geology

Between 1960 and 1967, the U.S. Department of Agriculture (Soil Conservation Service) investigated shallow soils (located between the ground surface and a depth of five feet) in the Antelope Valley. The investigation indicates that shallow soils at the Eastern Agricultural Site contain some soluble salts (*USDA, 1970, Jan*). In geologic terms, the shallow soils located at Agricultural Site No. 1 and 2 are Quaternary alluvium. The Quaternary alluvium extends down to a lacustrine layer (blue-clay layer). The lateral extent of the Quaternary alluvium and blue-clay layer are significant. They extend throughout a large portion of Antelope Valley. The blue-clay layer was formed by the accumulation of fine-grained sediments in a large ancestral lake. Remnants of the lake are shown as Rosamond Dry Lake and Rogers Dry Lake (*USGS, 2003*).

b. Hydrogeology (General)

Using information from historic site investigation reports, the US Geologic Survey prepared a 2003 report that includes maps (plan view and cross-sectional) showing the general locations of the following hydrogeologic features in the Antelope Valley: alluvium, blue-clay layer, bedrock and the Upper and Lower Aquifers (*USGS, 2003*). The Upper Aquifer is located above the blue-clay layer and the Lower Aquifer is located below the blue-clay layer. The blue-clay layer is considered to be an effective aquitard and the Lower Aquifer is considered to be a confined aquifer (*USGS, 2003*), (*LACSD14, 2005, Jan. 28*).

c. Hydrogeology (Eastern Agricultural Site No. 1 and 2)

In 2004 and 2005, the Discharger conducted hydrogeologic investigations at Eastern Agricultural Site No. 1 and the northern edge of Eastern Agricultural Site No. 2. The investigation included: (i) evaluation of well records for 155 wells (including wells extending into the Lower Aquifer, (ii) completion of down-hole geophysical and photographic logs for selected existing wells, and (iii) logging of 6 boreholes consisting of 4 exploratory borings and 2 boreholes for monitoring wells. The four exploratory boreholes extended into the blue-clay layer by depths ranging from 35 to 80 feet.

Based on the results of investigations generated by the Discharger and US Geologic Survey, the following is a summary describing the geology and groundwater underlying the Eastern Agricultural Sites No. 1 and 2. Quaternary alluvium underlies the sites and extends from the ground surface to approximately 200 to 250 feet below the ground surface (bgs). The Quaternary alluvium is followed by the blue-clay layer that is approximately 350 feet thick (i.e., extends from the bottom of the Quaternary alluvium to depths ranging from approximately 550 to 600 feet bgs). Older alluvium extends from the bottom of the blue-clay layer to an unknown depth.

The Upper Aquifer is located above the blue-clay layer in the Quaternary alluvium. The depth to groundwater underlying the Eastern Agricultural Site is approximately 100 feet bgs. The Quaternary alluvium consists of interbedded, discontinuous layers of geologic material. Classifications for individual layers vary in a random fashion. The classifications consist of sands, silts or clays. Groundwater flow in the Upper Aquifer is toward the south and southeast.

13. Groundwater (Existing Quality, Eastern Agricultural Site)

Table No. 2 provides a summary of Total Dissolved Solids (TDS) levels in five monitoring wells recently established at Eastern Agricultural Site No. 1 and the northern

edge of Eastern Agricultural Site No. 2. The locations of the wells in Table No. 2 are shown in Attachment C. Results of the Discharger's site investigation indicates spatial variation in TDS concentrations in groundwater. The results also indicate the concentrations of TDS in wells sampled were higher in wells located in the western portion of the site (e.g., TDS of 1600 mg/L) as compared to those located in the eastern portion (e.g., TDS of 440 mg/L) (*LACSD14, 2005, Jun 21*) (*LACSD14, 2005, Nov 21*) (*LACSD14, 2006, Aug 15*).

Table No. 2
Existing Concentrations in Groundwater

Monitoring Well No.	Date monitoring well was established	TDS Range (mg/L)	Nitrate Concentration Range (mg/L)	No of Samples
MW-30	09/05	440 to 630	1.53 to 2.3	4
MW-31	09/05	110 to 440	<0.1 to 1.05	4
SW-30	03/05	350 to 370	0.37 to 0.43	6
SW-31	03/05	850 to 990	0.84 to 1.5	6
SW-32	09/05	1500 to 1858	2.8 to 3.3	4

14. Effluent Quality

Table No. 3 summarizes effluent quality data for the existing AVTTP and expected quality for the MBR the proposed AS/NDN treatment plant. The data for the MBR and AS/NDN treatment plants are based on design data for the plants.

The Discharger has implemented operations for starting the recycling of treatment plant effluents at the Eastern Agricultural Site. In December 2006, the Discharger began conveying the AVTTP treatment plant effluent to the site and recycling the effluent at the site (see Column 1 of Table No. 3 for the quality of the AVTTP treatment plant effluent). In February 2007, the Discharger began: operation of the auxiliary sodium hypochlorite system to disinfect the MBR treatment plant effluent; combining effluent from both the AVTTP and MBR treatment plants; conveying the combined effluents from both plants to the site; and recycling the combined effluents at the site. See Column 2 of Table No. 3 for the quality of the AVTTP/ MBR treatment plant effluent blend. Requirements regulating the above-described production and recycling of treated wastewaters are contained in Board Order No. R6V-2002-053 adopted on September 11, 2002 and Board Order No. R6V-2006-035 adopted on September 14, 2006. Once ultraviolet disinfection is started at the MBR treatment plant, concentrations of disinfection by-products in the AVTTP/MBR effluent blend are expected to be as shown in Column 3 of Table No. 3. Concentrations of disinfection by-products in the AS/NDN effluent, once that plant is placed into operation, are expected to be as shown in Column 4 of Table No. 3 (*LACSD14, 2006, Apr 6*), (*LACSD14, 2006, Mar 24*), (*LACSD14, 2005, July 22*).

The disinfection by-products bromate and chlorite are not expected to be present in the effluents of the AVTTP, MBR and AS/NDN treatment plants. Bromate is a byproduct of ozonation and chlorite is a by-product of chlorine dioxide (*Metcalf and Eddy, 2003*). Neither ozonation nor chlorine dioxide will be used at the treatment plants.

Table No. 3
Concentrations¹ in Disinfected Tertiary Treated Wastewater

Constituents	Column 1: AVTTP treatment plant effluent with hypochlorite disinfection	Column 2: AVTTP/MBR blend ² with disinfection by auxiliary hypochlorite system	Column 3: MBR treatment plant effluent with ultraviolet disinfection	Column 4: AS/NDN treatment plant effluent with hypochlorite & ammonia disinfection
Turbidity (NTUs)	5	---	0.2	5
Biochemical Oxygen Demand (mg/L)	6	---	5	6
Total Dissolved Solids (mg/L)	703	585	550	550
Total Nitrogen (mg/L as N)	3.7	6	7	10
Arsenic (µg/L)	4	4	4	4
Total Chromium (µg/L)	2	2	2	2
Hexavalent Chromium (µg/L)	0.1	0.1	0.1	0.1
Disinfection By-Products:				
Trihalomethanes (µg/L)	100	40	20	30
Total haloacetic acids (µg/L)	80	34	20	30
Footnote:				
1. All concentrations in this table are predicted values, with exception of the TDS values, which are averages. Data is from the amended report of waste discharge (<i>LACSD14, 2006, Apr 10</i>) and the Discharger's annual report (<i>LACSD14, 2006, Mar 29</i>).				
2. The values are based on a combination of 1.0 mgd of MBR treatment plant effluent and 0.3 mgd of AVTTP treatment plant effluent.				

15. Receiving Waters (Eastern Agricultural Site)

The receiving waters at the Eastern Agricultural Site are the groundwaters of the Antelope Valley Groundwater Basin (DWR Unit No. 6-44).

16. Lahontan Basin Plan

The Lahontan Water Board adopted a Water Quality Control Plan for the Lahontan Region (Basin Plan), which became effective on March 31, 1995, and this Order implements the Basin Plan as amended.

17. Beneficial Uses

The beneficial uses of the groundwaters of the Antelope Valley groundwater basin (DWR No. 6-44) as set forth and defined in the Basin Plan are:

- a. Municipal and Domestic Supply (MUN);
- b. Agricultural Supply (AGR);
- c. Industrial Service Supply (IND); and
- d. Freshwater Replenishment (FRSH).

18. Degradation Analysis (Eastern Agricultural Site)

a. Phase I

Under Phase I, the Discharger is applying treated wastewater to grow crops using an irrigation method that does not involve significant quantities of deep percolation.

b. Deep Percolation and Leaching

Deep percolation refers to the movement of applied irrigation water past the root zone of the crop where it is no longer available for plant needs. Deep percolation can occur as a result of expected irrigation inefficiencies (i.e., irrigation systems are usually unable to apply the exact amount of water to a crop exactly when it needs it) and from intentional effort to leach salts for the crop root zone. Leaching is the removal of materials (salts) in solution by the passage of water through soil. Intentional leaching is practiced to achieve a specific soil salinity level and crop yield. It is accomplished by application of irrigation water in a manner that allows a fraction of the water entering the soil to pass through the root zone (leaching fraction). Crops have varying sensitivity to soil salinity. When a crop's level of tolerance to salinity is exceeded there will be a reduction in the crop yield. The reduction in yield will range up to 100 percent depending on the salinity level. Leaching is typically completed at least once per year, but may be performed less frequently.

c. Phase II

During Phase II, the Discharger will use best management irrigation practices to minimize deep percolation of treated wastewater while maintaining a viable crop. The Discharger proposes to use an irrigation method that includes leaching. In the RWD, the Discharger modeled two irrigation rate alternatives to evaluate the potential to affect underlying groundwater quality. The alternatives included irrigation rates of 10% and 20% below standard agronomic rates.

The evaluation indicates the project has the potential to degrade the underlying groundwater if percolate generated by the project were to reach groundwater. The Discharger predicts TDS concentrations in the project percolate located in the vadose zone below the crop root zone will range from 4,000 mg/L to approximately 12,000 mg/L. These concentrations are higher than existing TDS concentrations in underlying groundwater, which range from 110 to 1,858 mg/L.

Under both of the above described alternatives, results of modeling show that over a 50 year period the treated wastewater applied at the site from the project would be retained in the vadose zone and would not affect the quality of underlying groundwater.

19. Receiving Water Limits

Discharge Specification No. I.B.2.e of this Order specifies numerical receiving water limits for nitrate and TDS in groundwater underlying Eastern Agricultural Sites No. 1 and 2. The receiving water limits are based on preserving the existing quality of groundwater. There is significant spatial variation in TDS concentrations in groundwater, and there is potential for some variation in nitrate concentrations due to among other things, regional groundwater flow, adjacent land use, and groundwater pumping. Because of the spatial variation, Discharge Specification No. I.B.2.e requires: (a) determination of a separate numeric TDS receiving water limit for each compliance-monitoring well and (b) specifies the method the Discharger must use to calculate the numerical TDS limit. Due to the above factors that affect nitrate concentrations in groundwater and limited data for nitrate, Discharge Specification No. I.B.2.e specifies the same procedure for calculating a numeric receiving water limit for nitrate in each compliance-monitoring well at Fields No. 9 through 20. Because there are currently insufficient data points per monitoring well to determine a numerical limit at each well, the attached Monitoring and Reporting Program includes a schedule for conducting additional sampling. There is sufficient nitrate data for Fields No. 1 through 8 and therefore a single numeric receiving water limit for nitrate (3.4 mg/L as N) is specified in Discharge Specification No. I.B.2.e.

The attached Monitoring and Reporting Program requires routine monitoring of groundwater underlying the Eastern Agricultural Site to provide data for determining compliance with receiving water limits. It also requires monitoring of the vadose zone, which will provide an early warning of any deeper percolation of applied wastewater than was predicted by the modeling and allowing the opportunity to implement corrective action before groundwater is affected.

20. Consideration of Water Code Section 13241 Factors

Section 13263 of the Water Code requires that the Board, when prescribing waste discharge requirements, take into consideration five specific factors in Section 13241 of the Water Code. The Board has considered these factors as follows.

a. Past, Present, and Probable Future Beneficial Uses of Water

The hydrologic unit of the receiving waters is the Antelope Valley Groundwater Basin. The ground water basin is presently in an overdraft condition. The beneficial uses of the groundwater include Municipal and Domestic Supply and Agriculture Supply. The receiving water limits in this Order are to maintain the most sensitive beneficial uses, Municipal and Domestic Supply and Agricultural Supply.

Under the Basin Plan, Piute Ponds is a minor surface water of the Lancaster Hydrologic Area of the Antelope Hydrologic Unit. Beneficial uses of minor surface waters of that hydrologic area as set forth and defined in the Basin Plan are:

- i. Municipal and Domestic Supply (MUN);
- ii. Agricultural Supply (AGR);
- iii. Ground Water Recharge (GWR);
- iv. Water Contact Recreation (REC-1);
- v. Non-contact Water Recreation (REC-2);
- vi. Warm Freshwater Habitat (WARM); and
- vii. Wildlife Habitat (WILD).

b. Environmental Characteristics of the Hydrographic Unit under Consideration, Including the Quality of Water Available Thereto

The hydrographic unit for the receiving waters is the Antelope Groundwater Basin. Geological and hydrogeologic characteristics of the Basin are described in Findings No. 12. Because of past ongoing use of groundwater for domestic and agricultural purposes, the ground water basin is presently in an overdraft condition.

In general, the quality of groundwater in the basin is sufficient to support the beneficial uses MUN and AGR. The discharge, if continued beyond 2020, may add salts to the groundwater that would increase the TDS concentration to a point where it would begin to affect its use as a municipal and domestic supply. This Order, therefore, does not allow for this discharge to continue beyond 2020 without further analysis of the potential to degrade the receiving water and the Water Board's finding that it considered any identified degradation to be in the best interest of the people of the State.

Receiving water limits for groundwater underlying the Eastern Agricultural Site, which are contained in this Order, do not allow degradation of that water. This Order therefore preserves the existing quality of groundwater and its current and future beneficial uses.

In general, the quality of surface water in Piute Ponds is sufficient to support the preceding described Basin Plan beneficial uses. This Order preserves the existing quality of these surface waters and its current and future beneficial uses.

c. Water Quality Conditions That Could Reasonably be Achieved Through the Coordinated Control of All Factors, Which Affect Water Quality in the Area

The current and future beneficial uses and existing water quality in the area will be maintained.

d. Economic Considerations

Facilities regulated under this Order are for expanding and upgrading the Discharger's existing facilities. The costs for expansion and upgrading are reasonable.

e. The Need for Developing Housing within the Region

The discharge will indirectly enhance the development of housing in the region because the proposed new AS/NDN treatment plant and Eastern Agricultural Site are an integral part of the Discharger's 20-year plan for expansion of its sewage treatment and disposal/recycling capacity to address the population growth in the Discharger's service area.

f. The Need to Develop and Use Treated Wastewater

The Discharger's current secondary treatment plant produces an effluent for only limited reuses described in Title 22 of the CCR. The proposed new AS/NDN treatment plant will upgrade the level of treatment and produce an effluent that is acceptable for all uses described in Title 22. This will maximize the potential for reuse.

21. California Environmental Quality Act (CEQA)

In accordance with the CEQA, the Discharger, acting as the lead agency, certified an Environmental Impact Report (EIR) on June 16, 2004 for the 2020 Plan project. The project will not pose a significant impact to water quality provided that the mitigation measures summarized in Table No. 4, below, are implemented. This Order requires implementation of these mitigation measures. Monitoring and reporting requirements

are included in the attached Monitoring and Reporting Program to ensure the mitigation measures are properly implemented and the measures are effective, The monitoring and reporting requirements are summarized in Monitoring Sections No. W.1 through W.3 of the attached Monitoring and Reporting Program.

Table No. 4

<u>Impact</u>	<u>Mitigation Measure</u>
a. Downward migration of treated wastewater applied at the Eastern Agricultural Site would degrade the quality of groundwater.	Degradation of underlying groundwater is not expected, because of hydrogeologic conditions and the methods used for crop irrigation
b. Eastern Agricultural Site run on and/or runoff would degrade the quality of surface water.	Construct drainage controls to prevent run on and runoff
c. Flow of treated wastewater down abandoned wells would degrade the quality of groundwater.	Identify and properly destroy abandoned groundwater wells.
d. Loss of the 0.08-acre wetland, which will occur as result of fill and grading at Eastern Agricultural Site No. 1.	Create a wetland of equal or higher value at an area ratio for wetland loss to wetland created of 1:1.5.

22. Technical and Monitoring Reports

The fact that the Discharger is seeking coverage under waste discharge requirements issued by the Lahontan Water Board for one or more proposed discharges supports the requirement that the Discharger submit technical and monitoring reports in compliance with this Order and the attached Monitoring and Reporting Program so that the data may be collected to determine conditions in the vadose zone and the receiving water.

23. Notification of Interested Parties

The Lahontan Water Board has notified the Discharger and interested persons of its intent to establish Waste Discharge Requirements for the discharge/reuse.

24. Consideration of Public Comments

The Lahontan Water Board, in a public meeting, heard and considered all comments pertaining to the discharge/reuse.

IT IS HEREBY ORDERED that the Discharger must comply with the following:

I. DISCHARGE SPECIFICATIONS

A. Effluent Limitations (MBR and AS/NDN Treatment Plants)⁴

1. The effluent production at the MBR treatment plant must not exceed the following:
 - a. An average flow rate during any 12-month period of 1.0 million gallons per day.
 - b. A volume of 1.75 million gallons during any 24-hour period.

Flow in excess of these limitations shall not be considered a violation of this provision unless one or more of the following is also exceeded: an effluent limitation in Discharge Specifications No. I.A.4. through I.A.6., a receiving water limitation in Discharge Specifications No. I.B.2.a through I.B.2.e or a water recycling requirements in Discharge Specifications No. I.C.1 through I.C.4.

2. The effluent production at the initial AS/NDN treatment plant (Described in Finding No. 5) must not exceed a volume of 18 million gallons during any 24-hour period.

Flow in excess of this limitation shall not be considered a violation of this provision unless one or more of the following is exceeded: an effluent limitation in Discharge Specifications No. I.A.4. through I.A.6., a receiving water limitation in Discharge Specifications No. I.B.2.a through I.B.2.e or a water recycling requirements in Discharge Specifications No. I.C.1 through I.C.4.

3. The recycled water production at the subsequent expanded AS/NDN treatment plant (Described in Finding No. 5) must not exceed a volume of 21 million gallons during any 24-hour period.

Flow in excess of this limitation shall not be considered a violation of this provision unless one or more of the following is exceeded: an effluent limitation in Discharge Specifications No. I.A.4. through I.A.6., a receiving water limitation in Discharge Specifications No. I.B.2.a through I.B.2.e or a water recycling requirements in Discharge Specifications No. I.C.1 through I.C.4.

⁴ Effluent limits for the AVTTP treatment plant are currently specified in Board Order No. R6V-2002-053.

4. The effluents produced by the MBR and AS/NDN treatment plants must not exceed the following limits:

<u>Parameter</u>	<u>Units</u>	<u>30-Day Mean⁵</u>	<u>7-Day Mean</u>	<u>Daily Maximum⁶</u>
BOD ⁷	mg/L	10	15	30

5. The effluents produced by the MBR and AS/NDN treatment plants must have a pH of not less than 6.0 nor more than 9.0. A pH over 9.0 is allowed if the Discharger has demonstrated it results from biological processes within the treatment plant.
6. The effluents produced by the MBR and AS/NDN treatment plants must have a dissolved oxygen concentration of not less than 1.0 mg/L.

B. Receiving Water Limitations

1. Surface Water

The Receiving Water Limits for surface waters (Piute Ponds) that receive effluent from the AS/NDN treatment plant are those set forth in Board Order No. R6V-2002-053 and in a 2005 amendment to those Waste Discharge Requirements (Board Order No. R6V-2002-053A1).

2. Groundwater

The discharge must not cause a violation of the following water quality objectives for the groundwaters of the Lancaster Hydrologic Area underlying and located in the vicinity of Eastern Agricultural Sites No. 1 and 2.

- a. Bacteria - Groundwaters must not contain concentrations of coliform organisms attributable to human wastes.
- b. Chemical Constituents - Groundwaters must not contain concentrations of chemical constituents in excess of the maximum contaminant level (MCL) or secondary maximum contaminant level (Secondary MCL) based upon drinking water standards specified in the following provisions of title 22 of the California Code of

⁵ The arithmetic mean of lab results for 24 hour composite samples collected during a period of 30 days, respectively.

⁶ Daily maximum limitations must be applied to the values of the measurements obtained for any single 24-hour composite sample (or daily discharge rate).

⁷ Biochemical Oxygen Demand (five day, 20°C) of an unfiltered sample.

Regulations: Table 64431-A of section 64431 (Inorganic Chemicals), Table 6444-A of section 64444 (Organic Chemicals), Table 64433.2-B of section 64433.2 (Fluoride), Table 64449-A of section 64449 (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits), and Table 64449-B of Section 64449 (Secondary Maximum Contaminant Levels-Ranges). This incorporation-by-reference is prospective including future changes to the incorporated provisions as the changes take effect.

- c. Radioactivity - Radionuclides must not be present in concentrations that are deleterious to human, plant, animal, or aquatic life, or that result in the accumulation of radionuclides in the food chain to an extent that it presents a hazard to human, plant, animal, or aquatic life. Waters must not contain concentrations of radionuclides in excess of limits specified in the CCR, title 22, chapter 15, article 5, section 64443.
- d. Taste and Odors - Groundwaters must not contain taste or odor-producing substances in concentrations that cause nuisance (CWC section 13050(m)) or that adversely affect waters for beneficial uses.
- e. Nitrate and TDS (Eastern Agricultural Site) – Use of treated wastewater at the Eastern Agricultural Site must not cause:
 - (i) A nitrate concentration in excess of existing water quality (3.4 mg/L as N) in any groundwater compliance monitoring well for Fields No. 1 through 8;
 - (ii) A nitrate concentration (12-month average concentration) in excess of existing water quality in any groundwater compliance monitoring well for Fields No. 9 through 20 (The existing quality must be equal to the upper 99% confidence interval for the first eight nitrate samples collected from the well.); or
 - (iii) A TDS concentration (12-month average concentration) in groundwater at a given groundwater compliance monitoring well to exceed the existing water quality at that point. The existing quality must be equal to the upper 99% confidence interval for the first eight TDS samples collected from the well.

C. Water Recycling Requirements

- 1. The effluents produced by the MBR and AS/NDN treatment plants and the use of treated wastewater at the Authorized Disposal/ Recycling Site (described in the Finding No. 10) must comply with the Uniform Statewide Reclamation Criteria, which are contained in

California Code of Regulations (CCR), title 22, sections 60301 through 60355.

2. The effluents produced by the MBR and AS/NDN treatment plants must be disinfected tertiary treated wastewater as defined in title 22, CCR.
3. The effluents produced by the MBR and AS/NDN treatment plants must be an oxidized wastewater and a wastewater that has been filtered by the method described in either a. or b., below.
 - a. The effluent has been coagulated and passed through natural undisturbed soils or the bed of a filter and the turbidity concentration of the effluent does not exceed any of the following:
 - (i) A 24-hour average value of two (2) nephelometric turbidity units (2 NTUs);
 - (ii) Five (5) NTUs more than 5% of the time during a 24-hour period; and
 - (iii) 10 NTUs at any time.
 - b. The effluent has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtered wastewater does not exceed any of the following:
 - (i) 0.2 NTU more than 5 percent of the time within a 24-hour period; and
 - (ii) 0.5 NTU at any time.
4. The effluents produced by the MBR and AS/NDN treatment plants must be a filtered and subsequently disinfected wastewater that meets the following:
 - a. Disinfected by either:
 - (i) A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time⁸ measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or
 - (ii) A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate

⁸ The "modal contact time" means the amount of time elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance to a chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber (title 22, CCR, section 60301.600).

and/or remove 99.999 percent of the plaque forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as poliovirus may be used for purposes of the demonstration.

- b. The median concentration of total coliform bacteria measured in the filtered and disinfected effluents produced by the MBR and AS/NDN treatment plants must not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria must not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample must exceed an MPN of 240 total coliform bacteria per 100 milliliters.
5. Irrigation with disinfected tertiary treated wastewater must not take place within 50 feet of any domestic water supply well. (title 22, CCR, section 60310, subdivision (a))
6. Impoundment of disinfected tertiary treated wastewater must not occur within 100 feet of any domestic water supply well. (title 22, CCR, section 60310, subdivision (b))

D. General Requirements and Prohibitions

1. There must be no discharge, bypass, or diversion of untreated or treated wastewater, sludge, grease, or oils from the transport, treatment, or Authorized Disposal/Recycling Site (described in the Finding No. 10) to adjacent land areas or surface waters.
2. Surface flow, or visible discharge of untreated or treated wastewater, from the Authorized Disposal/Recycling Site (described in the Finding No. 10) to adjacent land areas or surface waters is prohibited.
3. All facilities used for collection, transport, treatment, or disposal of waste regulated by this Order must be adequately protected against overflow, washout, inundation, structural damage or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 100 years.
4. The discharge must not cause a pollution, as defined in California Water Code (CWC) section 13050, subdivision (I), or a threatened pollution.

5. Neither the treatment nor the discharge must cause a nuisance, as defined in CWC section 13050, subdivision (m).
6. The Discharger is authorized to recycle disinfected tertiary-treated wastewater on land areas it owns within Eastern Agricultural Site No. 1 and Section 25 and 30 of Eastern Agricultural Site No. 2 (as defined in Findings No. 6 and 10). After December 31, 2020, these areas are no longer authorized to receive treated wastewater under this Order.
7. The disposal of waste residue, including sludge, must be in a manner in compliance with all local, state, and federal requirements.
8. Treated wastewater used for dust control or soil compaction must be applied at a rate and amount that does not cause runoff or excessive ponding.
9. The treatment facility and Eastern Agricultural Site must be designed and operated as described in the findings of this Order and the Discharger's application referenced in Finding No. 1.
10. The MBR and AS/NDN treatment plants must be maintained at maximum operating efficiency in compliance with this Order.
11. The discharge of waste, as defined in the CWC, which causes violation of any narrative Water Quality Objective contained in the Basin Plan, including the Non-Degradation Objective, is prohibited.
12. The discharge of waste, which causes violation of any numeric WQO contained in the Basin Plan, is prohibited.
13. Before startup of the AS/NDN treatment plant, the amount of water applied to irrigate crops at the Eastern Agricultural Site must not exceed the amount that would result in percolation of treated wastewater below the crop root zone as described in the Discharger's application.
14. After startup of the AS/NDN treatment plant, application of recycled water to irrigate crops at the Eastern Agricultural Site must be in a manner consistent with the Discharger's application.

II. PROVISIONS

A. Waste Discharge and Water Recycling Requirements

1. Board Order No. No. R6V-2006-035 is hereby rescinded.
2. The second paragraph of Provision No. II.B.4. of Board Order No. R6V-2002-053 is hereby rescinded. The second paragraph of Provision No. II.B.4. included a schedule for submitting status reports for achieving compliance with Board Order No. R6V-2002-053. Requirements for submitting these status reports are addressed in other Orders of the Board, separate from this Order.
3. Discharge Specifications No. I.D.3 and I.D.4. of Board Order No. R6V-2002-053 are rescinded once the discharge from the AS/NDN tertiary treatment plant begins. Discharge Specifications No. I.D.3 and I.D.4. contain requirements from title 22 of the CCR that pertain to the quality of the effluent currently discharged to Piute Ponds and Nebeker Ranch. Currently, effluent from the Discharger's secondary treatment plant is discharged to these sites. Once the discharge from the AS/NDN tertiary treatment plant begins, Discharge Specifications in this Order will regulate the quality of effluent discharged to Piute Ponds and Nebeker Ranch.

B. Engineering Reports

1. Treated wastewater generated by the AS/NDN treatment plant must not be supplied to water recycling areas until the Lahontan Water Board Executive Officer has received the recommendations of the State Department of Health Services on the CCR, Title 22 Engineering Report, and the Discharger has received written acceptance of the Engineering Report from the Executive Officer.
2. Treated wastewater disinfected by the Ultraviolet Disinfection System for the MBR treatment plant must not be supplied to water recycling areas until the Lahontan Water Board Executive Officer has received the recommendations of the State Department of Health Services on the CCR, Title 22 Engineering Report, and the Discharger has received written acceptance of the Engineering Report from the Executive Officer.

C. Eastern Agricultural Site - Farm Management Plan

At least nine months before beginning application of treated wastewater to grow crops as part of Phase II for the Discharger's current facilities planning

period, the Discharger must submit to the Lahontan Water Board a revised Farm Management Plan.

D. Eastern Agricultural Site – Vadose Zone Monitoring

The attached Monitoring and Reporting Program describes the vadose zone monitoring requirements for the Eastern Agricultural Site. Provision I.H. of this Order requires the Discharger assess vadose zone monitoring results to determine whether predictions of the Discharger's vadose zone model are reasonable.

E. Eastern Agricultural Site - Groundwater Compliance Monitoring Wells

1. Fields No. 1 through 8 (Determination of Existing Water Quality)

The groundwater compliance monitoring points for these fields are existing wells No. MW30, MW31, SW30 and SW31, which are located as shown in Attachment C. By **June 30, 2007**, the Discharger must complete a minimum of eight TDS sampling rounds for each of these compliance monitoring wells and then calculate the existing water quality at each well as specified in Discharge Specification No. I.B.2.e. The results of the calculations and data used to make the calculations must be included in the third quarter self monitoring report due on **October 30, 2007**.

2. Fields No. 9 through 12

a. Additional Groundwater Compliance Monitoring Wells

By **April 20, 2007**, the Discharger must submit a workplan to the Board for installing a minimum of one monitoring well to monitor groundwater near two private wells located approximately 1000 feet south east of the center of Field No. 10. To satisfy the requirement for this monitoring well, the Discharger may adjust the location and design of one of the three wells discussed in the Discharger's August 17, 2005 groundwater monitoring plan. The monitoring well is for monitoring trends and compliance with receiving water limits for groundwater. It is also for monitoring groundwater located near the water table and that could potentially be tributary to groundwater located in the vicinity of the well casing screens for the two private wells.

At a minimum, the Discharger must install by **June 15, 2007**, three additional groundwater-monitoring wells for these fields,

including the above-described well near Field No. 10. Installation of three additional wells for these fields is discussed in the Discharger's August 17, 2005 groundwater monitoring plan.

b. Determination of Existing Water Quality

The compliance monitoring points are existing well No. SW32 and the three additional required wells, which are located as shown in Attachment C. By **September 30, 2007**, the Discharger must complete a minimum of eight TDS sampling rounds for each of these compliance monitoring wells and then calculate the existing water quality at each well as specified in Discharge Specification No. I.B.2.e. The results of the calculations and data used to make the calculations must be included in the fourth quarter self monitoring report due on **January 30, 2008**.

3. Fields No. 13 through 20

a. Additional Groundwater Compliance Monitoring Wells

At least one year before beginning application of treated wastewater to grow crops in any of these fields, the Discharger must submit to the Lahontan Water Board a workplan for establishing additional groundwater monitoring compliance wells. A minimum of three additional wells must be installed for these fields as shown in Attachment C.

b. Determination of Existing Water Quality

The compliance monitoring points are existing well No. SW31 and MW-30 and the three additional required wells, which are located as shown in Attachment C. Before beginning application of treated wastewater to grow crops in these fields, the Discharger must install the wells in accordance with an approved workplan and complete a minimum of eight TDS sampling rounds for each of these compliance monitoring wells and then calculate the existing water quality at well as specified in Discharge Specification No. I.B.2.e. The results of the calculations and data used to make the calculations must be included in the quarter self monitoring following the quarter the samples were collected.

F. Eastern Agricultural Site (Abandoned Wells, Fields No. 13 through 20)

At least three months before using treated wastewater in any of these fields, the Discharger must complete an investigation to determine the locations of all abandoned wells, properly destroy the abandoned wells in accordance with State and local regulations and submit a report to the Lahontan Water Board on the investigation and destruction of abandoned wells.

G. Eastern Agricultural Site (Site Run On and/or Runoff)

At least one month before beginning crop irrigation in any area within Fields No. 5 through 20, the Discharger must submit to the Lahontan Water Board a Drainage Control Report demonstrating the Discharger has completed drainage controls to prevent recycled water runoff as proposed in the 2020 Facilities Plan and Environmental Impact Report. Each Drainage Control Report must include as-built drawings including certification (by either a California licensed Civil Engineer, or a Certified Engineering Geologist) that the drainage controls were constructed in accordance with the Final Design Plans.

H. Eastern Agricultural Site (Performance Evaluation)

1. By **March 30, 2008** and annually thereafter, the Discharger must submit to the Lahontan Water Board a report containing:
 - a. Initial data required for center-pivot fields, including the information described in Section H.4.c of the attached Monitoring and Reporting Program.

The initial data, which was collected in the Phase I fields (in October 2006) before application of treated wastewater to grow crops, must be submitted by June 30, 2007. The Phase I fields consist of Fields No. 1 through 6, and Fields No. 9 and 10 (Phase I) shown in Attachment C.

For the remaining fields (Phase II fields), the Discharger must collect the preceding described initial data and include that data in one of the annual reports due before application of treated wastewater to grow crops. The Phase II fields consist of Fields No. 7 and 8, and Fields No. 11 through 20 shown in Attachment C.

- b. An evaluation of the effectiveness of the Discharger's best management practices in minimizing downward percolation of treated wastewater constituents (salts, nitrate and other constituents) in the vadose zone underlying the Eastern Agricultural Site.
 - c. An analysis of existing environmental and future operational conditions of the project. The results of the analysis must include values for both current and predicted wastewater infiltration rates⁹ through the vadose zone and depth of percolation in the vadose zone. It must also include a discussion of the current and predicted potential for wastewater constituents to affect groundwater quality. The report must be prepared by a registered hydrogeologist or soil scientist experienced in the field.
 - d. If the annual evaluation of downward percolation in the vadose zone indicates there is potential for a future discharge of treated wastewater to groundwater, the annual report shall include a plan of action with a schedule for completing actions in time to prevent discharge of treated wastewater to groundwater. The Discharger must provide quarterly reports on the status of the measures taken to ensure there are no violations of the receiving water limits as a result of treated wastewater reaching groundwater.
2. If the Discharger desires to continue operation of the site after 2020, the Discharger must evaluate the potential for continued operations to cause a discharge to groundwater and submit a report to the Lahontan Water Board by **August 14, 2015**. The report must contain an assessment of whether the continued use of the Eastern Agricultural Site will cause a discharge to groundwater. If the assessment indicates a discharge to groundwater may occur, the report must include a plan and schedule for preparing a degradation analysis. The analysis must identify the magnitude and extent of groundwater degradation that would occur as result of continuing the operation beyond 2020.

⁹ The unsaturated flow predictive analyses provided as part of the Discharger's application are contained in the following: (a) August 11, 2006 cover letter from the Discharger to the Water Board transmitting Addendum No. 2 to Report of Waste Discharge (ROWD) for the Lancaster Water Reclamation Plant (LWRP) Stage V Plant Expansion and (b) December 28, 2006 correspondence to the Water Board from Downey Brand Attorneys.

3. If the Discharger intends to use the site after 2020, the Discharger must:
 - a. File a complete Report of Waste Discharge with the Lahontan Water Board; and
 - b. Obtain new or amended requirements from the Lahontan Water Board for further use of the site.

I. Operator Certificates

The Facility must be supervised by persons possessing a wastewater treatment plant operator certificate of appropriate grade pursuant to CCR, title 23, section 3670 et seq.

J. Standard Provisions

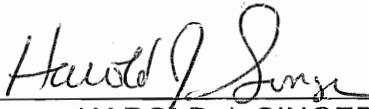
The Discharger must comply with the "Standard Provisions for Waste Discharge Requirements," dated September 1, 1994, in Attachment "E" which is made part of this Order.

K. Monitoring and Reporting

1. Pursuant to the CWC, section 13267, the Discharger must comply with Revised Monitoring and Reporting Program No. R6V-2002-0053 as specified by the Executive Officer which is made a part of this Order. Reports requested under the Monitoring and Reporting Program are being required to monitor the effects on water quality from known or suspected discharges of waste to waters of the State as a result of releases of treated wastewater or treated wastewater regulated by this Order.
2. Monitoring and Reporting Program No. R6V-2006-0051 for the Discharger's four proposed storage reservoirs located at the LWRP site is hereby rescinded. Monitoring and reporting requirements for the proposed reservoirs have been incorporated into the attached Monitoring and Reporting Program.

3. The Discharger must comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made a part of the Monitoring and Reporting Program.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on March 14, 2007.

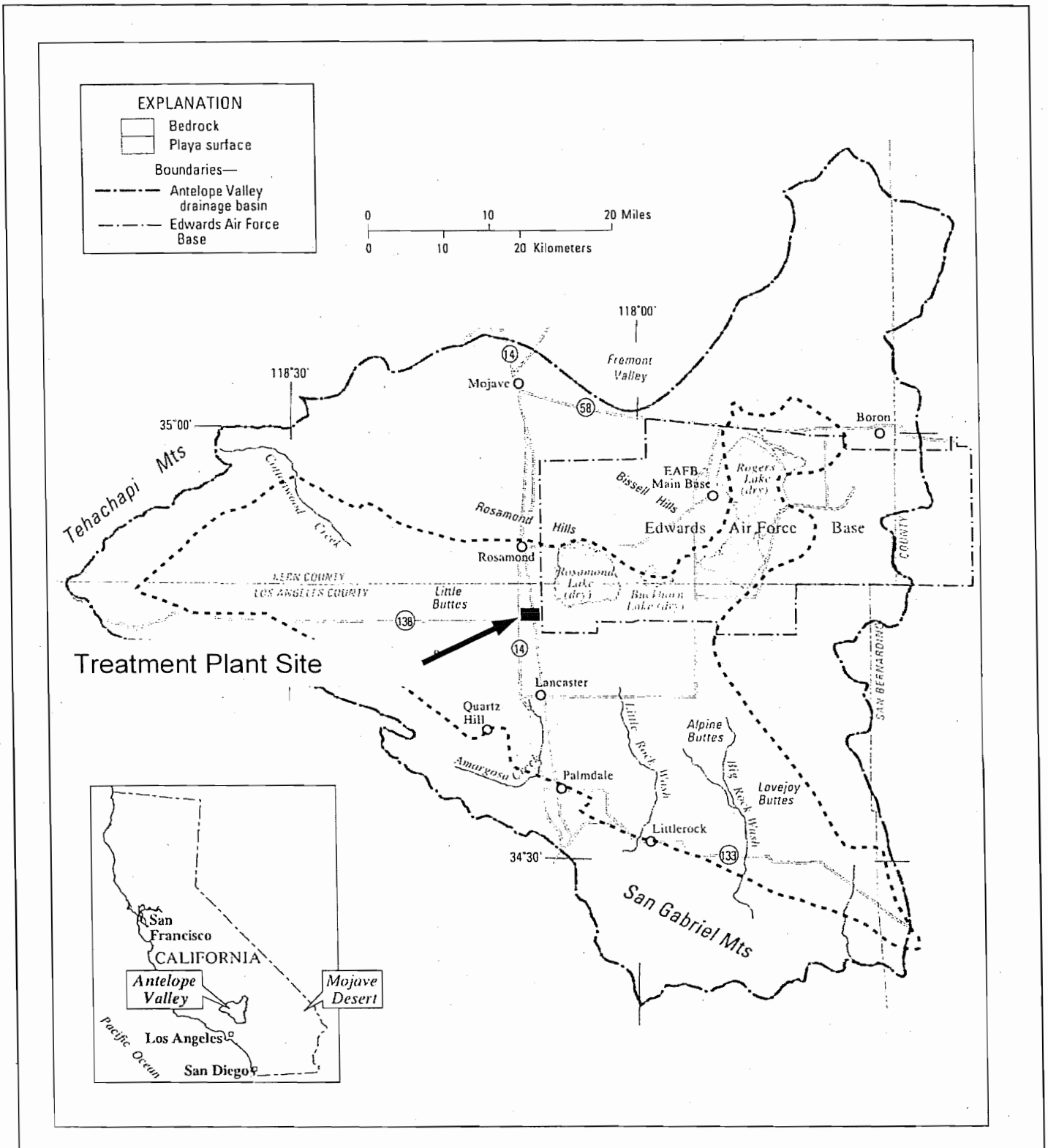


HAROLD J. SINGER
EXECUTIVE OFFICER

- Attachments:
- A. General Location Map
 - B. General Facilities Locations
 - C. Map of Eastern Agricultural Site
 - D. References
 - E. Standard Provisions for Waste Discharge Requirements

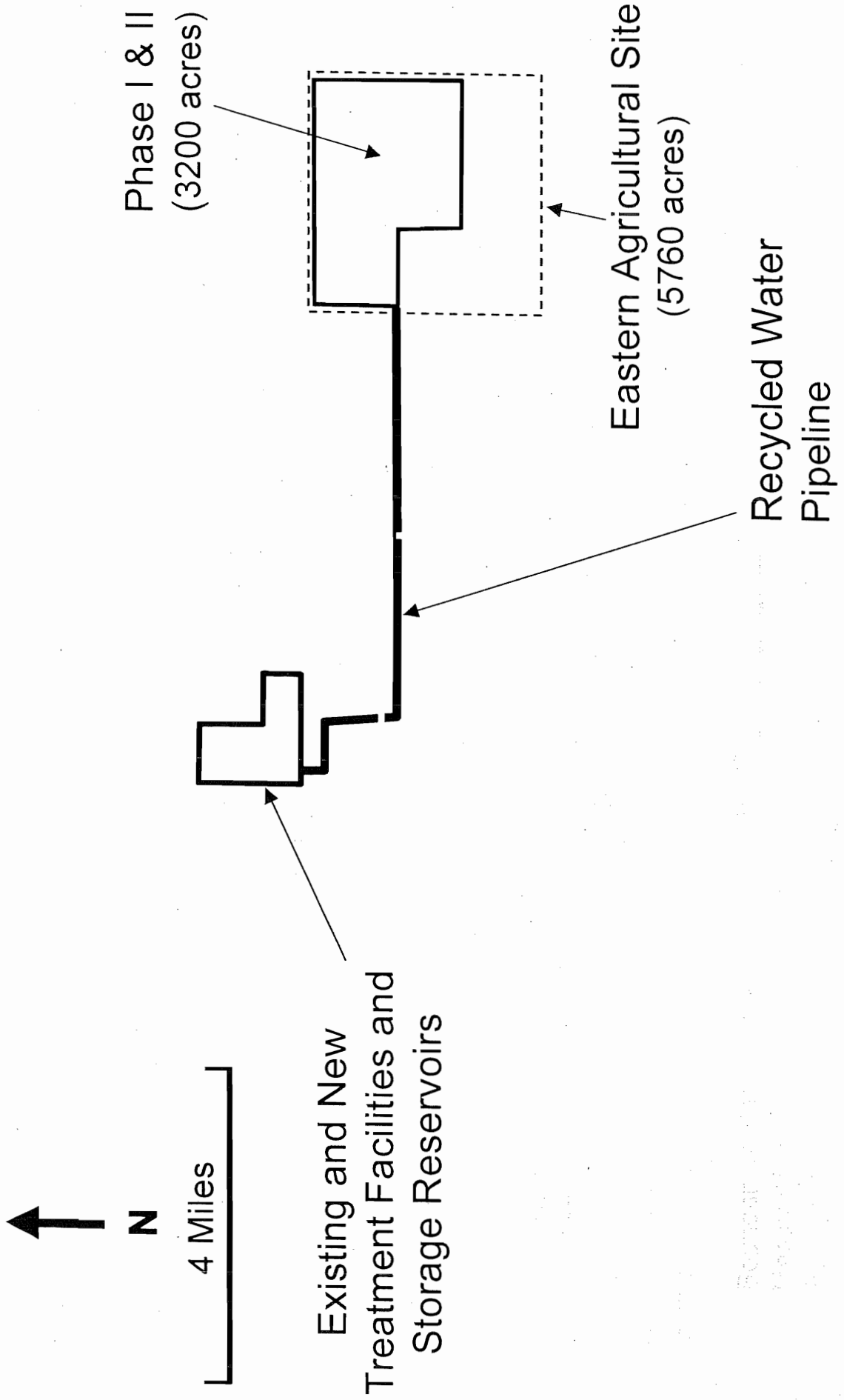
ATTACHMENT A

General Location Map



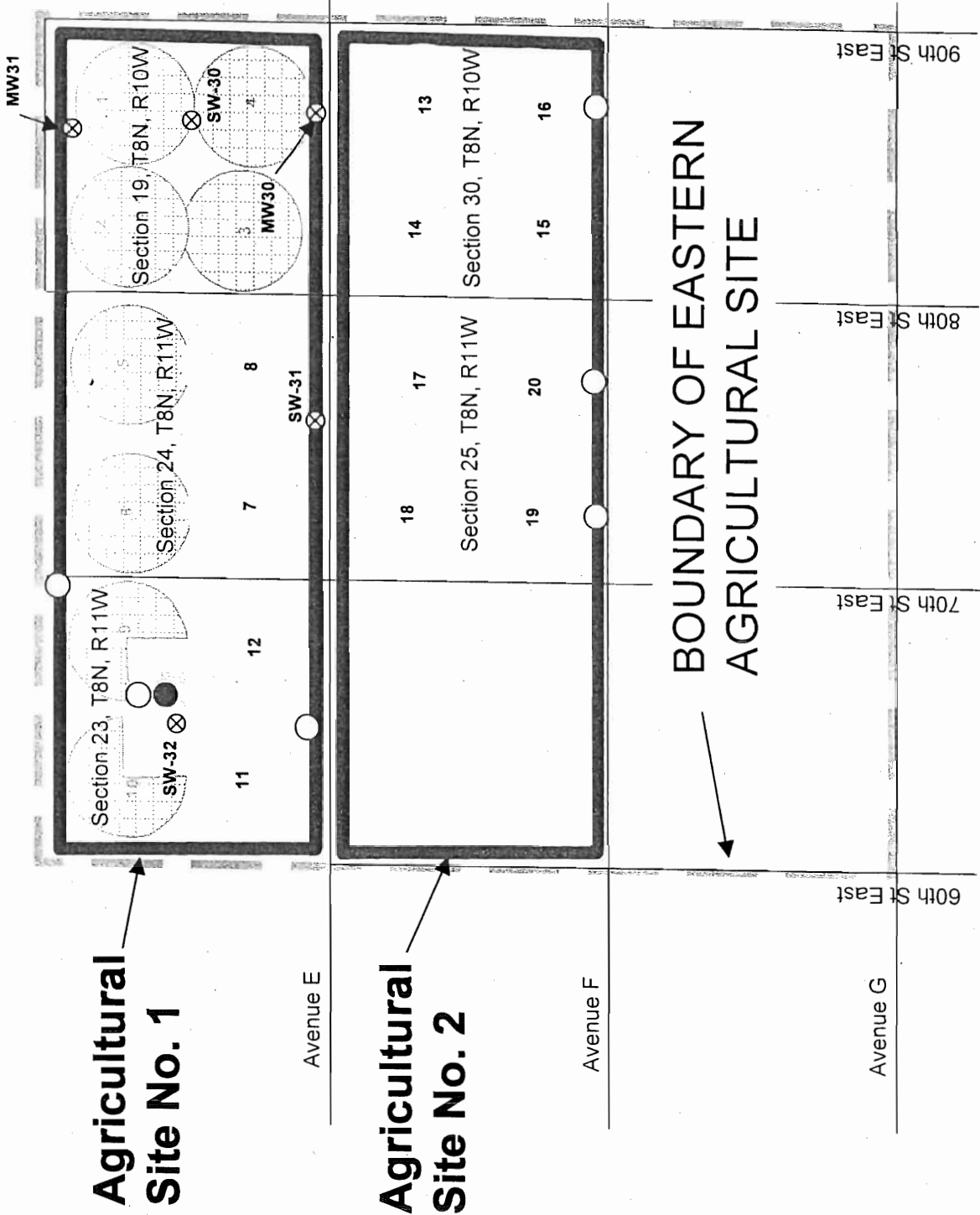
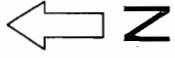
Modified from Figure 1, *Simulation of Groundwater Flow and Land Subsidence, Antelope Valley Ground-Water Basin*, USGS, 2003

Attachment B General Facilities Locations



Attachment C

Eastern Agricultural Site



Attachment D References

Los Angeles County Sanitation District No. 14 Amendment of Board Order No. RV6-2002-053

Note: The references that constitute the submittals for completing the Discharger's application are in **bold** text.

1. Asano, T., et al. 1984. Irrigation With Reclaimed Municipal Wastewater - A Guidance Manual Report No. 84-1 wr. Calif. State Water Resources Control Board, Sacramento, CA. (*Asano, 1984*)
2. California Department of Health Services, 2005, Letter containing recommendations and comments on the January 15, 2005 engineering report prepared by Los Angeles County Sanitation District No. 14, June 2. (*CDHS, 2005, Jun. 2*)
3. California Department of Health Services, 2004, Hexavalent chromium monitoring results on the CDHS website, <http://www.dhs.ca.gov/ps/ddwem/chemicals/Chromium6/Cr+6index.htm>, Dec 15. (*CDHS, 2004, Dec 15*)
4. California Department of Water Resources, 1975, Bulletin 118 California's Groundwater, September (*DWR, 1975*).
5. California Fertilizer Association (CFA), 1985, Western Fertilizer Handbook, Seventh Edition (*CFA, 1985*)
6. Fetter, C.W., Applied Hydrogeology, Third Edition, 1994 (*Fetter, 1984*)
7. Hermanson, et al, 2000, Nitrogen Use by Crops and the Fate of Nitrogen in the Soil and Vadoze Zone, A Literature Search. Washington State Department of Ecology (*Hermanson, 2000*)
8. Kennedy/Jenks Consultants (KJC), 1995, Antelope Valley Water Resource Study, March (*KJC, 1995*)
9. Los Angeles County Sanitation District No. 14, 2007, Letter from District to o Lahontan Water Board staff regarding mathematical modeling, January 4.
10. Los Angeles County Sanitation District No. 14, 2006, Supplement to "Lancaster Water Reclamation Plant Eastern Agricultural Site, Phase I and II, Evaluation of Potential Impacts to Groundwater Quality" Extending Modeling for 50 Years, December 28. (*LACSD14, 2006, Dec 28*)
11. Los Angeles County Sanitation District No. 14, 2006, E-mail from District staff to Lahontan Water Board staff transmitting table summarizing trihalomethane data, November 30. (*LACSD14, 2006, Nov 30*).

12. Los Angeles County Sanitation District No. 14, 2006, Well Destruction Report Eastern Agricultural Site No. 1, Prepared by Geomatrix Consultants, Inc., November 17. (*LACSD14, 2006, Nov 17*).
13. Los Angeles County Sanitation District No. 14, 2006, Crop Management Plan for the Lancaster Effluent Management Site, Prepared by Cascade Earth Sciences, November 13. (*LACSD14, 2006, Nov 13*).
14. Los Angeles County Sanitation District No. 14, 2006, *Addendum No. 3 to Report of Waste Discharge (ROWD) for the Lancaster Water Reclamation Plant (LWRP) Stage V Plant Expansion*, August 30, 2006.
15. Los Angeles County Sanitation District No. 14, 2006, *Addendum No. 2 to Report of Waste Discharge (ROWD) for the Lancaster Water Reclamation Plant (LWRP) Stage V Plant Expansion*, August 14(*LACSD14, 2006, Aug 14*)
16. Los Angeles County Sanitation District No. 14, 2006, E-mail from District staff to Lahontan Water Board staff transmitting table summarizing data for groundwater monitoring wells located at Eastern Agriculture Site No. 1, August 15. (*LACSD14, 2006, Aug 15*).
17. **Los Angeles County Sanitation District No. 14, 2006, Amended Report of Waste Discharge and Engineering Report for Membrane Bioreactor with Ultraviolet Disinfection Pilot Plant, April 10, 2006. (*LACSD14, 2006, Apr 10*)**
18. Los Angeles County Sanitation District No. 14, 2006, *2005 Annual Self-Monitoring Report*, Mar. 29. (*LACSD14, 2006, Mar 29*).
19. **Los Angeles County Sanitation District No. 14, 2006, Amended Report of Waste Discharge And Engineering Report For Membrane Bioreactor (MBR) with Chlorination Pilot Plant, Mar. 24. (*LACSD14, 2005, Mar 24*)**
20. **Los Angeles County Sanitation District No. 14, 2006, E-mail from District to Regional Board's Office including recent influent flow data, March 1. (*LACSD14, 2006, Feb.*)**
21. **Los Angeles County Sanitation District No. 14, 2005, Lancaster Wastewater Reclamation Plant Effluent Reuse Expansion – Phase IV Engineering Report, December 27. (*LACSD14, 2005, Dec. 27*)**
22. Los Angeles County Sanitation District No. 14, 2005, *Submission of Groundwater Monitoring Reports for Lancaster Reclamation Plant Eastern Agricultural Area*, November 3. (*LACSD14, 2005, Nov. 3*)
23. Los Angeles County Sanitation District No. 14, 2005, *Farm Management Plan – Phase 1a*, October 24. (*LACSD14, 2005, Oct. 24*)
24. **Los Angeles County Sanitation District No. 14, 2005, Report of Waste Discharge And Engineering Report For Effluent Reuse Expansion – Phase III, Oct. 24. (*LACSD14, 2005, Oct.*)**

25. Los Angeles County Sanitation District No. 14, 2005, *Groundwater Monitoring Plan, Eastern Agricultural Area, Agricultural Reuse Site No. 1*, Prepared By Geometrix Consultants, August 16, 2005. (LACSD14, 2005, Aug. 16)
26. Los Angeles County Sanitation District No. 14, 2005, *Well Detection Survey Report for Agricultural Site No. 1*, Prepared By GeoSyntec Consultants, August 10, 2005. (LACSD14, 2005, Aug. 10)
27. Los Angeles County Sanitation District No. 14, 2005, Letter from the District to the State Department of Health Services, August 8. (LACSD14, 2005, Aug. 8)
28. **Los Angeles County Sanitation District No. 14, 2005, District's cover letter to Regional Board office describing the proposed 1.0 mgd pilot tertiary treatment plant and transmitting a Form 200 and engineering report titled Lancaster Water Reclamation Plant, Membrane Bio-Reactor and Ultraviolet Disinfection Pilot Plant and Agriculture Reuse Project, July 22. (LACSD14, 2005, July 22)**
29. Los Angeles County Sanitation District No. 14, 2005, *Delineation Of Jurisdiction Waters For The Lancaster Water Reclamation Plant 2020 Facilities Plan: Storage Reservoir, Pipeline, & Eastern Agricultural Project Sites, Los Angeles County, California*, July 10. (LACSD14, 2005, July 10)
30. Los Angeles County Sanitation District No. 14, 2005, *Initial Groundwater Sampling and Analyses Report for Agricultural Site No. 1*, Prepared By GeoSyntec Consultants, June 21. (LACSD14, 2005, June 21)
31. Los Angeles County Sanitation District No. 14, 2005, *2004 Annual Self-Monitoring Report*, Mar. 28. (LACSD14, 2005, Mar).
32. **Los Angeles County Sanitation District No. 14, 2005, Report of Waste Discharge, Feb. 1. (LACSD14, 2005, Feb.)**
33. **Los Angeles County Sanitation District No. 14, 2005, Lancaster Water Reclamation Plant Effluent Reuse Expansion - Phase I, Engineering Report, January 15.**
34. Los Angeles County Sanitation District No. 14, 2004, *Lancaster Water Reclamation Plant 2020 Facilities Plan Final Environmental Impact Report*, May. (LACSD14, 2004, May)
35. Los Angeles County Sanitation District No. 14, 2004, *Lancaster Water Reclamation Plant 2020 Facilities Plan (Final)*, May (LACSD14, 2004, May).
36. Los Angeles County Sanitation District No. 14, 2003, *Identification Of Abandoned Wells – Lancaster Reclamation Plant*, Oct. (LACSD14, 2003, Oct.)
37. McKee and Wolf, *Water Quality Criteria, Second Edition*, 1963 (McKee, 1963)

38. *Metcalf and Eddy*, 2003, *Wastewater Engineering Treatment and Reuse*, Fourth Edition, (M&E, 2003)
39. U.S. Department of Agriculture (Soil Conservation Service) and University of California (Agriculture Experiment Station), 1970, *Soil Survey Antelope Valley Area, California*, January. (USDA, 1970, Jan)
40. U.S. Environmental Protection Agency, 1989, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities*, Interim Final Guidance, April. (USEPA, 1989)
41. U.S. Geological Service, 2006, Database on U.S. Geological Service website, Jan. (USGS, 2006, Jan)
42. U.S. Geological Service, 2003, *Simulation of Ground-Water Flow and Land Subsidence, Antelope Valley Groundwater Basin*, Jan. (USGS, 2003)
43. U.S. Geological Service, 1987, *Geohydrology of the Antelope Valley Area California and Design for a Groundwater Quality Monitoring Network* (USGS, 1987)

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

STANDARD PROVISIONS
FOR WASTE DISCHARGE REQUIREMENTS

1. Inspection and Entry

The Discharger shall permit Regional Board staff:

- a. to enter upon premises in which an effluent source is located or in which any required records are kept;
- b. to copy any records relating to the discharge or relating to compliance with the Waste Discharge Requirements (WDRs);
- c. to inspect monitoring equipment or records; and
- d. to sample any discharge.

2. Reporting Requirements

- a. Pursuant to California Water Code 13267(b), the Discharger shall immediately notify the Regional Board by telephone whenever an adverse condition occurred as a result of this discharge; written confirmation shall follow within two weeks. An adverse condition includes, but is not limited to, spills of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance.
- b. Pursuant to California Water Code Section 13260 (c), any proposed material change in the character of the waste, manner or method of treatment or disposal, increase of discharge, or location of discharge, shall be reported to the Regional Board at least 120 days in advance of implementation of any such proposal. This shall include, but not be limited to, all significant soil disturbances.
- c. The Owners/Discharger of property subject to WDRs shall be considered to have a continuing responsibility for ensuring compliance with applicable WDRs in the operations or use of the owned property. Pursuant to California Water Code Section 13260(c), any change in the ownership and/or operation of property subject to the WDRs shall be reported to the Regional Board. Notification of applicable WDRs shall be furnished in writing to the new owners and/or operators and a copy of such notification shall be sent to the Regional Board.
- d. If a Discharger becomes aware that any information submitted to the Regional Board is incorrect, the Discharger shall immediately notify the Regional Board, in writing, and correct that information.

- e. Reports required by the WDRs, and other information requested by the Regional Board, must be signed by a duly authorized representative of the Discharger. Under Section 13268 of the California Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation.
- f. If the Discharger becomes aware that their WDRs (or permit) are no longer needed (because the project will not be built or the discharge will cease) the Discharger shall notify the Regional Board in writing and request that their WDRs (or permit) be rescinded.

3. Right to Revise WDRs

The Regional Board reserves the privilege of changing all or any portion of the WDRs upon legal notice to and after opportunity to be heard is given to all concerned parties.

4. Duty to Comply

Failure to comply with the WDRs may constitute a violation of the California Water Code and is grounds for enforcement action or for permit termination, revocation and re-issuance, or modification.

5. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of the WDRs which has a reasonable likelihood of adversely affecting human health or the environment.

6. Proper Operation and Maintenance

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 WDRs. Proper operation and maintenance includes adequate laboratory control, where appropriate, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger, when necessary to achieve compliance with the conditions of the WDRs.

7. Waste Discharge Requirement Actions

The WDRs may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for waste discharge requirement modification, revocation and re-issuance, termination, or a notification of planned changes or anticipated noncompliance, does not stay any of the WDRs conditions.

8. Property Rights

The WDRs do not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

9. Enforcement

The California Water Code provides for civil liability and criminal penalties for violations or threatened violations of the WDRs including imposition of civil liability or referral to the Attorney General.

10. Availability

A copy of the WDRs shall be kept and maintained by the Discharger and be available at all times to operating personnel.

11. Severability

Provisions of the WDRs are severable. If any provision of the requirements is found invalid, the remainder of the requirements shall not be affected.

12. Public Access

General public access shall be effectively excluded from treatment and disposal facilities.

13. Transfers

Providing there is no material change in the operation of the facility, this Order may be transferred to a new owner or operation. The owner/operator must request the transfer in writing and receive written approval from the Regional Board's Executive Officer.

14. Definitions

- a. "Surface waters" as used in this Order, include, but are not limited to, live streams, either perennial or ephemeral, which flow in natural or artificial water courses and natural lakes and artificial impoundments of waters. "Surface waters" does not include artificial water courses or impoundments used exclusively for wastewater disposal.
- b. "Ground waters" as used in this Order, include, but are not limited to, all subsurface waters being above atmospheric pressure and the capillary fringe of these waters.

15. Storm Protection

All facilities used for collection, transport, treatment, storage, or disposal of waste shall be adequately protected against overflow, washout, inundation, structural damage or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 100 years.