California Regional Water Quality Control Board
Lahontan Region

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Arnold Schwarzenegger
Governor

July 21, 2006

To Interested Parties:

WDID NO. 6B190107017

TENTATIVE REVISED WASTE DISCHARGE REQUIREMENTS AND WATER RECYCLING REQUIREMENTS FOR LOS ANGELES COUNTY SANITATION DISTRICT NO. 14 WASTEWATER TREATMENT FACILITIES, STORAGE RESERVOIRS AND EASTERN AGRICULTURAL SITE NO. 1

Enclosed are tentative Waste Discharge Requirements (WDRs) and Water Recycling Requirements (WRRs) for the above subject.

The California Regional Water Quality Control Board is circulating tentative WDRs/WRRs for review. Please provide your written comments no later than **August 21, 2006**. Comments received after that date cannot be given full consideration in preparation of the recommended Board Order to be presented to the Regional Board for adoption at the meeting scheduled for September 13 and 14, 2006.

If you need further information regarding the WDRs/WRRs, please contact Curt Shifrer at (760) 241-7305.

Sincerely,

Rebecca Phillips
Office Technician

Enclosures: Tentative Board Order
Comment form

cc: Attached Mailing List

Notice

Submittal of Written Material for Regional Board Consideration

In order to ensure that the State of California Lahontan Regional Water Quality Control Board has the opportunity to fully study and consider written material, it is necessary to submit it at least ten (10) days before the Regional Board Meeting. Pursuant to Title 23 of the California Code of Regulations, Section 648.2, the Regional Board may refuse to admit written testimony into evidence unless the proponent can demonstrate why he or she was unable to submit the material on time or that compliance with the deadline would otherwise create a hardship. If any other party demonstrates prejudice resulting from admission of the written testimony, the Regional Board may refuse to admit it.

COMPLETE FORM AND RETURN

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To: CA Regional Water Quality Control Board, Lahontan Region (Curt Shifrer)
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Comments on WDRs for TENTATIVE REVISED WASTE DISCHARGE REQUIREMENTS AND WATER RECYCLING REQUIREMENTS FOR LOS ANGELES COUNTY SANITATION DISTRICT NO. 14 WASTEWATER TREATMENT FACILITIES, STORAGE RESERVOIRS AND EASTERN AGRICULTURAL SITE NO. 1 – WDID NO. 6B190107017

_______We concur with proposed requirements

_______We concur; comments attached

______We do not concur; comments attached

____(Sign)

____(Type or print name)

____(Organization)

____(Address)

____(City and State)

____(Telephone)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

BOARD ORDER NO. R6V-2006-(TENTATIVE)
WDID NO. 6B190107017

REVISED WASTE DISCHARGE REQUIREMENTS AND WATER RECYCLING REQUIREMENTS

FOR
LOS ANGELES COUNTY SANITATION DISTRICT NO. 14
WASTEWATER TREATMENT FACILITIES,
STORAGE RESERVOIRS AND EASTERN AGRICULTURAL SITE NO. 1

_____ Los Angeles County _____

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

1. Discharger

   On May 23, 2006, the Los Angeles County Sanitation District No. 14 sent information to the Lahontan Water Board, completing an application under Water Code section 13522.5. The application also included information for a revised Report of Waste Discharge under Water Code section 13260. The documents that constitute the complete application are listed in Attachment E (References). For the purposes of this Order, the Los Angeles County Sanitation District No. 14 is the Discharger.

2. Facilities

   The Discharger collects and treats an average of 13 million gallons per day (mgd) of municipal wastewater. Treated effluent is either disposed or recycled. The Discharger's service area includes a majority of the City of Lancaster, part of the City of Palmdale, and adjacent areas within unincorporated areas of Los Angeles County. Through a network of trunk sewers, the Discharger collects untreated domestic wastewater from local sewers. Currently, all wastewater receives treatment at the Discharger’s existing primary and secondary treatment facility, which is located in Lancaster. This facility produces un-disinfected and disinfected secondary recycled water. A portion of the secondary effluent receives further treatment at the adjacent Antelope Valley Tertiary Treatment Plant (AVTTP Plant). The Discharger has operated oxidation ponds for treatment at the current plant site since 1959. Since 1988, the Discharger has operated four reservoirs located adjacent to the treatment facilities to store secondary effluent.

3. Order History

a. Revised Waste Discharge Requirements

On September 11, 2002, the Lahontan Water Board adopted Board Order No. R6V-2002-053 establishing revised Waste Discharge Requirements and Water Recycling Requirements for the Discharger. On July 13, 2005, the Lahontan Water Board adopted Board Order No. R6V-2002-053A1 amending Board Order No. R6V-2002-053. Board Order No. R6V-2002-053 and its amendment included: (i) requirements regulating the Discharger's network of trunk sewers, and (ii) effluent limits for recycled water and treated effluent discharged to Piute Ponds and Impoundments No. A, B and C, and other disposal/reuse sites regulated under separate orders described in Finding No. 3.c., below.

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.

c. Other Orders

The Lahontan Water Board on April 11, 1985 adopted Board Order No. 6-85-35 issuing requirements to the County of Los Angeles for use of disinfected tertiary recycled water at Apollo Park and General William J. Fox Airfield. Requirements for use of un-disinfected secondary recycled water to irrigate fodder crops were issued to Nebeker Ranch by the Lahontan Water Board in Board Order No. 6-86-58, which was adopted on May 15, 1986. Master Water Recycling Requirements for use of disinfected tertiary recycled water in the Division Street Recycled Water Project are prescribed by the Lahontan Water Board in Board Order No. R6V-2006-0009, which was adopted on March 8, 2006.

4. Reason for Action

The Lahontan Water Board is revising Waste Discharge Requirements and Water Recycling Requirements because the Discharger has submitted an application proposing to construct additional reservoirs for storage of treated effluent. The Discharger's application also proposes to use disinfected tertiary recycled water to irrigate fodder crops at a proposed site.

The Discharger's application proposes to construct a pilot tertiary treatment plant (Membrane Bioreactor Plant (MBR Plant)). Effluent from the proposed MBR Plant will be combined with AVTTP plant effluent that is not used at Apollo Park. The combined effluents (disinfected tertiary recycled water) will be conveyed by pipeline a distance of seven miles to a proposed 1920-acre site (Eastern Agricultural Site No. 1). The recycled water will be used for construction purposes during installation of irrigation infrastructure and for growing fodder crops at Agricultural Site No. 1. The annual-average treatment capacities of the existing AVTTP plant and proposed MBR plant are 0.5 mgd and 1.0 mgd, respectively.

The project described in the Discharger's application also includes construction of four reservoirs with a combined storage capacity of 1299 million gallons. The sources of effluent are tertiary recycled water from the existing AVTTP and proposed MBR tertiary treatment plants. The Discharger has indicated it plans to complete an application with the Board for a proposed activated-sludge tertiary treatment plant, which will replace the existing secondary treatment plant. Before the Discharger can store effluent from the proposed activated sludge plant in the proposed reservoirs, it must obtain requirements from the Board.

5. Facility Location

The treatment facilities and storage reservoirs (both existing and proposed) are 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 treatment facility office is 1865 W. Avenue D, Lancaster, California 93534. Eastern Agricultural Site No. 1 is located approximately seven miles east of the treatment facilities as shown in Attachment B, which is made a part of this Order.

6. Description of Facilities

a. Description of Collection System

The Discharger owns a 63-mile network of trunk sewers and is responsible for operation and maintenance of this network. Local sewers convey wastewater to the trunk-sewer network. The Cities of Lancaster and Palmdale own the local sewers within their borders. The County owns the majority of the local sewers located in unincorporated areas. The County Consolidated Sewer Maintenance District, under an agreement with the Cities of Lancaster and Palmdale, operates and maintains most local sewers within the Discharger's service area.

b. Description of Existing Primary and Secondary Treatment Facility

All wastewater receives primary treatment by sedimentation tanks followed by secondary treatment in oxidation ponds No. 1 through 10. The primary treatment facility has a treatment capacity of 17 mgd and the secondary treatment facility has a treatment capacity of 16 mgd.

Oxidation ponds No. 1 through 6 include surface aerators. The Discharger disinfects effluent before discharge to receiving waters (Piute Ponds/Impoundments No. A, B and C). This is accomplished by addition of sodium hypochlorite and ammonia. In November 2005, the Discharger began operation of a new permanent bisulfite station, which includes two brush surface aerators following bisulfate addition. The Discharger also completed construction and began operation of a 16-mgd pH adjustment facility for complying with interim ammonia effluent limits for discharge to receiving waters. Adjustment of pH is accomplished by addition of hydrochloric acid. Anaerobic digesters treat sludge from the primary sedimentation tanks. Digested sludge is dried and stockpiled onsite until transport to a composting facility. Dried sludge that may be generated from pond cleaning will be hauled offsite for disposal/reuse at an authorized reuse or disposal site.

c. Description of Existing Tertiary Treatment Plant (AVTTP)

The source of influent flow for the AVTTP plant is secondary effluent from the Discharger's last oxidation pond. This plant has capacity to treat a maximum of 0.6 million gallons during a 24-hour period. For longer time-periods the treatment capacity is limited to 0.5 mgd. This plant includes chemical addition for coagulation/flocculation and phosphorus removal, followed by sedimentation, filtration, and disinfection with hypochlorite. The plant was not designed for nitrogen removal. Concentrations of key constituents in the effluent are described in Finding No. 14.

d. Description of Membrane Bioreactor Tertiary Treatment Plant

The source of influent wastewater flow for the proposed MBR plant is effluent from the Discharger's primary treatment facility. The plant will include: (i) a suspended-growth biological process, (ii) membrane bioreactors (MBRs) and (iii) two ultraviolet disinfection systems. The treatment capacity of the proposed MBR plant in terms of effluent production is: (i) annual average net flow of 1.0 mgd, and (ii) maximum daily average net flow of 1.75 mgd. The two ultraviolet disinfection systems will be operated in parallel and each will have disinfection treatment capacity of 1.0 mgd (in terms of average daily flow). The MBR plant will provide removal of biochemical oxygen demand (BOD) and nitrogen using a single-sludge, suspended-growth biological treatment process with MBR tanks instead of conventional clarifiers. Suspended-growth biological treatment will occur in activated sludge tanks, with initial

treatment in an anoxic zone followed by further treatment in an aerobic zone. Flow from the activated sludge tanks will go to the MBR tanks for further treatment, including filtration by membranes and removal of sludge. Removed sludge will either be returned to the activated sludge tanks or wasted to Oxidation Pond No. 1.

The Discharger will use citric acid and sodium hypochlorite solutions to periodically clean the surfaces of membranes in the MBR tanks. Use of these solutions will be minimal and not cause pH or concentrations of disinfection byproducts to exceed values in Table No. 3.

e. Description of Existing and Proposed Impoundments

The surface area of the existing impoundments (oxidation ponds and storage reservoirs) is 410 acres. Oxidation ponds (currently 270 acres) have been operated at the current plant site since 1959. Four reservoirs (140 acres) located adjacent to the oxidation ponds have been used since 1988 to store secondary effluent. The total storage capacity in the four existing reservoirs is 470 million gallons. The Discharger is proposing to construct four additional reservoirs with a total surface area of 280 acres. The following summarizes the proposed-reservoir storage capacities and the Discharger's estimated dates (subject to change) for completing reservoir construction.

Reservoir No.	Volume of Storage (Million Gallons)	Surface Area (Acres)	Tentative Construction Completion Date
1	305	66	September 2007
2	322	66	September 2007
3	381	85	March 2008
4	291	66	March 2008

The total capacity for storage in the proposed reservoirs is 1299 million gallons. The Discharger proposes to compact existing native soils in the bottom of the reservoirs to reduce percolation from the reservoirs. A provision of this Order requires the Discharger to submit to the Lahontan Water Board Final Design Plans and a Construction Quality Assurance (CQA) Program before starting construction. The CQA program is for describing proposed soil testing to verify the proposed level of compaction has been achieved. A Quality Assurance Test Report must be submitted to the Board following completion of construction providing the results of soil testing.

f. Description of Conveyance System

The Discharger has completed construction of a pipeline and a temporary pump station. The pipeline and pump station are part of a system for conveying the disinfected tertiary recycled water a distance of seven mile

to the proposed Eastern Agricultural Site No. 1. The Discharger proposes to construct a permanent pump station and a steel storage tank that will also become part of the conveyance system. The pump station will be located near the proposed storage reservoirs. The storage tank will be located near Eastern Agricultural Site No. 1 and have a storage capacity of two million gallons.

g. Description of Eastern Agricultural Site No. 1

Proposed Eastern Agricultural Site No. 1 consists of 1920 acres and includes all of 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). Use of the recycled water for construction at the site will include use for soil compaction, backfilling, concrete mixing, hydraulic testing of pipelines and irrigation systems. The recycled water will also be used for dust control during construction and following construction when plants are not being grown. Construction will include grading and preparation (tilling, etc.) of soil for planting crops. The Discharger has completed the following tasks in a 480-acre portion of Section 19 (See Attachment D, Map of Eastern Agricultural Site No. 1): destruction of abandoned water supply wells in accordance with well standards, installation and sampling of groundwater monitoring wells and construction of three center pivot irrigation systems. (*LACSD14, 2006, Apr)* Irrigation of crops with recycled water will begin within the 480-acre area following adoption of this Order. A provision of this Order requires completion of additional tasks in the remaining 1440 acres of the 1920-acre Agricultural Site No. 1 before crops are grown in that area. The tasks include installation of vadose zone monitoring devices and groundwater monitoring wells, and destruction of abandoned water supply wells in accordance with State and local regulations.

A wetland with an area of 0.08 acres has been delineated within the 480-acre area. The Discharger proposes to fill and grade the 0.08-acre area resulting in loss of the wetland. The Discharger proposes to mitigate the loss of this wetland through the Santa Monica Mountains Conservancy (SMMC). A total of 0.12 acres will be acquired through SMMC in the Antelope Valley or an alternative location acceptable to the Lahontan Water Board Executive Officer. This mitigation satisfies Discharge Specification No. I.D.11., which requires the Discharger to mitigate the loss of the 0.08-acre wetland by creation of a wetland of equal or higher value at an area ratio for wetland loss to wetland created of 1:1.5. Provision No. II.E.4 of this Order includes a schedule requiring the Discharger to submit to the Lahontan Water Board a documentation demonstrating the funds have been paid to the SMMC for implementation of the mitigation project.

The California State Legislature established the SMMC in 1980. In April 2000, the SMMC entered into the "Agreement for Establishment and

Administration of the Los Angeles County Aquatic Resource In-Lieu Fee Mitigation Program" with the U.S. Army Corps of Engineers (USACE) and the Mountains Recreation and Conservation Authority. The program established through this agreement provides mitigation for aquatic resources through the in-lieu fee process approved by the USACE. Once a participating entity enters into a Memorandum of Understanding with SMMC and makes payment of the set fees, the entity's responsibility for mitigation is transferred to the SMMC, and the entity's obligation for mitigation is fulfilled.

h. Piute Ponds/Impoundments No. A, B and C

Piute Ponds and Impoundments No. A, B and C are man-made impoundments located in Amargosa Creek (ephemeral stream channel) between Avenue D and Rosamond Dry Lakebed. An existing man-made channel conveys disinfected secondary effluent to Piute Ponds and Impoundments No. A, B and C. The receiving waters, which are effluent dominated, commingle with seasonal storm waters. The point-of-discharge from the channel to Piute Ponds/Impoundments No. A, B and C is an existing spillway located on Challenger Way. Surface water monitoring station RS-2 is located in Surface Impoundment A within 150 feet downgradient of the spillway at Challenger Way as shown in Attachment C of this Order. The Discharger, landowner (U.S. Department of the Air Force) and the California Department of Fish and Game established a memorandum of understanding (MOU) dated May 6, 1981 for maintaining Piute Ponds at 200 acres year-round. In 1991, Impoundments A, B and C were constructed within the Piute Pond area. On March 8, 1991, the Discharger and Department of the Air Force completed a memorandum of agreement (MOA) establishing the parameters under which the Air Force will accept effluent onto its property (Edwards AFB). A map (Exhibit A) attached to the MOA defines the boundaries of Impoundments No. A, B and C, and Piute Ponds. The Discharger also refers to Impoundment No. A as Little Piute Pond and Impoundments No. B and C as the Duck Ponds. Discharge of effluent to the Duck Ponds is contingent upon approval by Edwards AFB on an annual basis. The approximate time frame of discharge to these impoundments is November 1 through April 15. While the Duck Ponds may be dry during portions of the year, the remainder of the Piute Pond area remains wet year round. The Air Force uses fencing, posting and patrolling to restrict access to the receiving water area (Piute Ponds and Impoundments No. A, B and C), but does periodically permit short-term use of all (or portions) of the area for duck hunting and wildlife viewing.

7. Regulation of Recycled Water

a. Regulation

This Order includes water-recycling requirements. It requires the

Discharger to comply with Uniform Statewide Reclamation Criteria (California Code of Regulations, title 22, sections 60301 through 60355) established pursuant to Water Code section 13521.

As required under California Code of Regulations, title 22, section 60323 (22CCR§60323), the Discharger has submitted to the Lahontan Water Board and State Department of Health Services (SDHS) the following engineering reports for production of disinfected tertiary recycled water. Provision No. II.C. of this Order requires the Discharger submit to the Lahontan Water Board copies of the finalized versions of engineering reports described in part b. and d. of this Finding. The final version must address recommendations of the State Department of Health Services.

b. Engineering Report (Auxiliary Sodium Hypochlorite System)

The Discharger plans to initially disinfect combined effluents from the AVTTP and MBR plants using an auxiliary sodium hypochlorite disinfection system. Contact time for disinfection will occur in the effluent outfall pipeline to Eastern Agricultural Site No. 1. Use of the auxiliary system will continue while the Discharger tests the ultraviolet disinfection systems located at the MBR plant. The testing is expected to take up to two months. The Discharger has submitted the following engineering report for the auxiliary disinfection system: 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, 2006, Mar 24)*

c. Engineering Report (AVTTP plant with hypochlorite disinfection)

The final engineering report for this plant, which addresses the recommendations of the SDHS, consists of:

(i) An initial report prepared by the Discharger and titled *Lancaster Water Reclamation Plant Effluent Reuse Expansion - Phase I, Engineering Report*, January 15, 2005,
(ii) A June 2, 2005 letter from SDHS providing recommendations on the report, and
(iii) An August 8, 2005 letter from the Discharger that addresses recommendations in SDHS's June 2 letter.

d. Engineering Report (MBR tertiary treatment plant with ultraviolet disinfection)

The Discharger has submitted the following engineering report for the MBR tertiary treatment plant with ultraviolet disinfection: *Amended Report of Waste Discharge and Engineering Report for Membrane Bioreactor with Ultraviolet Disinfection Pilot Plant,* April 10, 2006.

8. Land Ownership

The treatment facilities, storage reservoirs and Eastern Agricultural Site No. 1 are located on land owned by the Discharger. Piute Ponds and Impoundments No. A, B and C are located on land owned by Edwards Air Force Base.

9. Authorized Disposal/Water Recycling Sites

This Order authorizes:

a. Storage of tertiary effluent in the proposed reservoirs,
b. Storage of secondary and tertiary effluent in the existing reservoirs,
c. Discharge of disinfected secondary effluent to Piute Ponds, Impoundment No. A (Little Piute Pond) and Impoundments No. B and C (Duck Ponds),
d. Use of disinfected tertiary recycled water at Eastern Agricultural Site No. 1, and
e. Use of recycled water for non-potable treatment plant site uses such as landscape irrigation and facility washdown.

Other disposal/water recycling sites authorized to receive treated wastewater are described in separate Board Orders adopted by the Lahontan Water Board. Currently, these sites consist of Apollo Park and General William J. Fox Airfield, Nebeker Ranch and the City of Lancaster, Division Street Recycled Water Project.

10. Topography

The direction of the ground-surface gradient at the Discharger's existing and proposed surface impoundments, Eastern Agricultural Site No. 1 and Piute Ponds is toward Rosamond Dry Lakebed in directions ranging from northeasterly to northwesterly. The slope of the gradient is 0.001 feet/foot at the existing and proposed surface impoundments and Piute Ponds. At the Eastern Agricultural Site No. 1, the slope of the gradient is 0.003 feet/foot.

11. Geology and Hydrogeology

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. Results of the investigation show that shallow soils in a 25,000-acre area between the City of Lancaster and Rosamond Dry Lakebed consist of silts and sandy silts that are high in soluble salts (*USDA, 1970, Jan*). The existing and proposed surface impoundments (oxidation ponds and storage reservoirs) are located within this area. The investigation indicates that shallow soils at Agricultural Site No. 1 contain soluble salts but at concentrations that are less than those in the shallow soils at the surface impoundment site. Shallow soils at Agricultural Site No. 1 are predominately clayey sand and silty sand (*USDA, 1970, Jan*).

In geologic terms, the shallow soils located at the surface impoundment site, Agricultural Site No. 1, and Piute Ponds are Quaternary alluvium. The Quaternary alluvium extends down to a lacustrine layer (blue-clay layer), which is present under all of these sites. In some areas, thin beds of clay and evaporative salt deposits, which have formed from small intermittent lakes or playas, are present in the Quaternary alluvium. The lateral extent of the Quaternary alluvium and blue-clay layer is 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, Middle and Lower Aquifers (*USGS, 2003*). The Upper Aquifer is located above the blue-clay layer and the Lower Aquifer is located below the layer. The upper portion of the Lower Aquifer is sometimes referred to as the Middle Aquifer. The blue-clay layer is considered to be an effective aquitard and the Middle and Lower Aquifers are considered to be confined aquifers (*USGS, 2003*), (*LACSD14, 2005, Jan. 28)*.

b. Hydrogeology (Discharger's Surface impoundments and Piute Ponds)

In 2004 and 2005, the Discharger conducted hydrogeologic investigations at the Discharger's existing and proposed surface impoundments and Piute Ponds. The investigation included logging of 38 boreholes, consisting of five exploratory borings and 33 boreholes for monitoring wells and piezometers. Eight of the boreholes extended into the blue-clay layer by depths ranging from several feet to 100 feet, respectively (*LACSD14, 2005, Jan. 28),* (*LACSD14, 2005, Dec. 12)*. The Discharger completed site investigation reports that include cross-sectional diagrams showing alluvium, blue-clay layer and the location of groundwater. These diagrams were constructed using information from the above-described USGS reports and the Discharger's investigations (*LACSD14, 2005, Jan. 28),* (*LACSD14, 2005, Dec. 12)*.

The reports indicate the thickness of the Quaternary alluvium located above the top surface of the blue-clay layer ranges from approximately 100 to 200 feet bgs at the Discharger's existing and proposed surface impoundments. The surface of the blue clay layer slopes toward the southwest at approximately 0.01 feet per foot in this area (*LACSD14, 2005, Jan. 28),* (*LACSD14, 2005, Dec. 12)*. In this area, the water table for the Upper Aquifer is located at depths ranging from 40 to 75 feet below ground surface (bgs). Water table elevations range from 2235 to 2255 feet

above mean sea level (msl) across this area. The direction of the water table gradient varies, ranging from toward the west to toward the north. Its slope is approximately 0.001 feet/foot (*LACSD14, 2006, May 4*).

At depths ranging from 20 to 30 feet below the ground surface (bgs) at the existing surface impoundments, there is a saturated zone perched on discontinuous layers of finer grained materials. The perched saturated zone is recharged by treated effluent that has percolated from existing surface impoundments. This perched saturated zone is located above the Upper Aquifer. The hydrogeology for the proposed reservoirs is similar to that for the existing impoundments, except the perched saturated zone is not present. Operation of the proposed unlined reservoirs may create a perched saturated zone similar to the perched zone under the existing impoundments.

The reports indicate the thickness of the Quaternary alluvium above the top surface of the blue-clay layer is approximately 20 feet in the area of Piute Ponds. In this area, a small-saturated zone is located on top of the blue-clay layer. Sources of recharge to this saturated zone include percolation of treated effluent from Piute Ponds and stormwater runoff that periodically occurs in Amargosa Creek. The water table for the saturated zone is located at depths ranging from zero to 13 feet below ground surface (bgs). Water table elevations range from 2275 to 2285 feet above mean sea level (msl) across this area. In general, the water table is mound shaped. The central portion of the mound is located near the center of the Piute Ponds and Impoundments A, B and C. Groundwater flow is in all directions from the center of the mound, including toward the Upper Aquifer underlying the Discharger's existing and proposed surface impoundments. The slope of this groundwater flow is approximately 0.003 feet/foot (*LACSD14, 2005, Dec. 12),* (*LACSD14, 2005, Jan. 28)*, (*USGS, 2003*).

b. Hydrogeology (Eastern Agricultural Site No. 1)

In 2004 and 2005, the Discharger conducted hydrogeologic investigations at Eastern Agricultural Site No. 1. The investigation included evaluation of well records for 155 wells located at the site, completion of down-hole geophysical and photographic logs for selected existing wells (*LACSD14, 2005, Aug. 10*), and 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 50 to 75 feet, respectively (*LACSD14, 2005, Aug. 16*). The Discharger completed site investigation reports that include cross-sectional diagrams showing alluvium, blue-clay layer and the location of groundwater (*LACSD14, 2005, Aug. 10*), (*LACSD14, 2005, Aug. 16*), (*LACSD14, 2005, June 21*). These diagrams were constructed using information from the above-described USGS reports and the Discharger's investigation results. The reports indicate the thickness of the Quaternary alluvium above the

top surface of the blue-clay layer ranges from approximately 200 to 250 feet bgs at Eastern Agricultural Site No. 1. The thickness of the blue-clay layer is approximately 350 feet based on logs for water wells extending into the Middle Aquifer. The depth to the Upper Aquifer is approximately 110 feet bgs. Groundwater flow is toward the southeast. (*LACSD14, 2005, Aug. 16*) (*LACSD14, 2005, Aug. 10*) (*LACSD14, 2005, June 21*)

12. Groundwater (Naturally Occurring Background Quality)

Concentrations of constituents, which are believed to be representative of naturally occurring background quality in groundwater are shown in Table No. 1. Drinking water Maximum Contaminant Levels (MCLs) are also shown in Table No. 1. The arsenic and chromium concentrations in groundwater are believed to be from naturally occurring sources.

Table No. 1 includes concentrations of constituents in Monitoring Wells No. 208, 209 and 210, which are screened in the Upper Aquifer. These wells are located in the area of the Discharger's existing and proposed surface impoundments. There has been either little or no anthropogenic development of the land in the vicinity of these well sites. The concentrations of constituents in the wells are, therefore, believed to be representative of naturally occurring background water quality. Monitoring well No. 208 is located approximately 3,500 feet west of the Discharger's existing surface impoundments. Monitoring wells No. 209 and 210 are located approximately 2,000 and 3,000 feet (respectively) north of the Discharger's existing surface impoundments at the site for the proposed storage reservoirs.

Table No. 1 includes concentrations of constituents in the Discharger's treatment plant water supply well, which are believed to be screened in the Middle Aquifer below the blue-clay layer. As discussed in Finding No. 13, below, effluent in the Discharger's existing surface impoundments has percolated to the Upper Aquifer. The blue-clay layer is considered to be an effective aquitard (*USGS, 2003*) that would prevent effluent in the Upper Aquifer from reaching the Middle Aquifer. The concentrations of constituents in the well are, therefore, believed to be representative of naturally occurring background water quality.

Table No. 1
Naturally Occurring Background Concentrations in Groundwater

Constituents	MCLs	Upper Aquifer[1] (Underlying the Discharger's existing and proposed surface impoundments)	Middle Aquifer[2] (Adjacent to west edge of Treatment Plant Site)	Upper Aquifer[3] (Underlying Agriculture Site No. 1)
Nitrate (mg/L as N)	10	2.0	1.8	<0.1 to 4
Total Dissolved Solids (mg/L)	500[4] and 1000[5]	358	500	200 to 500
Arsenic (µg/L)	10	5 to 11	26	4 to 10
Total Chromium (µg/L)	50	3 to 15	10	5 to 15
Hexavalent Chromium (µg/L)	Not Established	0.1 to 16	13	5 to 15

Footnotes:

1. TDS value is based on the maximum of the annual-average concentrations during 2005 for monitoring wells 208, 209 and 210. There were three sampling events for each well during 2005. Arsenic is based on nine samples collected in 2004 and 2005. Hexavalent chromium is based on six samples collected in 2004 and 2005. The other constituents are based on three samples collected in 2004.
2. Results of one sampling round collected from the Discharger's water supply well located 100 feet west of the treatment plant site. In the vicinity of this well site, the depth to the top of the blue-clay layer is approximately 200 feet. The screened interval for the well is reported to be located from a depth of from 270 feet to 470 feet. The site investigation report stated that the screened interval allows groundwater from the Middle Aquifer to enter the well. The report indicated the well was constructed in 1958. No well driller's log was included in the report (*LACSD14, 2005, Jan. 28).*
3. TDS concentrations are from Figure 10 of (*USGS, 1987*), which is an isoconcentration map for Antelope Valley constructed using TDS data for 1964 to 1984. Nitrate is from Table No. 3 of (*USGS, 1987*). Estimates of for arsenic and chromium are based on data contained in (*LACSD14, 2005, Nov. 3)*
4. Secondary MCL (Recommended)
5. Secondary MCL (Upper)

13. Groundwater (Existing Quality)

a. Proposed Storage Reservoir Site

Concentrations of constituents believed to be representative of existing water quality are given in Table No. 1 (Also, see discussion in Finding No. 13).

b. Existing Impoundments (Oxidation Ponds and Storage Reservoirs)

Site Investigation: In 2004 and 2005, the Discharger conducted a site investigations for the Discharger's existing surface impoundments. The investigations, which are described in Finding No. 11, included sampling and analysis of groundwater. The reports indicate that percolation of effluent from the existing impoundments have caused groundwater degradation, consisting of TDS concentrations greater than naturally occurring background concentrations.

Total Dissolved Solids (TDS): The average concentration of TDS in the existing surface impoundments is approximately 550 mg/L. Sampling results for monitoring wells located adjacent to the existing impoundments indicate TDS concentrations as high as 942 mg/L in groundwater and an average TDS concentration in groundwater of 900 mg/L. This data indicates TDS concentrations in effluent increase as effluent percolates through the vadose zone. A source of TDS in the subsurface is naturally occurring soluble salts in the vadose zone. As discussed in Finding No. 11, the U.S. Department of Agriculture have reported the presence of naturally occurring soluble salts in the vadose zone underlying this area. The degree of improvement to water quality would be minimal.

Extent of TDS Degradation in Groundwater: Since 1959, effluent TDS in underlying groundwater has migrated laterally a maximum of approximately 1000 feet from the edge of the ponds. Because of radial advection and dispersion, there is a concentration gradient across the degraded groundwater. TDS concentrations decrease with distance moving away from the reservoirs toward the outer boundary of the degraded groundwater. Beyond the outer boundary degraded groundwater concentrations are at naturally occurring background values

Nitrate: Evaluation of existing data shows that over 80 percent of the nitrogen in effluent stored in the existing impoundments is removed by denitrification before effluent affects groundwater. Concentrations of total nitrogen in wastewater in the existing impoundments range from 10 to 60 mg/l, depending on the time of year. Concentrations of nitrate in the perched groundwater described in Finding No. 11 and the Upper Aquifer range from non-detectable to 2.0 mg/L, which is equal to or less than naturally occurring background concentrations. The denitrification is believed to occur in both the lower portions of the impoundments and the underlying vadose zone (*WEI, 1998*).

b. Eastern Agricultural Site No. 1

Evaluation suggests that historic land-use practices at the proposed Eastern Agricultural Site No. 1 may have caused some degradation of groundwater. Total dissolved solids (TDS) concentrations in the Upper Aquifer are significantly higher than expected naturally occurring background concentrations. Sampling results indicate TDS concentrations in the Upper Aquifer underlying the site are highly variable ranging from 300 to 1800 mg/L (*LACSD14, 2005, Jun 21*) (*LACSD14, 2005, Nov 21*). Higher TDS concentrations appear to correlate with the locations for former dwellings and cropland (owned and operated by persons other than the Discharger). Former dwellings would have been served by septic tank systems. Both septic tank systems and irrigated cropland are potential sources of groundwater degradation. Figures No. 3-3 (aerial photograph) and Figure No. 4.1-10b in the Final EIR for the Discharger's 2020 Facilities Plan show significant agricultural operations formerly existed at Agricultural Site No. 1.

c. Piute Ponds

Concentrations of constituents in the shallow groundwater underlying Piute Ponds are shown in Table No. 2. Concentrations of TDS in the shallow groundwater that exceed the secondary MCL of 1000 mg/L are believed to be caused by evaporation of overlying surface water and the presence of naturally occurring salts in soils (*USDA, 1970, Jan*) (*USGS, 1987*). The concentrations of arsenic that exceed the MCL for arsenic are believed to be naturally occurring.

Table No. 2
Concentrations in Shallow Groundwater
Piute Ponds Area

Constituents	MCLs	Shallow Groundwater (*LACSD14, 2005, Dec. 12)*
Nitrate (mg/L as N)	10	<0.1 to 0.2
Total Dissolved Solids (mg/L)	500[1] and 1000[2]	1000 to 3000
Arsenic (µg/L)	10	30 to 400
Total Chromium (µg/L)	50	<3 to 10
Hexavalent Chromium (µg/L)	Not Established	<2

Footnotes:
1. Secondary MCL (Recommended)
2. Secondary MCL (Upper)

14. Effluent Quality

Table No. 3 summarizes data for the existing AVTTP plant and proposed MBR plant. The data for the proposed MBR plant is based on design data for that plant. Recycled water generated by both plants will be blended and conveyed to Eastern Agricultural Site No. 1. The values for the MBR/AVTTP blend are given in the fourth column of Table No. 3. The values are based on a combination of 1.0 mgd of MBR plant effluent and 0.3 mgd of AVTTP plant effluent.

During use of the Auxiliary Sodium Hypochlorite System described in Finding No. 7, concentrations of disinfection by-products in effluent conveyed to Eastern Agricultural Site No. 1 are expected to be the same as those in the second column of Table No. 3. Before there can be discharge from the ultraviolet disinfect system, the Discharger must follow a specific process described in Provision No. II.C.2 of this Order to demonstrate to the State Department of Health Services and Lahontan Water Board staff that ultraviolet disinfection facilities comply with Discharge Specification No. I.C.5.a. of this Order. This process is expected to take from two to three months. Ultraviolet light will then become the method of disinfection at the MBR plant. Once the ultraviolet disinfection is implemented, concentrations of disinfection by-products in the combined plant effluents will be as shown in the fourth column of Table No. 3. The disinfection by-products bromate and chlorite are not expected to be present in the effluents of the existing AVTTP plant and proposed MBR plant. Bromate is a byproduct of ozonation and chlorite is a by-product of chlorine dioxide. Neither ozonation nor chlorine dioxide are used by the Discharger (*Metcalf and Eddy, 2003),* (*LACSD14, 2006, Apr 6*), (*LACSD14, 2006, Mar 24),* (*LACSD14, 2005, July 22).*

Table No. 3
Concentrations[1] in
Disinfected Tertiary Recycled Water

Constituents	AVTTP plant effluent with hypochlorite disinfection	MBR plant effluent with ultraviolet disinfection	AVTTP and MBR plant effluent blend
Turbidity (NTUs)	5	0.2	---
Biochemical Oxygen Demand (mg/L)	6	5	---
Total Dissolved Solids (TDS)	703	550	585
Total Nitrogen (mg/L as N)	3.7	7	6
Arsenic (µg/L)	4	4	4
Total Chromium (µg/L)	2	2	2
Hexavalent Chromium (µg/L)	0.1	0.1	0.1
Disinfection By-Products:			
Trihalomethanes (µg/L)	100	20	40
Total haloacetic acids (µg/L)	80	20	34

Footnote:
1. All concentrations in this table are maximum values, with exception of the TDS values, which are averages. Data is from the amended report of waste discharge (*LACSD14, 2006, Apr 10*) and the Discharger's annual report (*LACSD14, 2006, Mar 29).*

15. Receiving Waters

The effluent dominated waters of Apollo Lakes and Piute Ponds/Surface Impoundments A, B and C are the surface receiving waters. These receiving waters are located within the Lancaster Hydrologic Area (Department of Water Resources [DWR] Hydrologic Unit No. 626.50). The subsurface receiving waters 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 – Surface Water and Groundwater

a. Surface Water Beneficial Uses

The beneficial uses of Piute Ponds and Apollo Lakes as set forth and defined in the Basin Plan are:

i. Municipal and Domestic Supply (MUN);

ii. Agricultural Supply (AGR);
iii. Groundwater 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. Groundwater 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:

i. Municipal and Domestic Supply (MUN);
ii. Agricultural Supply (AGR);
iii. Industrial Service Supply (IND); and
iv. Freshwater Replenishment (FRSH).

18. Cease and Desist Order

On October 13, 2004, the Lahontan Water Board issued Cease and Desist Order No. R6V-2004-0038 to the Discharger for threatening to violate General Requirement and Prohibition No. I.E.6 and failure to comply with Provision No. II.B.4 of Board Order No. R6V-2002-053, which state:

"I. DISCHARGE SPECIFICATIONS

E. General Requirements and Prohibitions

6. Neither the treatment nor the discharge shall cause a nuisance as defined in section 13050(m) of the California Water Code."

"II. PROVISIONS

B. Schedules

4. Nuisance Condition Caused by Effluent-Induced Overflows

By **August 25, 2005**, the Discharger shall complete a project to eliminate the threatened nuisance condition created by overflows from Piute Ponds to Rosamond Dry Lake, as described in Finding No. 7, and achieve compliance with General Requirements and Prohibition No. I.E.6."

Provisions of this Order specify that Cease and Desist Order No. R6V-2004-0038 and the above portions of Board Order No. R6V-2002-053 will remain in effect.

19. Effects of Existing Impoundments on Water Quality

a. Water Quality Effects Analysis

Description of Evaluation: During the evaluation of the effects of proposed reservoirs on groundwater, the Discharger also evaluated the effects of the existing surface impoundment. The results of evaluation for the existing impoundments are similar to those for the proposed reservoirs, which are discussed in Finding No. 20. c. In the evaluation, the Discharger assumed that the behavior of the effluent TDS and nitrogen in the vadose zone and groundwater for both the existing and proposed surface impoundments would be similar, with one exception; the nitrogen loss due to denitrification would be less for the proposed reservoirs. The denitrification is believed to occur in both the lower portions of the impoundments and the underlying vadose zone (*WEI, 1998*).

The Discharger assumed the amount of denitrification at the proposed reservoirs would be less than that, which occurs at the existing reservoirs, because of different wastewater characteristics. The type of wastewater present in the existing impoundments typically contains a higher ratio of organic carbon to nitrogen (C:N ratio) than effluent that will be stored in the proposed impoundments. The effluent stored in the proposed reservoirs will consist of effluent that has received tertiary treatment and treatment to remove nitrogen. Such effluents typically have a lower C:N ratio than wastewater in the existing impoundments. The type of wastewater present in the existing impoundments is discussed in Finding No. 6.b. and e. Levels of denitrification for the existing and proposed impoundments are discussed in Findings No. 13.b. and 20.c., respectively. A description of the extent of degraded groundwater at its maximum predicted extent is provided in Finding No. 20.d.

b. Conformance with Policy (Resolution No. 68-16)

In accordance with policy contained in the State Water Resources Control Board Resolution No. 68-16 (*Statement of Policy With Respect to Maintaining High Quality of Waters in California*) and the Water Quality Control Plan for the Lahontan Region (Basin Plan), the Lahontan Water Board can allow degradation of a water of the State if certain conditions are met. Results of evaluation show the degradation proposed by the Discharger meets those conditions. The following is a summary of the evaluation for the existing impoundments, with the conditions provided in *underlined italics* and a description of how the condition is met in normal text.

1) *The water quality changes are consistent with maximum benefit to the people of the State* because the existing surface impoundments provide treated water for recycling within the Antelope Valley. As noted in State Water Resources Control Board Resolution No. 77-1, *Policy with Respect to Water Reclamation in California*, the "State Board and Regional Boards shall (1) encourage reclamation and reuse of water in water-short areas of the State . . . ."

2) *The water quality changes will not unreasonably affect present and anticipated beneficial uses.* Water quality objectives for the beneficial use Municipal and Domestic Supply will be met. Water quality criteria for the beneficial use Agriculture Supply will not be met in a relatively small volume of groundwater compared to the total volume of groundwater in Antelope Valley (See discussion on volume in Finding No. 20.d.). Because the volume of groundwater where criteria will not be met is relatively small, the beneficial use Agriculture Supply will not be unreasonably affected. For additional details on the bases for these conclusion see Finding No. 20.f. The conclusions in Finding No. 20.f. (water quality changes caused by the proposed impoundments) are also applicable to the existing impoundments.

3) *The water quality changes will not result in water quality less than that prescribed in the Basin Plan.* As discussed above, the proposed degradation will not unreasonably affect applicable beneficial uses, including the beneficial uses: Agriculture Supply, and Municipal and Domestic Supply.

4) *The project is consistent with the use of best practicable treatment or control to avoid pollution or nuisance and maintain the highest water quality consistent with maximum benefit to the people of the State because*:
   i. The additional costs associated with lining the existing impoundments are not warranted given the relatively small volume of groundwater that will be degraded compared to the total volume of groundwater in Antelope Valley (See discussion on volume in Finding No. 20.d.).
   ii. In the future, the Discharger proposes to convert the existing impoundments to impoundments used for storing a quality of effluent that is higher than the current quality of effluent contained in the impoundments.

The estimate cost for lining 280 acres of impoundments (i.e., proposed reservoirs) is $30.5 million (See Table No. 4 of Finding No. 20.) Costs for lining the existing impoundments (410 acres) would be in excess of $30.5 million, because there would be an additional 130 acres that needs to be lined. The Discharger has indicated it proposes to convert the existing oxidation ponds to storage ponds. These ponds plus the existing storage reservoirs would be used to store effluent from the Discharger's activated-sludge tertiary treatment plant (to be built in the future and not regulated under this Order).

In summary, the above evaluation shows that the proposed long-term localized degradation in the vicinity of the existing impoundments meets the conditions contained in the Basin Plan and State Water Resources Control Board Resolution No. 68-16. The Regional Board finds that the degradation is reasonable, acceptable and appropriate provided the Discharger meets the conditions contained in this Order and the attached Monitoring and Reporting Program. Those conditions include requirements for monitoring the long-term trends in concentrations of TDS, nitrate and other constituents to demonstrate whether constituents in the vadose zone and groundwater are acting as predicted by the Discharger's evaluation.

20. Water Quality Effects Analysis (Proposed Storage Reservoirs)

a. Description of Proposal

This finding describes the evaluation of the effects of the proposed reservoirs. The Discharger is proposing unlined reservoirs for storage of tertiary-treated effluent. Operation of the proposed unlined reservoirs will cause some long-term localized degradation of groundwater (i.e., increases in TDS and possibly nitrate). In accordance with policy, the Lahontan Water Board can allow degradation of a water of the State if certain conditions are met.

b. Description of Alternatives

The Discharger analyzed four alternatives referred to for the purposes of this Order as Alternatives No. 1A, 1B, 2A and 2B (See Table No. 4). As a result of evaluation, the Discharger selected Alternative No. 1A. The alternatives evaluated included lined (synthetic) and unlined reservoirs, and tertiary-treated effluent with removal of total nitrogen (TN) to concentrations of 5 and 10 mg/L as N.

Table No. 4
Summary of Alternatives Evaluated

Alternative No.	Liner (*LACSD14, 2006, Jan.*)	Assumed Effluent Concentrations (*LACSD14, 2006, Jan.*)		Projected Concentrations in Groundwater Underlying Reservoirs		Cost (Million Dollars) (*LACSD14, 2006, Jan.*) (*LACSD14, 2004, May*)
		TDS (mg/L)	TN (mg/L as N)	TDS (mg/L)	Nitrate (mg/L as N)	
1A	Unlined,	550	10	900[1]	4[1]	172.7
1B	Unlined	550	5	900[1]	2.0[2]	203.3
2A	Lined (Synthetic)	550	10	358[3]	2.0[3]	203.2
2B	Lined (Synthetic)	550	5	358[3]	2.0[3]	233.8

Footnotes:
1. Based on evaluation described in Finding No. 20.c.
2. Calculated using the method described in Finding No. 20.c.
3. Naturally occurring background concentrations determined by taking the maximum of annual-average concentration during 2005 for monitoring wells 208, 209 and 210. There were three sampling events for each well during 2005.

c. Water Quality Effects Analysis

i. Methods Used in the Analysis

The Discharger evaluated the effects of the four alternatives in Table No. 4, above, on TDS and nitrate concentrations in groundwater. In the evaluation of the effects of the proposed unlined reservoirs (Alternative 1A and 1B), the Discharger relied primarily on data for the existing surface impoundments. In the evaluation, the Discharger assumed that the behavior of the effluent TDS and nitrogen in the vadose zone and groundwater would be similar to that, which is occurring at the existing impoundments, with one exception; the nitrogen loss due to denitrification would be less. The nitrogen loss for the proposed impoundments is based on literature (*WEI, 1998*). The Discharger also performed some mathematical modeling, which is summarized in Finding No. 20. h. The Discharger did use the results of a groundwater mixing cell model in its evaluation. The results of other mathematical modeling were considered but not incorporated into the final conclusions for the evaluation.

ii. Predicted Maximum TDS Concentration Underlying Proposed Impoundments

At the proposed reservoir site, the depth to the water table for the Upper Aquifer is approximately 75 feet below ground surface. The Discharger assumed:

1) The TDS concentration in the effluent contained in the proposed reservoirs would be the same as the concentration in the existing impoundments (550 mg/L),
2) The characteristics of the soils (e.g., amount of soluble salts in soils) in the vadose zone underlying the proposed reservoirs are the same as for the existing reservoirs (See discussion in Findings No 11.a and 13.b. on soluble salts),
3) As effluent percolates through the vadose zone underlying the proposed reservoirs the TDS concentration increases will be the same as the increases that occur under the existing impoundments, and
4) The TDS concentration in the upper 20 feet of the groundwater (Upper Aquifer) underlying the proposed reservoirs will not exceed maximum concentrations underlying the existing impoundments (900 mg/L).

This Order includes a receiving water limit for TDS in groundwater underlying the proposed reservoirs of 900 mg/L. This value (900 mg/L) is the same value the Discharger determined from its evaluation summarized above. The assumed TDS concentration of 550 mg/L is an estimate that is slightly higher than expected, because it includes TDS increases caused by evaporation from treatment ponds. These ponds will not be used to treat effluent stored in the proposed reservoirs; therefore, actual values in effluent that will be stored in the proposed reservoirs are expected to be slightly lower than 550 mg/L. Because of this, the Discharger expects actual concentrations in groundwater will also be slightly lower than the receiving water limit of 900 mg/L. The Discharger expects the actual concentrations will be lower by an amount that is sufficient to allow for statistical variation and still remain below the receiving water limit of 900 mg/L. The Discharger's staff has reported that actual values will be lower than the above values of 550 mg/L and 900 mg/L, but it does not have accurate estimates suitable for submission with its application.

iii. Predicted Maximum Nitrate Concentration Underlying Proposed Impoundments

For the Discharger's proposed alternative (Alternative No. 1A), the Discharger made the following assumptions:

1) The total nitrogen concentration in effluent stored in the proposed unlined reservoirs would be 10 mg/l as N (annual average).
2) One (1) mg/l of organic nitrogen is assumed to be resistant to biodegradation and would neither convert to nitrate nor effect groundwater. This value is based on literature (*WEI, 1998*).
3) The remaining total nitrogen is assumed to decrease by 50% because of nitrogen losses due to denitrification in the lower portion of the proposed reservoirs and the vadose zone. The Discharger bases this 50% value on literature and review of data for existing impoundments containing similar effluent (*WEI, 1998*). This assumed nitrogen loss due to denitrification is less than the loss occurring at the existing impoundment site, because the characteristics of the stored-effluents are different (*WEI, 1998*).

Using the above assumptions, the Discharger calculated a predicted nitrate concentration of 4.5 mg/l for effluent-percolate reaching groundwater. The Discharger then used a mixing-cell model to estimate the effect of percolate on the groundwater directly under the proposed reservoirs. This model predicts a concentration of four (4) mg/l in groundwater. This Order includes a receiving water limit for nitrate in groundwater underlying the proposed reservoirs of 4 mg/L as N. This value (4 mg/L) is the same value the Discharger determined from its calculations summarized above. In the calculations, the assumed nitrogen loss of 50% due to denitrification is slightly lower than expected losses. Because of this, the Discharger expects actual concentrations in groundwater underlying the proposed reservoirs to be lower than the receiving water limit of 4 mg/L by an amount that is sufficient to allow for uncertainty and statistical variation. The Discharger's staff has reported that actual values will be lower than the above value of 4 mg/L as N, but it does not have accurate estimates suitable for submission with its application.
(*LACSD14, 2006, May 23*).

iv. Predicted Distance of Lateral Migration of Degradation from Edge of Proposed Impoundments

The Discharger estimates the total distance of lateral migration of both effluent TDS and nitrate in groundwater from the edge of the

proposed reservoirs will be less than 2000 feet. This estimate is based on data for the existing surface impoundments. The Discharger has operated the existing surface impoundments at the current plant site for 47 years. The Discharger graphed TDS concentrations in existing monitoring wells versus distance of the monitoring wells from the existing impoundments. (*LACSD14, 2006, May 4*). The plotted data shows that effluent TDS in groundwater underlying the existing impoundments have migrated laterally a maximum of approximately 1000 feet from the edge of the impoundments in 47 years. (*LACSD14, 2006, May 4*).

d. Description of Degraded Groundwater at Maximum Predicted Extent

The area of the groundwater basin in Antelope Valley is approximately 1,620 square miles, which is equivalent to 1.04 million acres. The estimated volume of groundwater in storage is 72 million-acre feet. (*DWR, 1975*). At maximum extent, the volume of degraded groundwater will be 62,500 acre-feet for both the existing and proposed surface impoundments. This is less than 0.1 percent of the total volume of groundwater in storage in the Antelope Valley.

The following is a description of the degraded groundwater in the Upper Aquifer once it has reached its maximum extent as predicted by the Discharger. The presence of effluent TDS and nitrate in groundwater will be limited to the upper 125 feet of groundwater. The blue clay layer is located approximately 125 feet below the water table for the underlying groundwater (Upper Aquifer). It is an effective barrier to groundwater movement (*USGS, 2003*).

Average concentrations up to (but less than) 900 mg/L of TDS and 4 mg/L of nitrate (as N) will exist over an aquifer area of 690 acres in the upper 20 feet of the aquifer directly under the existing surface impoundments (410 acres) and proposed surface impoundments (280 acres).

At maximum extent, the total area of degraded groundwater will be less than 1000 acres, approximately 600 acres for the existing impoundments and 400 acres for the proposed surface impoundments. The total distance of lateral migration of both effluent TDS and nitrate in groundwater from the edge of the proposed reservoirs will be less than 2000 feet. The maximum distances for migration in groundwater are expected to be similar for all lateral directions, because there is relatively little slope to the surface of the water table (approximately 0.001 feet/foot (*LACSD14, 2006, May 4*). TDS and nitrate concentrations in groundwater, which are due to the presence of effluent, will decrease with distance moving laterally in all direction from the edge of the proposed reservoirs. The phenomenon is due to radial advection and dispersion of TDS and nitrate molecules (*Javandel, 1984*).

e. Receiving Water Limits

Receiving water limits included in this Order for nitrate and TDS are shown in Table No. 5.

Table No. 5
Receiving Water Limits
(Average-Annual Concentrations)

Compliance Locations (CLs)	Groundwater (Underlying Proposed Reservoirs)	Groundwater (Beyond 2000 feet down gradient of Proposed Reservoirs)
TDS (mg/L)	900[1]	430[2]
Nitrate (mg/L as N)	4[1]	2.4[2]

Footnotes:
1. Based on evaluation described in Finding No. 20.c and d.
2. Based on the naturally occurring background water quality.

f. Conformance with Policy (Resolution No. 68-16)

In accordance with policy contained in the State Water Resources Control Board Resolution No. 68-16 (*Statement of Policy With Respect to Maintaining High Quality of Waters in California*) and the Water Quality Control Plan for the Lahontan Region (Basin Plan), the Lahontan Water Board can allow degradation of a water of the State if certain conditions are met. Results of evaluation show the degradation proposed by the Discharger for the surface impoundments meets those conditions. The following is a summary of the evaluation for the existing impoundments, with the conditions provided in *underlined italics* and a description of how the condition is met in normal text.

1) *The water quality changes are consistent with maximum benefit to the people of the State* because the project will increase the amount of treated water available for recycling within the Antelope Valley. As noted in State Water Resources Control Board Resolution No. 77-1, *Policy with Respect to Water Reclamation in California*, the “State Board and Regional Boards shall (1) encourage reclamation and reuse of water in water-short areas of the State . . . .”

2) *The water quality changes will not unreasonably affect present and anticipated beneficial uses.* Water quality objectives for the beneficial use Municipal and Domestic Supply will be met. Water quality criteria for the beneficial use Agriculture Supply will not be met in a relatively small volume of groundwater compared to the total volume of groundwater in Antelope Valley (See discussion on volume in Finding No. 20.d.). Because the volume of groundwater where criteria will not be met is relatively small, the degradation will not unreasonably affect the beneficial use Agriculture Supply.

The water quality changes will not result in water quality less than that prescribed in the California Code of Regulations, Title 22 (drinking water standards) and the Basin Plan. TDS concentrations will exceed the Recommended Secondary Maximum Contaminant Level (Recommended Secondary MCL) of 500 mg/L over an area of less than 400 acres. TDS concentrations in groundwater are not predicted to exceed the Upper Secondary MCL of 1000 mg/L. Constituent concentrations lower than the Recommended Secondary MCL (500 mg/L) are desirable for a higher degree of consumer acceptance. Concentrations in excess of 500 mg/L may affect the taste of the water. California allows waters with TDS concentrations between 500 and 1000 mg/L to be used as a drinking water source if it is neither reasonable nor feasible to provide more suitable waters.

The proposed reservoirs are located within a 25,000-acre area where soils are not suitable for irrigated agriculture because of the presence of high concentrations of soluble salts in the upper five feet of soil and a layer of lime-cemented hardpan between depths of 24 to 39 inches below the ground surface (*USDA, 1970, Jan*). The groundwater underlying the proposed reservoirs, however, could be exported to other portions of Antelope Valley where soils are suitable growing crops. Waters with TDS concentrations of 700 mg/L or less are suitable for irrigation of all crops. Waters with a TDS concentration in the range of 700 to 2100 mg/L are suitable for crop irrigation dependent on crop, soil, climate, etc (*McKee, 1963*).

TDS concentrations up to 900 mg/L will occur in the Upper Aquifer directly under the proposed reservoirs. Concentrations up to 900 mg/L would not have a significant effect on forage, field, vegetable and fruit crops grown in the Antelope Valley with the possible exception of more sensitive fruit crops (strawberries) and vegetable crops (onions, carrots and beans). Crop irrigation water with TDS concentrations up to 900 mg/L may cause the following reduction in crop yields: up to 25% for strawberries, and up to 10% for onions, carrots and beans (*CSU, 2006*), (UNL*, 2006*). Onions and carrots are grown on a commercial scale in Antelope Valley. Strawberries and beans are not reported to be grown on a commercial scale in the Valley (*UCCE, 2006*). Water quality criteria for crop irrigation will not be met will not be met in a relatively small volume of groundwater relative to the total volume of groundwater in Antelope Valley (See discussion on volume in Finding No. 20.d.). The beneficial use Agriculture Supply will not be unreasonably affected, because the volume of groundwater where criteria will not be met is relatively small.

3) *The water quality changes will not result in water quality less than that prescribed in the Basin Plan*. As discussed above, the proposed degradation will not unreasonably affect applicable beneficial uses, including the beneficial uses: Agriculture Supply, and Municipal and Domestic Supply.

4) *The project is consistent with the use of best practicable treatment or control to avoid pollution or nuisance and maintain the highest water quality consistent with maximum benefit to the people of the State* because the additional costs associated with reservoir liners and/or a higher level of treatment are not warranted given the degree of improvement to water quality. Costs for these additional items would increase the Discharger's estimated total cost of $172.7 million for Stage V wastewater facilities by 17 to 35 percent, depending on the alternative selected. Stage V facilities include both the four proposed reservoirs regulated under this Order and the activated-sludge tertiary treatment plant to be built in the future (not regulated under this Order). The Discharger estimates the additional costs are $30.5 million for lined reservoirs and $30.6 million for a higher level of treatment. The Discharger has reported that the cost per sewer connection was $112/year before the 2020 Facilities Plan was completed in 2004. Following completion of the Facilities Plan, the cost/connection increased to $345/year according to the Discharger. If the Discharger were required to line the proposed reservoirs, the Discharger estimates the cost/connection would increase to $400/year.

In summary, the above evaluation shows that the proposed long-term localized degradation in the vicinity of the proposed reservoirs meets the conditions contained in the Basin Plan and State Water Resources Control Board Resolution No. 68-16. The Regional Board finds that the proposed degradation is reasonable, acceptable and appropriate provided the Discharger meets the conditions contained in this Order and the attached Monitoring and Reporting Program are met. Those conditions include requirements for monitoring the long-term trends in concentrations of TDS, nitrate and other constituents to demonstrate whether constituents in the vadose zone and groundwater are acting as predicted by the Discharger's evaluation.

g. Authority to Regulate Waste Leakage From Impoundments

Although the proposed reservoirs are to store recycled water that will ultimately be put to reuse for irrigation of fodder crops, the leakage from the ponds is not a recognized and permitted reuse of water for groundwater recharge and is therefore a discharge of waste to the groundwater and is regulated by these waste discharge requirements. The Water Board is not precluded from setting effluent limits that protect water quality from degradation even when it is of a better quality than necessary to protect beneficial uses.

h. Additional Details of the Discharger's Evaluation

The Discharger conducted some mathematical modeling for the evaluation. Calibration or sensitivity analysis for the models was not performed. The uncertainty of model predictions, therefore, cannot be quantified. In general, the portion of the modeling that involved the vadose zone and groundwater underlying the reservoirs were modeled to steady state. Modeling of degradation in the portion of the Upper Aquifer beyond the edges of the proposed impoundments did not include modeling to steady state.

The mathematical models used by the Discharger's evaluation consisted of:

1) VS2D vadose zone model to estimate time for percolating effluent to reach the Upper Aquifer,
2) A mixing cell model to estimate concentration of nitrate in groundwater directly below the proposed reservoirs, and
3) A three-dimensional groundwater flow model developed using FEFLOW to estimate potential mounding on the water table under proposed and existing impoundments and lateral migration using particle tracking.

Results of selected modeling results are included in Table No. 6 and 7, below.

Table No. 6
Vadose Zone

Parameters	**Values**[1]
Time required for percolating effluent to begin reaching groundwater after startup of reservoir operation.	15 years
Time required for the flow rate of leakage to groundwater to reach steady state.	25 years
Flow rate (annual average) of leakage to groundwater once the flow rate to groundwater reaches steady state in 25 years.	100,000 gallons per day

Footnote:
1. The values are from Figures No. 1, 2 & 3 and Table No. 1 of the Discharger's Water Quality Effects Analysis, Supplement I (WQEQ I), which summarize results of vadose zone VS2D model (*LACSD14, 2006, May 4*)

A mound containing effluent will exist on top of the Upper Aquifer. The maximum height of the mound will be at the center of the mound, which will be located at the center of the existing and proposed impoundments. The maximum height will be less than five feet. The value five feet is based on results of modeling for groundwater mounding in the Discharger's WQEA (*LACSD14, 2006, Jan*) and WQEA I (*LACSD14, 2006, May 4*). The January 2006 WQEA indicated a leakage rate of 400,000 gallons per day, a maximum mound height of five (5) feet at **steady state** and effluent TDS in groundwater would migrate laterally a maximum distance of approximately 2000 feet from the edge of the impoundments in 50 years. The Discharger determined that this value is likely to be too high, based on observations of effluent TDS migration for the existing surface impoundments. Those observation indicate that the effluent TDS in groundwater have migrated laterally a maximum distance of approximately 1000 feet from the edge of the impoundments in 47 years (*LACSD14, 2006, May 4*). The May 4, 2006 WQEA incorporated data on TDS migration for the existing surface impoundments. This modeling, therefore, provides results that more likely to characterize future conditions for the degraded groundwater. The May 4, 2006 WQEA results indicate a maximum mound height of 0.8 feet in 50 years, a leakage rate of 100,000 gallons per day, and effluent TDS in groundwater would migrate laterally a maximum distance of approximately 1000 feet from the edge of the impoundments in 50 years.

Table No. 7
Groundwater

Parameters	**Values**
Time required for concentrations in degraded groundwater directly under the proposed impoundment to reach steady state.	125 years[1]
Maximum height of the mound on top of the Upper Aquifer.	5 feet

Footnotes:

1. The value is from results of the vadose zone (VS2D) model and groundwater-mixing model shown in Figures No. 1 and 3 of the Discharger's Water Quality Effects Analysis, Supplement I (WQEA I) (*LACSD14, 2006, May 4*) Modeling was conducted for a period of 100 years. At 100 years, the curves in Figures No. 1 through 3 indicate a condition of steady state (curve slope of zero) will be reached in several years beyond 100 years. The value of 100 years was rounded up to 125 years to provide an estimate of time for reaching steady state assuming the model had been continued beyond 100 years.

21. 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 use of the groundwater includes Municipal and Domestic Supply and Agriculture Supply. Water quality objectives for the beneficial use Municipal and Domestic Supply will be met. Water quality criteria for the beneficial use Agriculture Supply will not be met in a relatively small volume of groundwater relative to the total volume of groundwater in Antelope Valley (See discussion on volume in Finding No. 20.d.). Because the volume where criteria will not be met is relatively small, the beneficial use Agriculture Supply will not be unreasonably affected.

The following describes requirements included in this Order for protection of the past, present, and probable future beneficial uses of groundwaters of the Antelope Valley. Receiving water limits, which are contained in this Order, limit the extent of degraded groundwater to the relatively small volume of groundwater discussed, above. Provisions in the Order and attached Monitoring and Reporting Program require the District to

construct a vadose zone monitoring system and additional groundwater monitoring wells for monitoring compliance with the receiving water limits. The attached Monitoring and Reporting Program requires the Discharger prepare graphs (concentration versus time) showing trends in concentrations of TDS and nitrate in lysimeters and groundwater monitoring wells for the proposed storage reservoirs. If the trends are not as predicted by the Discharger's water quality effects analysis described above, the Discharger is required to provide additional technical information in the monitoring reports submitted to the Water Board. The information must demonstrate whether the observed trends could potentially result in: (i) a higher level of degradation (or a pollution) or (ii) a larger area (laterally and vertically) of degraded groundwater or both (i) and (ii). Such information may include, but is not limited to, results of additional site investigation, more in-depth evaluation of data, completion of calibration and sensitivity analysis for the mathematical model.

b. Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.

The geological and hydrogeologic characteristics of the subsurface soils and the groundwater basin are described in Finding No. 11. The naturally occurring groundwater quality and the existing groundwater quality are listed in Findings No. 12 and 13, respectively.

Naturally occurring background concentrations of arsenic and hexavalent chromium are high in groundwater underlying the reservoirs. The recycled water will contain lower concentrations of trace metals including arsenic and hexavalent chromium than naturally occurring background water quality. Existing background quality currently meets drinking water standards for arsenic and total chromium. There is currently no drinking water standard for hexavalent chromium. The quality of groundwater in Monitoring Wells No. 208, 209 and 210 are believed to be representative of naturally occurring background concentrations for groundwater underlying the proposed storage reservoir site. Concentrations of arsenic and hexavalent chromium in these wells are relatively high. Of nine samples collected in 2004 and 2005, one sample contained 11 µg/L of arsenic, which exceeds the Primary MCL for arsenic of 10 µg/L. The concentrations of arsenic in the remaining eight samples ranged from 4.9 to 8.3 µg/L. There is currently no MCL for hexavalent chromium, but work is underway to establish one. Because of concerns with the toxicity of hexavalent chromium, the State Department of Health Services (SDHS) has required monitoring of drinking water sources for hexavalent chromium. As of December 2004, 6,700 sources have been monitored. Approximately one third of the sources had sampling results that showed the presence of hexavalent chromium using a 1.0 µg/L detection limit for the purposes of reporting. SDHS reported that 134 of the 6,700 sources had peak level detections in the range of 11 to 15 µg/L. Of four samples collected in 2004 and 2005 from Monitoring Wells No. 209 and 210 three

of the samples ranged from 13 to 16 µg/L. These results show that naturally occurring background concentrations of hexavalent chromium in the groundwater at the proposed reservoirs site is relatively high compared to monitoring results for most of the above-referenced 6,700 drinking water sources (*CDHS, 2004, Dec 15*).

c. Water quality conditions that could reasonably be achieved through the coordinated control of all factors, which affect water quality in the area.

The discharger evaluated alternatives to treat and control the proposed discharge. As stated in Findings No. 19 and 20, the discharge meets the conditions set forth in State Water Resources Control Board Resolution No. 68-16 allowing some degradation of groundwater.

d. Economic considerations.

Economic considerations are discussed in Findings No. 19 and 20. The discharger analyzed four alternatives, including lined impoundments. The additional costs for more expensive alternatives were determined not to be justified based on the additional degree of groundwater protection.

e. The need for developing housing within the region.

The discharge will indirectly enhance the development of housing in the region, because the discharger is authorized under the permit to discharge a larger quantity of wastewater than the existing permit.

f. The need to develop and use recycled water.

The permit authorizes an increase in the quantity of recycled water.

22. Water Quality Effects Analysis (Eastern Agricultural Site No. 1)

a. Deficit Irrigation

Disinfected tertiary recycled water from the AVTTP plant and proposed MBR plant will be used to deficit-irrigate fodder crops at Agricultural Site No. 1. The Discharger may complete an application with the Board in the future proposing to use Agricultural Site No. 1 for crop irrigation at an agronomic rate. Before the Discharger can apply effluent in amounts greater than the deficit irrigation rate, it must obtain requirements from the Water Board. The difference between deficit irrigation and irrigation at agronomic rates is that agronomic rates include application of additional amounts of water to leach salts from the root zone. Degradation of underlying groundwater is not expected. Deficit irrigation will be used. The soils consist of clayey sand and silty sand and the depth to groundwater is approximately 110 feet below the ground surface. The Discharger will be able to meet receiving water limits for nitrate and TDS, which are contained in this Order and are based on naturally

occurring background quality for groundwater.

b. Irrigation at Agronomic Rates

The Discharger has indicated it plans to submit information to the Water Board to complete an application to obtain requirements for the Discharger's activated-sludge tertiary treatment plant (to be built in the future and not regulated under this Order). The Discharger is planning to propose that effluent from that plant be used to irrigate crops at agronomic rates (including leaching of salts from the root zone).

c. Proposed Water Quality Effects Analysis

As discussed in Finding No. 13, evaluation indicates groundwater underlying Agriculture Site No. 1 may have been degraded by historic land use practices (*LACSD14, 2005, June 21*). TDS concentrations are significantly higher than naturally occurring background concentrations, which are from 200 to 500 mg/L. The attached monitoring and reporting program requires monitoring of the vadose zone and groundwater underlying Eastern Agricultural Site No. 1. Vadose zone monitoring will provide an early indicator of un-permitted and excessive application of recycled water that exceeds the deficit-irrigation rate (i.e., recycled water is migrating past the plant root zone) and allows the opportunity to implement corrective action (reduce the irrigation rate).

23. California Environmental Quality Act (CEQA)

In accordance with the California Environmental Quality Act (CEQA), the Discharger, acting as the lead agency, certified an Environmental Impact Report (EIR) on June 16, 2004 for the 2020 Plan project. The EIR found that the project would not pose a significant impact to water quality provided that the mitigation measures summarized in Table No. 8, below, are implemented. Monitoring and reporting requirements to ensure the mitigation measures are implemented and the measures are effective are included in this Order and the attached Monitoring and Reporting Program (MRP) at locations shown in the last column of Table No. 8. Additional monitoring requirement are include under Monitoring Requirement No. I.T of the attached MRP.

Table No. 8
Environmental Impact Report

	Impact	Mitigation Measure
a.	Downward migration of treated wastewater from storage reservoirs would degrade the quality of groundwater.	Native soils in the bottom of the proposed reservoirs will be compacted to minimize leakage. The quality of effluent stored in proposed reservoirs will be higher than that currently contained in existing impoundments.
b.	Downward migration of treated wastewater applied at agriculture site would degrade the quality of groundwater.	Deficit irrigation will be used. Degradation of underlying groundwater is not expected.
c.	Agriculture-site run on and/or runoff would degrade the quality of surface water.	Construct drainage controls to prevent run on and runoff
d.	Flow of treated wastewater down abandoned wells would degrade the quality of groundwater.	Identify and properly destroy abandoned groundwater wells.
e.	Elimination of the threatened violations related to effluent-induced overflows described in Finding No. 18 of this Order will cause existing total dissolved solids concentrations (500 to 1400 mg/L) to increase to concentrations (>3000 mg/L) that will impact beneficial uses (*LACSD14, 2003, Oct. Pg 3-10).*	Implement a project that will maintain an acceptable quality of water in Piute Ponds.

24. Notification of Interested Parties

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

25. 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 shall comply with the following:

I. DISCHARGE SPECIFICATIONS

A. Effluent Limitations

1. The flow of wastewater shall not exceed the following flow limits (Flow in excess of these limits shall not be considered a violation unless the violation causes a violation of an effluent or receiving water limit.):

   a. Average[1] daily flow to the primary treatment facility of 17.0 mgd,
   b. Maximum instantaneous flow to the primary treatment facility of 40.0 mgd, and
   c. Average[1] daily flow to the secondary treatment facility of 16.0 mgd.

2. The total flow of wastewater to the Antelope Valley Tertiary Treatment Plant during a 24-hour period shall not exceed 0.6 million gallons. (Flow in excess of these limits shall not be considered a violation unless the violation causes a violation of an effluent or receiving water limit.)

3. The effluent production at the MBR plant shall not exceed the following flow limits (Flow in excess of these limits shall not be considered a violation unless the violation causes a violation of an effluent limits.):

   a. Annual average flow of 1.0 mgd, and
   b. Maximum daily average flow of 1.75 mgd

4. All treated wastewater discharged to Piute Ponds/Impoundments No. A, B and C shall not exceed of the following limits:

Parameter	Units	30-day mean[2]	7-day mean[4]	Maximum
CBOD[3]	mg/L	40	60	---
Methylene Blue Active Substances	mg/L	---	---	0.5

5. Chlorine

   Effluent discharged to Piute Ponds/Impoundments No. A, B and C shall not contain concentrations of total residual chlorine (the sum of free and combined residual chlorine) at a one-hour compliance limit of

0.050 mg/L. Continuous monitoring shall be used to monitor compliance. Continuous monitoring is defined as monitoring that produces one or more data points every minute. All readings recorded beginning with the hour and for 59 minutes afterwards shall be collected. All non-detect readings (less than 0.050 mg/L) within this time frame shall be converted to zero. From the readings, the discharger shall compute the arithmetic mean, which shall be the value that is compared with the permit effluent limit. A new determination shall be made for the next hour time period beginning with the next hour. There shall be 24 determinations per day.

When continuous monitoring systems are off-line, such as for calibration, maintenance, and troubleshooting, a back-up system must be in place to show compliance. These systems can include, but are not limited to, monitoring for dechlorination residual (bisulfite or sulfite analyzer), redundant analyzers, stoichiometry method, or grab samples (in 40 CFR 136.3 Table 1B, revised as of July 1, 2004) using U.S. Environmental Protection Agency approved methods.

6. Interim Ammonia Effluent Limits

Treated effluent discharged to Piute Ponds/Impoundments No. A, B and C shall not contain ammonia concentrations exceeding the following ammonia effluent limits based on the pH of the effluent measured at the time the ammonia sample is taken:

pH	Interim Ammonia Limit (mg/L as N)	pH	Interim Ammonia Limit (mg/L as N)	pH	Interim Ammonia Limit (mg/L as N)
6.5	126.95	7.4	59.73	8.3	12.26
6.6	121.79	7.5	51.71	8.4	10.09
6.7	115.87	7.6	44.28	8.5	8.33
6.8	109.19	7.7	37.55	8.6	6.89
6.9	101.81	7.8	31.56	8.7	5.73
7.0	93.84	7.9	26.34	8.8	4.80
7.1	85.44	8.0	21.86	8.9	4.04
7.2	76.80	8.1	18.07	9.0	3.44
7.3	68.16	8.2	14.89		

7. pH

All wastewater made available to the authorized disposal/water recycling sites shall 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.

8. Dissolved Oxygen

All wastewater discharged to the authorized disposal/water recycling sites shall have a dissolved oxygen concentration of not less than 1.0 mg/L.

B. Receiving Water Limitations

The discharge shall not cause the presence of the following substances or conditions in ground or surface waters of the Antelope Hydrologic Unit.

1. Surface Waters

The discharge to surface waters shall not cause a violation of the following WQOs for the waters of the Lancaster Hydrologic Area, as determined at surface water monitoring station RS-2 (Surface water monitoring station RS-2 is located in Surface Impoundment A within 150 feet downgradient of the spillway at Challenger Way as shown in Attachment C of this Order.)

a. Ammonia - Waters shall not contain ammonia concentrations in excess of the values specified in Tables 3-2 and 3-4 of the Basin Plan as calculated using the formula described on page 3-4 of the Basin Plan. (A schedule for achieving compliance with Basin Plan WQOs for ammonia is contained in Provision II.F.1. of this Order.)

b. Bacteria - Waters shall not contain concentrations of coliform organisms attributable to human or livestock waste. The fecal coliform concentration during any 30-day period shall not exceed a log mean of 20 MPN/100 ML, nor shall more than 10 percent of all samples collected during any 30-day period exceed 40 MPN/100 ML. The log mean shall ideally be based on a minimum of not less than five samples collected as evenly spaced as practicable during any 30-day period. However, a log mean concentration exceeding 20 MPN/100 ML for any 30-day period shall indicate a violation of this objective even if fewer than five samples were collected.

c. Biostimulatory Substances - Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance (CWC 13050(m)), or adversely affect the beneficial uses of the receiving waters.

d. Chlorine - Waters shall not contain total chlorine residual in excess of either a median value of 0.002 mg/L or a maximum value of 0.003 mg/L. Median values shall be based on daily measurements taken within any six-month period. Results at a detection limit of 0.05 mg/L shall be considered as non-detects and will be deemed to demonstrate compliance with the numerical limits in accordance with the plan.

e. Color - Waters shall be free of coloration that causes a nuisance (CWC section 13050(m)), or adversely affects the waters for beneficial uses.

f. Dissolved Oxygen - The dissolved oxygen concentrations shall not be less than a 30-day mean concentration of 5.5 mg/L.

g. Floating Materials - Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause a nuisance (CWC section 13050(m)) or adversely affect the waters for beneficial uses.

h. Oil and Grease - Waters shall not contain oils, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause a nuisance (CWC section 13050(m)), or that otherwise adversely affect the waters for beneficial uses.

i. Pesticides and Herbicides - Pesticide (as defined on page 3-5 and 3-6 of the Basin Plan) concentrations individually or collectively shall not exceed the lowest detectable levels, using the most recent detection limits available. There shall not be an increase in pesticide concentrations found in bottom sediments. There shall be no detectable increase in bioaccumulation of pesticides in aquatic life.

j. pH - Changes in normal ambient pH levels shall not exceed 0.5 units, excluding exceedances attributable to natural flow conditions in Amargosa Creek. The pH shall not be depressed below 6.5 nor raised above 8.5 as a result of the discharge. pH values attributable to biological processes that

affect the receiving water's pH shall not be considered violations of Waste Discharge Requirements.

k. Radioactivity - Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life, nor which result in the accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal, or aquatic life.

l. Sediment - The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance (CWC section 13050(m)) or adversely affect the waters for beneficial uses.

m. Settleable Materials - Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance (CWC section 13050(m)) or that adversely affects the waters for beneficial uses.

n. Suspended Materials - Waters shall not contain suspended material in concentrations that cause nuisance (CWC section 13050(m)), or adversely affect the waters for beneficial uses.

o. Taste and Odors - Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish or other edible products of aquatic origin, that cause nuisance (CWC section 13050(m)), or that adversely affect the waters for beneficial uses.

p. Temperature - The natural receiving water temperature shall not be altered unless it can be demonstrated to the satisfaction of the Lahontan Water Board that such alteration in temperature does not create a nuisance (CWC section 13050(m)), or adversely affect the water’s beneficial uses. At no time before or after such demonstration shall the temperature of any waters be increased by more than 5°F above the natural receiving water temperature.

q. Toxicity - All waters shall be maintained free of toxic substances, as a result of the discharge, in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.

r. Turbidity - During periods of natural flow in Amargosa Creek, Piute Ponds shall be free of changes in turbidity that cause

nuisance (CWC section 13050(m)), or adversely affect the water for beneficial uses. Increases in turbidity shall not exceed natural levels by more than 10 percent.

s. Harmful Substances - All wetlands shall be free from substances attributable to wastewater or other discharges that produce adverse physiological responses in humans, animals, or plants, or which lead to the presence of undesirable or nuisance (CWC section 13050(m)) aquatic life. All wetlands shall be free from activities that would substantially impair the biological community as it naturally occurs due to physical, chemical and hydrologic processes.

2. Groundwater

The discharge shall not cause a violation of the following WQOs for the groundwaters of the Lancaster Hydrologic Area.

a. Bacteria - Groundwaters shall not contain concentrations of coliform organisms attributable to human wastes.

b. Chemical Constituents - Groundwaters shall 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 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 shall 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 shall 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 shall 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 (Proposed Storage Reservoirs) – Effluent seepage through the bottom of the proposed storage reservoirs shall be limited to an amount that does not cause nitrate and TDS concentrations to exceed the following limits in groundwater samples collected from:

i. Compliance monitoring locations, which consist of a single monitoring well screened across the upper 20-feet of the Upper Aquifer and located within 100 feet of the proposed reservoirs.

Parameter	Units	Annual Average
TDS	mg/L	900
Nitrate	mg/L as N	4

ii. Compliance monitoring locations, which consist of a single monitoring well screened across the upper 20-feet of the Upper Aquifer and located within 2000 feet of the proposed reservoirs.

Parameter	Units	Annual Average
TDS	mg/L	430
Nitrate	mg/L as N	2.4

f. Nitrate (Eastern Agriculture Site No. 1) – Use of recycled water at Eastern Agriculture Site No. 1 shall not cause: (i) nitrate concentrations in groundwater in excess of 3.4 mg/L as N, and (ii) TDS concentrations in groundwater at a given monitoring point to exceed existing concentrations at that point (concentration limit) as determined by an approved intra well statistical method.

C. Water Recycling Requirements

1. The Discharger shall comply the Uniform Statewide Reclamation Criteria, which are contained in California Code of Regulations (CCR), title 22, sections 60301 through 60355.

2. All treated effluent made available for water recycling shall be in compliance with requirements contained in title 22, CCR.

3. Recycled water used as a source of supply for the Apollo Park, Division Street Recycled Water project and Eastern Agricultural Site No. 1 shall be disinfected tertiary recycled water as defined in title 22, CCR.

4. Disinfected tertiary recycled water shall 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.

5. Disinfected tertiary recycled water shall be a filtered and subsequently disinfected wastewater that has been:

   a. Disinfected by either:

      i. A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time 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 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; and

   b. The median concentration of total coliform bacteria measured in the filtered and disinfected effluent shall 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 shall not exceed an MPN of 23 per 100

milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

6. During any period when Piute Ponds/Impoundments No. A, B and C are actively being used as a "restricted recreational impoundment" (as defined in CCR, title 22) and during the 30 days preceding the period when the ponds/impoundment will be used as a "restricted recreational impoundment," the wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed 2.2 MPN/100 ML, as determined from the bacteriological results of the last seven (7) days for which analyses have been completed. At all other times the discharge to Piute Ponds/Impoundments No. A, B and C shall be adequately disinfected such that at some location in the treatment process the number of coliform organisms does not exceed 23 MPN/100 ML in more than one sample within any 30-day period.

7. Recycled water used as a source of supply for irrigation on Nebeker Ranch shall have a level of quality no less than that of undisinfected secondary treated effluent as defined in the recycled water use criteria specified in title 22, CCR.

D. General Requirements and Prohibitions

1. There shall be no discharge, bypass, or diversion of raw or partially treated sewage, sewage sludge, grease, or oils from the collection, transport, treatment, or disposal facilities to adjacent land areas or surface waters.

2. Surface flow, or visible discharge of sewage or sewage effluent, from the authorized disposal/water recycling sites[5] to adjacent land areas or surface waters is prohibited.

3. All facilities used for collection, transport, treatment, or disposal of waste regulated by these Waste Discharge Requirements 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.

4. The vertical distance between the liquid surface elevation and the lowest point of a pond dike or the invert of an overflow structure of the existing and proposed surface impoundments described in Finding No. 6.e. shall not be less than two (2.0) feet.

5. The discharge shall not cause a pollution, as defined in CWC section 13050, subdivision (l), or a threatened pollution.

6. Neither the treatment nor the discharge shall cause a nuisance, as defined in CWC section 13050, subdivision (m).

7. The discharge of wastewater except to the authorized disposal/water recycling sites is prohibited.

8. The disposal of waste residue, including sludge, shall be in a manner in compliance with all local, state, and federal requirements.

9. Recycled water used for dust control or soil compaction shall be applied at a rate and amount that does not cause ponding or runoff.

10. Animal Feed Operations or Confined Animal Feed Operations as defined in 40CFR122.23 are prohibited within Eastern Agricultural Site No. 1.

11. Loss of the 0.08-acre wetland, which will occur as result of fill and grading at Eastern Agricultural Site No. 1, shall be mitigated by creation of a wetland of equal or higher value at an area ratio for wetland loss to wetland created of 1:1.5.

12. The treatment facilities, storage reservoirs and Eastern Agricultural Site No. 1 shall be designed and operated as described in the Findings of this Order and the Discharger's application referenced in Finding No. 1.

13. The treatment Facility shall be maintained at maximum operating efficiency in compliance with Waste Discharge Requirements.

14. The discharge of waste, as defined in the CWC, which causes violation of any narrative WQO contained in the Basin Plan, including the Non-Degradation Objective, is prohibited except for nitrate and TDS in groundwater underlying the proposed storage reservoirs as provided in Discharge Specification No. I.B.2.e.

15. The discharge of waste, which causes violation of any numeric WQO contained in the Basin Plan, is prohibited (except for the numeric WQO of 500 mg/L for TDS in groundwater underlying the proposed storage reservoirs as provided for in Receiving Water Limit No. I.B.2.e.)

II. PROVISIONS

A. Cease and Desist Orders

Cease and Desist Order No. R6V-2004-0038 shall remain in effect.

B. Waste Discharge Requirements

1. Board Order No. R6V-2002-053 (except for Finding No. 7, General Requirement and Prohibition No. I.E.6 and Provision No. II.B.4) is hereby rescinded. Finding No. 7, General Requirement and Prohibition No. I.E.6 and Provision No. II.B.4 shall remain in effect.

2. Board Order No. R6V-2002-053A1 is hereby rescinded.

C. Engineering Reports

1. Recycled water generated by the Auxiliary Sodium Hypochlorite Disinfection System (described in Finding No. 7.b) shall not be supplied to the Eastern Agricultural Site No. 1 for use until the Lahontan Water Board staff has:
   a. Received the recommendations of the State Department of Health Services on the Engineering Report for the MBR plant and the Auxiliary Disinfection System, and
   b. Submitted to the Discharger in writing its acceptance of the Engineering Report.

2. Recycled water generated by the Ultraviolet Disinfection System (described in Finding No. 7.d) shall not be supplied to the Eastern Agricultural Site No. 1 for use until the Lahontan Water Board staff has:
   a. Received the recommendations of the State Department of Health Services on the Engineering Report for the MBR plant and the Ultraviolet Disinfection System, and
   b. Submitted to the Discharger in writing its acceptance of the Engineering Report. (The final version of the Engineering Report for the MBR plant with ultraviolet disinfection must demonstrate there will be compliance with Discharge Specification No. I.C.5.a. of this Order.)

D. Proposed Storage Reservoirs

1. Monitoring

By **January 12, 2007**, the Discharger shall submit to the Lahontan Water Board a Vadose Zone and Groundwater Monitoring Workplan including a schedule for constructing vadose zone monitoring devices and additional groundwater monitoring wells at

the proposed storage reservoir site. The Discharger shall complete installation of the monitoring network (vadose zone monitoring and groundwater monitoring) before discharging treated wastewater into the proposed reservoirs. The workplan shall include:

a. A detailed schedule for completing all tasks associated with installation of the monitoring network, including performing at least three sampling events with one month between each event. The sampling must occur prior to discharging treated wastewater into the proposed reservoirs;
b. A map showing proposed locations for monitoring facilities;
c. Justification for the proposed monitoring locations and number of monitoring sites; and
d. Design plans and specifications for the proposed monitoring network.

2. Construction

a. Before discharging treated wastewater into the proposed reservoirs, the Discharger shall comply with Provisions II.D.2.b, c and d, below, which pertain to the compacted native soils layer proposed for the bottom of the storage reservoirs (See Finding No. 6.e.).

b. The Discharger shall submit to the Lahontan Water Board its Final Design Plans for the compacted native soils layer, including construction specifications for hydraulic conductivity, percentage of soil compaction and soil moisture content.

c. The Discharger shall submit to the Lahontan Water Board a Construction Quality Assurance (CQA) Program describing activities that provides assurance that compacted native soils layer is constructed as specified in the approved Final Design Plans. The CQA Program shall including plans for conducting:
   i. Hydraulic conductivity testing in accordance with Standard Methods
   ii. Tests to determine percent of soil compaction and soil moisture content,

   The CQA Program shall also contain a detailed schedule for completing all tasks associated with construction of the compacted soil layer including submittal of a Quality Assurance Test Report for the compacted layer to the Lahontan Water Board.

d. The Discharger shall submit to the Lahontan Water Board as-built drawings including certification (by either a California licensed Civil Engineer, or a Certified Engineering Geologist) that the reservoirs were constructed in accordance with the Final Design Plans.

E. Eastern Agricultural Site No. 1

1. Monitoring

By **January 12, 2007**, the Discharger shall submit to the Lahontan Water Board a Vadose Zone and Groundwater Monitoring Workplan including a schedule for installing vadose zone monitoring devices and additional groundwater monitoring wells at Eastern Agriculture Site No. 1. The Discharger shall complete installation of the portion of the vadose zone monitoring system underlying the 480-acre area at Agricultural Site No. 1 by **May 18, 2007**. The Discharger shall complete installation of vadose zone monitoring devices in the remaining areas of the site before recycling treated wastewater at Agricultural Site No. 1. The Discharger shall complete construction of the additional wells prior to **May 18, 2007**. The Workplan shall include:

e. A detailed schedule for completing all tasks associated with installation of the monitoring network, including performing at least three sampling events with one month between each event. The sampling must occur prior to recycling treated wastewater at the Agricultural Site No. 1;
f. A map showing proposed locations for monitoring facilities;
g. Justification for the proposed monitoring locations and number of monitoring sites; and
h. Design plans and specifications for the proposed monitoring network.

2. Abandoned Wells

Before using recycled water in areas of Eastern Agricultural Site No. 1 other than the 480-acre area described in Finding No. 6.g, the Discharger shall completed investigation to show 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 demonstrating the wells were properly destroyed.

3. Site Run On and/or Runoff

The Discharger shall submit to the Lahontan Water Board a Drainage Control Report demonstrating that drainage controls to prevent site run on and/or runoff have been completed as proposed

in design plans, before beginning crop irrigation in the 480-acre area of Eastern Agricultural Site No. 1 described in Finding No. 6.g. The Discharger shall also submit an additional Drainage Control Report, before beginning crop irrigation in areas of Eastern Agricultural Site No. 1 other than the 480-acre area. Each Drainage Control Report shall 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.

4. Wetland Mitigation

By **January 12, 2007**, the Discharger shall submit to the Lahontan Water Board a report demonstrating compliance with Discharge Specification No. I.D.11, which requires the Discharger mitigate the loss of the 0.08-acre wetland as proposed by the Discharger as described in Finding No. 6.g. The report shall include documents that demonstrate the Santa Monica Mountains Conservancy (SMMC) will implement the mitigation project described in Finding No. 6.g. Documents shall consist of a copy of the Discharger's completed Memorandum of Understanding with the SMMC and a receipt showing the Discharger has paid the SMMC fee required for implementation of the project.

If the Discharger decides to implement a mitigation project different from the proposed project, the Discharger shall submit a report of waste discharge to the Water Board for the proposed project. The Discharger is shall still submit to the Lahontan Water Board a report demonstrating compliance with Discharge Specification No. I.D.11 by **January 12, 2007**.

F. Piute Ponds

1. Ammonia Limits

Pursuant to CWC section 13242, the Discharger shall achieve compliance with Basin Plan water quality objectives for ammonia in Piute Ponds in accordance with the following schedule:

a. The Discharger shall comply with interim effluent limits for ammonia contained in Discharge Specification No. I.A.6. until the Lahontan Water Board amends the Basin Plan to include: (a) a site-specific water quality objective (WQO) for ammonia in Piute Ponds, or (b) another WQO for ammonia that is applicable to Piute Ponds, or until the Lahontan Water Board takes other action that would eliminate the requirement to comply with the interim effluent limits contained in this Order (e.g., revision of the interim effluent limits for ammonia). The time required to complete a Basin

Plan amendment is approximately 15 months.

b. The Discharger shall comply with the applicable Basin Plan WQO for ammonia once the Lahontan Water Board completes the above-referenced Basin Plan amendment and all other required amendment approvals have occurred.

2. Total Dissolved Solids (TDS)

By **January 12, 2007**, the Discharger shall submit to the Lahontan Water Board a plan of action for completing a project that will protect beneficial uses of Piute Ponds including maintaining an acceptable quality of surface water (e.g., acceptable TDS concentrations) in Piute Ponds after the Discharger has eliminated the threatened violations related to effluent-induced overflows described in Finding No. 18 of this Order. The plan of action shall include, but not be limited to a tentative schedule for completing tasks including: (a) completion of a project in time to prevent TDS increases in Piute Ponds, (b) meeting with the Air Force to coordinate implementation of a project, (c) preparation of any technical reports or environmental documentation that may be required.

G. Operator Certificates

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

H. Standard Provisions

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

I. Monitoring and Reporting

1. Pursuant to the CWC, section 13267, the Discharger shall comply with the Monitoring and Reporting Program No. R6V-2006-(TENTATIVE) as specified by the Executive Officer. 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 recycled water regulated by this Order.

2. The Discharger shall 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 September 13, 2006.

_____

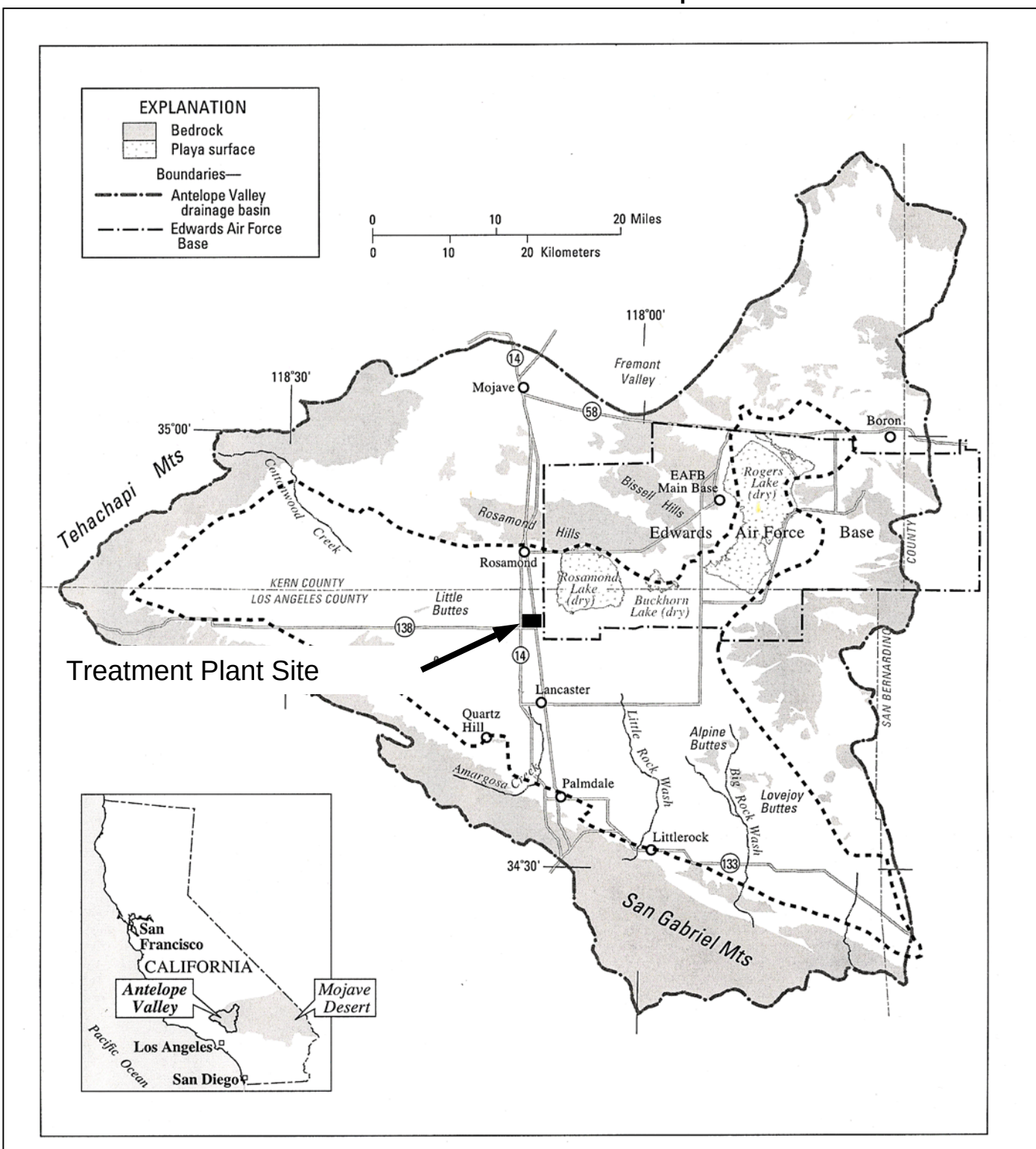
HAROLD J. SINGER
EXECUTIVE OFFICER

Attachments: A. General Location Map
B. General Facilities Locations
C. Map of Treatment Plant Site and Storage Reservoirs
D. Map of Eastern Agricultural Site No. 1
E. References
F. Standard Provisions for Waste Discharge Requirements

1. The arithmetic mean of total daily flow values for each month.
2. 30-day mean (average), the mean of all lab results for effluent samples collected in a 30-day period. For each date a sample is submitted, the results will be summed from that day and the previous 29 days and divided by the number of samples.
3. Carbonaceous Biochemical Oxygen Demand (5 day, 20^{o}C of a filtered sample).
7-day mean (average), the mean of all lab results collected in a 7-day period. For each date a sample is submitted, the results will be summed from that day and the previous 6 days and divided by the number of samples.
4. 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. (*22CCR§60301.600*)
5. This does not include overflow from Piute Ponds to Rosamond Dry Lake.

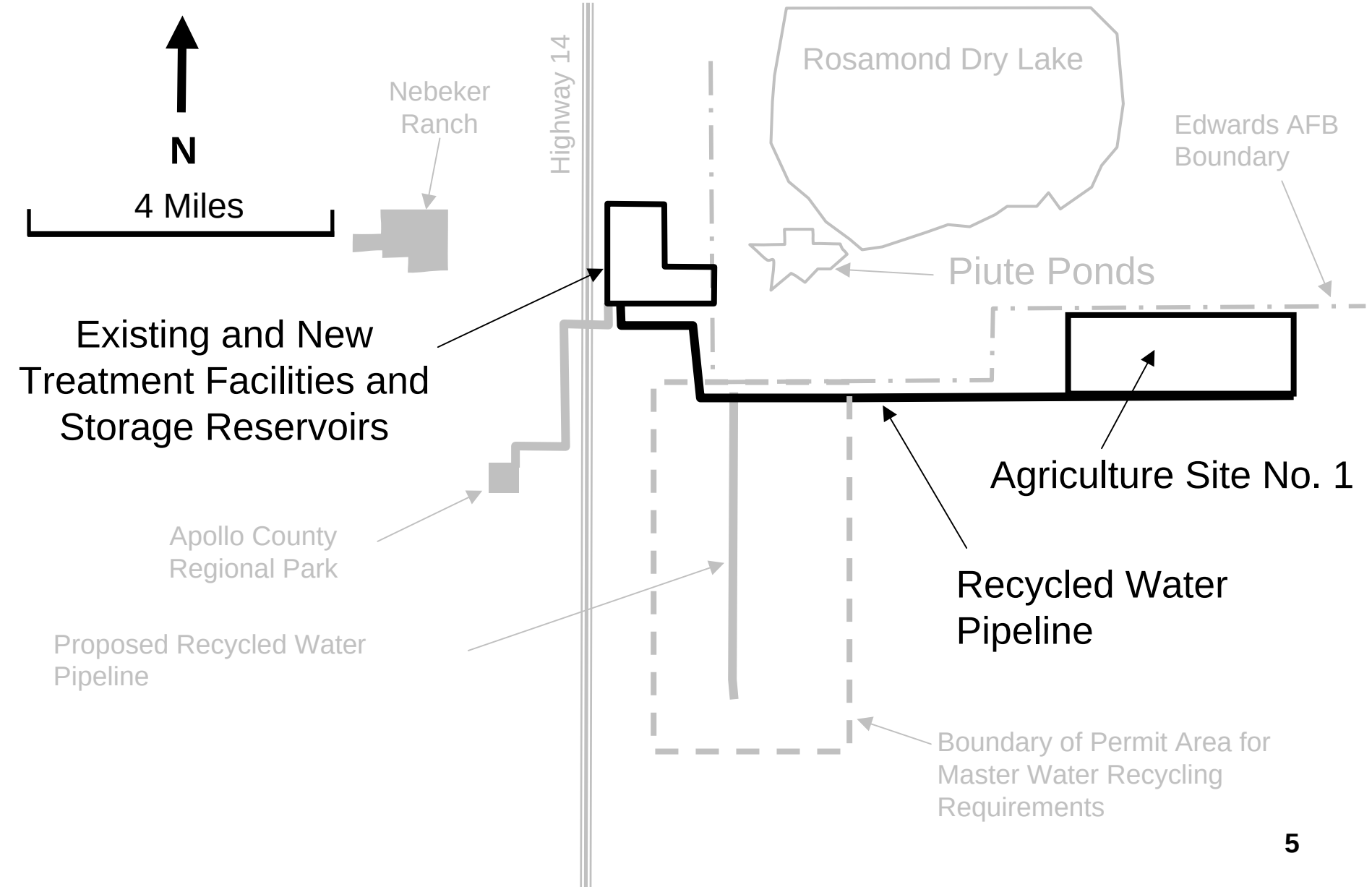
ATTACHMENT A

General Location Map



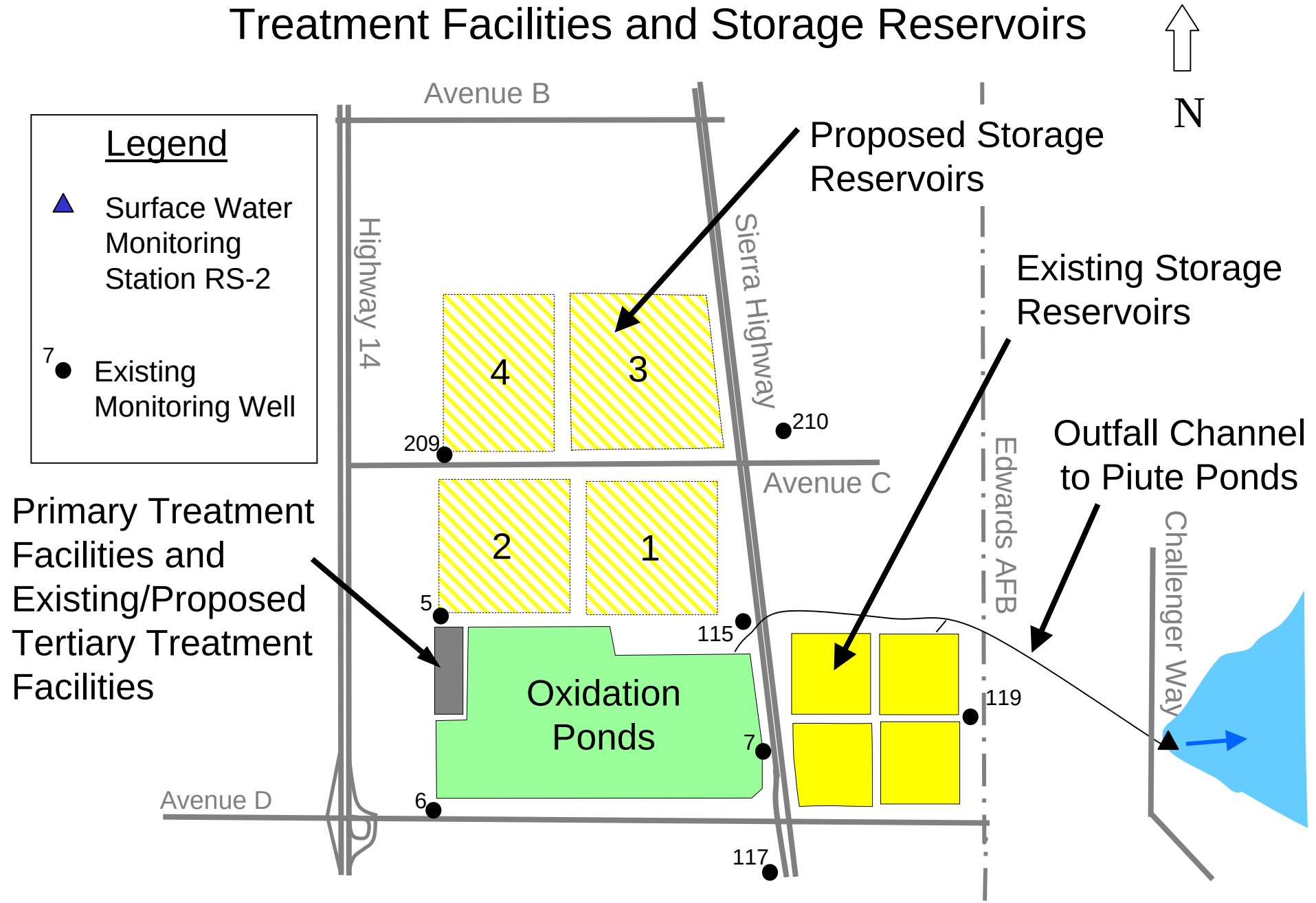
Modified from Figure 1, *Simulation of Groundwater Flow and Land Subsidence, Antelope Valley Ground-Water Basin*, USGS, 2003

Attachment B
General Facilities Locations

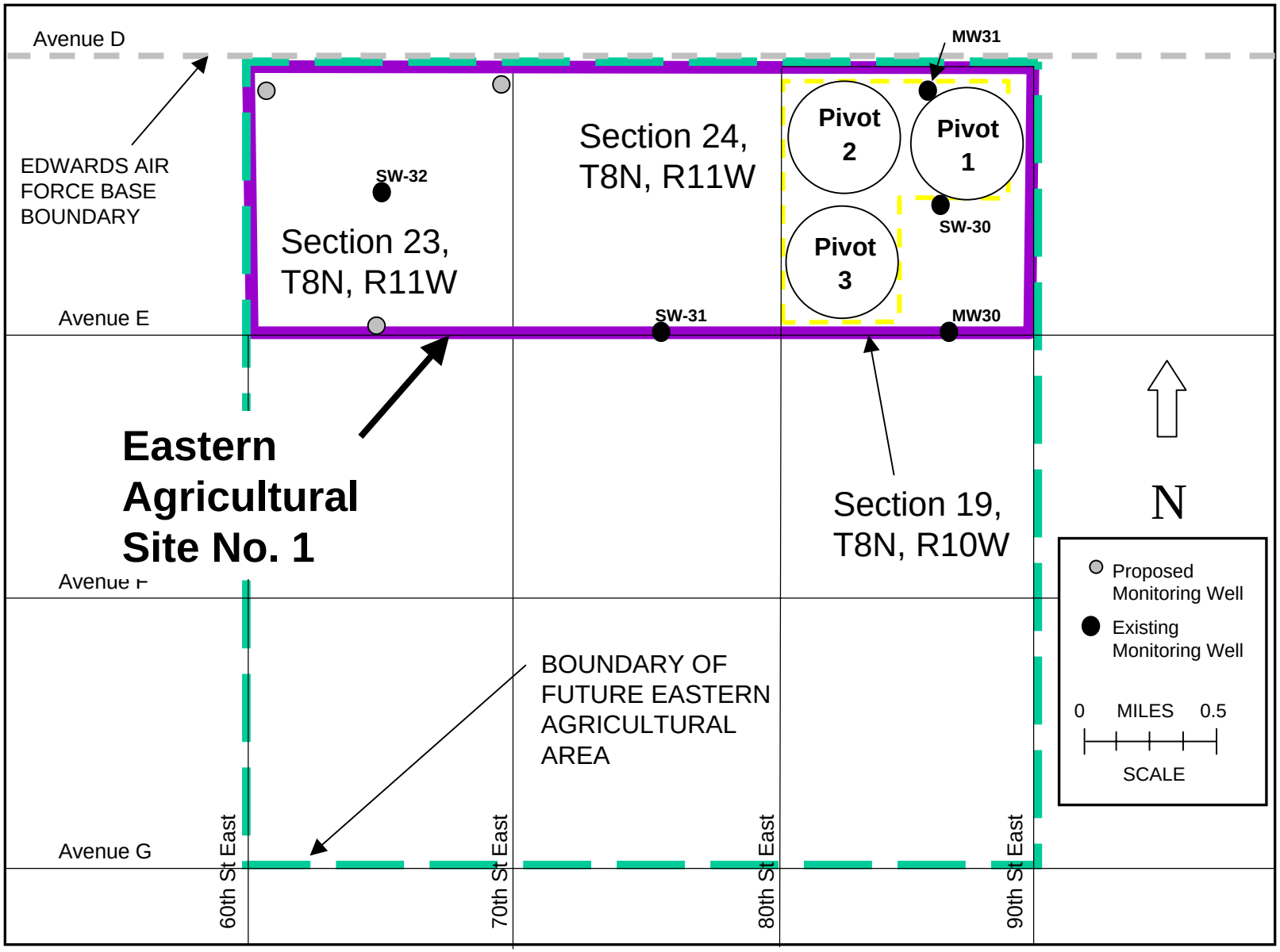


ATTACHMENT C

Treatment Facilities and Storage Reservoirs



Attachment D
Eastern Agricultural Site No. 1



Attachment E
References
Los Angeles County Sanitation District No. 14
Domestic Wastewater Treatment Facilities, Storage Reservoirs And
Agriculture Site No. 1

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

1. 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*)

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3. California Department of Water Resources, 1975, Bulletin 118 California's Groundwater, September (*DWR, 1975*).

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7. **Los Angeles County Sanitation District No. 14, 2006, *Proposed Stage V Storage Reservoir Water Quality Effects Analysis – Supplement No. II*. May 23 (*LACSD14, 2006, May 23*)**

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9. **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)***

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14. **Los Angeles County Sanitation District No. 14, 2006, *Report of Waste Discharge Stage V Storage Reservoirs*, Feb. (*LACSD14, 2006, Feb*.)**

15. **Los Angeles County Sanitation District No. 14, 2006, *Proposed Stage V Storage Reservoir Water Quality Effects Analysis, January*, transmitted with (*LACSD14, 2006, Feb*.) as part of a RWD. (*LACSD14, 2006, Jan*.)**

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17. Los Angeles County Sanitation District No. 14, 2005, *Investigation On Elevated Groundwater Nitrate Concentrations At Monitoring Wells MW5 and MW6,* December 14. (*LACSD14, 2005, Dec 14)*

18. Los Angeles County Sanitation District No. 14, 2005, *Groundwater Monitoring Plan: Evaluation Of Phase II Investigation Results at Paiute Ponds,* December 12. (*LACSD14, 2005, Dec. 12)*

19. 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)*

20. Los Angeles County Sanitation District No. 14, 2005, *Farm Management Plan – Phase 1a,* October 24. (*LACSD14, 2005, Oct*. 24)

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35. Los Angeles County Sanitation District No. 14, 2003, *Identification Of Abandoned Wells – Lancaster Reclamation Plant,* Oct. (*LACSD14, 2003, Oct.)*

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Attachement F

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.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

REVISED MONITORING AND REPORTING PROGRAM
NO. R6V-2006-(TENTATIVE)
WDID NO. 6B190107017

FOR

LOS ANGELES COUNTY SANITATION DISTRICT NO. 14
WASTEWATER TREATMENT FACILITIES,
STORAGE RESERVOIRS AND EASTERN AGRICULTURAL SITE NO. 1

_____ Los Angeles County _____

I. MONITORING

A. Flow Monitoring

The following data shall be recorded in a permanent logbook and the information submitted according to the frequency listed:

1. The total volumes, in million gallons (MG), of wastewater flow to the secondary and tertiary treatment facilities for each day and month.

2. The calculated average flow rates, in million gallons per day (MGD) of wastewater to the secondary and tertiary treatment facilities calculated for each month.

3. The maximum instantaneous flow rate, in MGD, of wastewater to the secondary treatment facility that occurs each day.

4. The annual average monthly volume of septage received shall be calculated and reported annually.

5. The daily and monthly volumes, and calculated average flow rate, in MG, of flow to the Eastern Storage Reservoirs (existing), Northern Storage Reservoirs (proposed), Agriculture Site No. 1, Piute Ponds/Impoundments A, B and C, Nebeker Ranch, Apollo Park, and Division Street Recycled Water Project, and the source (treatment facility name) of the flow to each of these sites.

B. Facility Influent Monitoring

Influent samples taken prior to the primary clarifiers shall be analyzed to determine the concentration and magnitude of the following analytes and parameters:

Parameter	Units	Type of Sample	Frequency
BOD[1]	mg/L	24-hour composite	Weekly
CBOD[2]	mg/L	24-hour composite	Weekly
COD[3]	mg/L	24-hour composite	Weekly
MBAS[4]	mg/L	24-hour composite	Annually
Total Suspended Solids	mg/L	24-hour composite	Weekly
Nitrate Nitrogen	mg/L as N	24-hour composite	Monthly
Kjeldahl Nitrogen	mg/L as N	24-hour composite	Monthly
Ammonia Nitrogen	mg/L as N	24-hour composite	Monthly
Total Petroleum Hydrocarbons[6,8]	µg/L	Grab[5]	Quarterly
Total trihalomethanes	µg/L	Grab[5]	Quarterly
Total Dissolved Solids	mg/L	24-hour composite	Semiannually
Total Cyanides	µg/L	24-hour composite	Annually
Total Phenols	µg/L	24-hour composite	Annually
Purgeable Organics[7,8]	µg/L	Grab[5]	Annually
Base/Neutral Extractable Organics[7,8]	µg/L	24-hour composite	Annually
Acid Extractable Organics[7,8]	µg/L	24-hour composite	Annually
Heavy Metals[7,8]	mg/L	24-hour composite	Annually

C. Facility Effluent Monitoring - Piute Ponds

Samples of the effluent shall be collected downstream of all treatment units at the point of release to the earthen channel, which conveys effluent to Piute Ponds. (The length of the earthen channel is approximately 0.5 miles). The samples shall be analyzed to determine the concentration and magnitude of the following analytes and parameters:

Parameter	**Units**	**Type of Sample**	**Frequency**
Total Coliform Bacteria[9]	MPN/100 ml	Grab[5]	Daily
Chlorine Residual (after any dechlorination)	mg/L	Continuous	Continuous
BOD[1]	mg/L	24-hour composite	Weekly
CBOD[2]	mg/L	24-hour composite	Weekly
Total Suspended Solids	mg/L	24-hour composite	Weekly
COD[3]	mg/L	24-hour composite	Weekly
Dissolved Oxygen	mg/L	Grab[5]	Weekly
pH	0-14	Grab[5]	Weekly
Temperature	°C	Grab[5]	Weekly
Total Dissolved Solids	mg/L	24-hour composite	Monthly
Nitrate Nitrogen	mg/L as N	24-hour composite	Monthly

Parameter	Units	Type of Sample	Frequency
Kjeldahl Nitrogen	mg/L as N	24-hour composite	Monthly
Ammonia Nitrogen	mg/L as N	24-hour composite	Monthly
Total Organic Carbon	mg/L	24-hour composite	Quarterly
Copper	mg/L	24-hour composite	Quarterly
Zinc	mg/L	24-hour composite	Quarterly
Selenium	mg/L	24-hour composite	Quarterly
Chlorides	mg/L	24-hour composite	Quarterly
Sodium	mg/L	24-hour composite	Quarterly
Sulfate	mg/L	24-hour composite	Quarterly
Total Petroleum Hydrocarbons [6,8]	µg/L	Grab[5]	Quarterly
Total trihalomethanes	µg/L	Grab[5]	Quarterly
Oil and Grease	mg/L	Grab[5]	Quarterly
Total Hardness as $CaCO_3$	mg/L	24-hour composite	Quarterly
MBAS[4]	mg/L	24-hour composite	Quarterly
Total Cyanides	µg/L	24-hour composite	Annually
Total Phenols	µg/L	24-hour composite	Annually
Purgeable Organics[7,8]	µg/L	Grab[5]	Annually
Base/Neutral Extractable Organics[7,8]	µg/L	24-hour composite	Annually
Acid Extractable Organics[7,8]	µg/L	24-hour composite	Annually
Heavy Metals[7,8]	mg/L	24-hour composite	Annually
Total Chromium[10]	mg/L	24-hour composite	Annually
Hexavalent Chromium[10]	mg/L	Grab[5]	Annually
Methyl tertiary-Butyl Ether	µg/L	Grab[5]	Annually

D. Facility Effluent Monitoring – Nebeker Ranch

Samples of the treated wastewater effluent conveyed to Nebeker Ranch shall be collected downstream of all treatment units and analyzed to determine the concentration and magnitude of the following analytes and parameters:

Parameter	Units	Type of Sample	Frequency
BOD[1]	mg/L	Grab	Monthly
CBOD[2]	mg/L	Grab	Monthly
COD	mg/L	Grab	Monthly
Total Suspended Solids	mg/L	Grab	Monthly
Nitrate Nitrogen	mg/L as N	Grab	Monthly
Kjeldahl Nitrogen	mg/L as N	Grab	Monthly
Ammonia Nitrogen	mg/L as N	Grab	Monthly

E. Facility Effluent Monitoring – Disinfected Tertiary Recycled Water

Samples of the treated effluent from the AVTTP and MBR tertiary treatment plants shall be collected and analyzed to determine the magnitude of the following parameters:

Parameter	Units	Type	Minimum Frequency
Flow	MGD	Flow Meter And Recorder	Continuous
Turbidity[11]	NTU	Turbidity Meter And Recorder	Continuous
Total chlorine residual	mg/L	Chlorine Residual Meter And Recorder	Continuous (When the effluent is chlorinated)
Modal contact time[12]	minutes	Calculated	Daily
CT value[13]	mg-minutes/L	Calculated	Daily
PH	pH units	Grab Sample	Daily
Total coliform bacteria	MPN/100ml	Grab Sample	Daily
Total Organic Carbon (TOC)	mg/L	24-hr composite sample	Quarterly
$BOD_5 20^oC$[1]	mg/L	24-hr composite sample	Monthly
CBOD[2]	mg/L	24-hr composite sample	Monthly
COD[3]	mg/L	24-hr composite sample	Monthly

Parameter	Units	Type	Minimum Frequency
Total dissolved solids	mg/L	24-hr composite sample	Monthly
Nitrate nitrogen	mg/L as N	24-hr composite sample	Monthly
Nitrite nitrogen	mg/L as N	24-hr composite sample	Monthly
Ammonia nitrogen	mg/L as N	24-hr composite sample	Monthly
Kjeldahl nitrogen	mg/L as N	24-hr composite sample	Monthly
Total petroleum hydrocarbons[6,8]	mg/L	Grab	Quarterly
Oil and grease	mg/L	Grab	Quarterly
Methylene blue active substances	mg/L	Grab	Quarterly
Total trihalomethanes (TTHM)	mg/L	Grab	Annually (When the effluent is chlorinated)
Haloacetic acids (five) (HAA5)	mg/L	Grab	Annually (When the effluent is chlorinated)
Total cyanides	mg/L	24-hr composite sample	Annually
Total phenols	mg/L	24-hr composite sample	Annually
Total chromium[10]	mg/L	24-hr composite sample	Annually
Hexavalent chromium[10]	mg/L	Grab	Annually
Heavy metals[7,8]	mg/L	24-hr composite sample	Annually
Purgeable organics[7,8]	mg/L	Grab	Annually
Base/nuetral extractable organics[7,8]	mg/L	24-hr composite sample	Annually
Acid extractable organics[7,8]	mg/L	24-hr composite sample	Annually

F. Recreational Lake Monitoring

Grab samples of the recreational lake water at Apollo Lakes Regional County Park shall be collected semiannually and analyzed to determine the concentration of the following analytes:

Parameter	**Units**
Total Dissolved Solids	mg/L
Chloride	mg/L
Sodium	mg/L
Sulfate	mg/L
Total Hardness	mg/L as $CaCO_3$

G. Vadose Zone Monitoring

The Vadose Zone and Groundwater Monitoring Workplan required in the attached Order shall propose vadose zone devices for the proposed storage reservoirs and Agriculture Site No. 1. The number and design of the devices shall be sufficient for providing data to determine whether constituents in the vadose zone are acting as predicted by the Discharger's model. If a constituent is not acting in the vadose zone as predicted, there may be potential for adverse effects to the quality of underlying groundwater. The number and design of the vadose zone monitoring devices shall be sufficient to provide an early indicator of potential adverse effects to water quality and allow the Discharger the opportunity to implement corrective action to prevent occurrence of those affects. A minimum of eight lysimeters shall be installed within 100 feet of the proposed storage reservoirs. The devices shall be installed at a minimum of four locations with two devices per location, which are designed to collect samples at two different depths.

The lysimeters shall conform with the following.

1. Lysimeters must be positioned in the appropriate locations and depths to provide a vertical distribution of vadose zone pore-fluid chemistry below the proposed storage reservoirs and Agriculture Site No. 1.

2. Use of conventional ceramic soil suction lysimeters instead of pan lysimeters is acceptable.

Upon completion of lysimeters proposed in the accepted Workplan, the Discharger shall collect vadose zone water from lysimeters and analyze the water for the following parameters:

Parameter	Units	Frequency
Total Kjeldahl Nitrogen	mg/L as N	Quarterly
Nitrate Nitrogen	mg/L as N	Quarterly
Ammonia Nitrogen	mg/L as N	Quarterly
Nitrite Nitrogen	mg/L as N	Quarterly
Total Dissolved Solids	mg/L	Quarterly
Bromoform	μg/L	Annually
Chloroform	μg/L	Annually
Dibromochloromethane	μg/L	Annually
Dichlorobromomethane	μg/L	Annually
Haloacetic acids	ug/L	Annually

H. Ground Water Monitoring

The Vadose Zone and Groundwater Monitoring Workplan required in the attached Order shall propose additional groundwater monitoring wells for the proposed storage reservoirs and Agriculture Site No. 1. The monitoring wells are for monitoring trends and compliance with receiving water limits contained in the attached Order. At a minimum, the Discharger shall install three additional groundwater-monitoring wells at Agriculture Site No. 1 as described in the Discharger's August 17, 2005 groundwater monitoring plan.
At a minimum, the Discharger shall install four additional groundwater-monitoring wells for the proposed storage reservoirs as described in the Discharger's May 23, 2006 groundwater monitoring plan.

Grab[5] samples of ground water shall be collected from existing and proposed monitoring wells in accordance with the sampling frequencies described in attached Tables No. 1 through 4. The samples shall be analyzed to determine the concentration of analytes described in Tables No. 1 through 4, which include: nitrogen compounds, minerals, total organic carbon, methylene blue active substances, total trihalomethanes, total petroleum hydrocarbons,[6,8] total chromium, [10] hexavalent chromium,[10] total cyanides, total phenol, purgeable organics,[7,8] base/neutral extractable organics,[7,8] acid extractable organics,[7,8] heavy metals,[7,8] methyl tertiary-butyl ether.

Field parameters shall be determined in all monitoring wells and, when possible, in supply wells each time they are sampled to determine the following.

Parameter	Units
Static water depth	Feet below ground surface
Electrical conductivity	uS/cm
pH	pH units
Temperature	Degrees C
Dissolved Oxygen	mg/L
Turbidity	NTU
Color	Visual

The final field parameters from each well shall be reported in a separate table.

Annually, the District shall calculate and record the ground water gradient, the direction of the gradient, and velocity of ground water flow at the authorized disposal/water recycling sites (except at the Piute Ponds area).

I. Data Presentation for Compliance Determinations

Annual monitoring reports shall contain:

1. A plot of the ground water elevations above mean sea level and elevation isopleths on an 11" x 17" copy of a site plan, which shows the locations of the authorized disposal/water recycling sites and monitoring points.

2. Graphs showing long-term trends of the following in groundwater monitoring wells: depth to groundwater and groundwater elevation.

3. Graphs (concentration versus time) showing term trends in concentrations of the following constituents in lysimeters and groundwater monitoring wells: TDS, Nitrate, Chloride. If the trends are not as predicted by the Discharger's water quality effects analysis described above, the Discharger is required to provide additional technical information in the monitoring reports submitted to the Water Board. The information must demonstrate whether the observed trends could potentially result in: (i) a higher level of degradation (or a pollution) or (ii) a larger area (laterally and vertically) of degraded groundwater or both (i) and (ii). Such information may include, but is not limited to, results of additional site investigation, more in-depth evaluation of data, completion of calibration and sensitivity analysis for the mathematical model.

4. Graphs (concentration versus time) showing long-term trends in concentrations of the following constituents in the primary treatment plant influent: BOD, CBOD, COD, TSS, Nitrate, Kjeldahl Nitrogen, Ammonia, TDS

5. Graphs (concentration versus time) showing long-term trends in concentrations of the following constituents in the effluent to Piute Ponds, Surface Water monitoring stations RS-2 and RS-4: BOD, CBOD, COD, TSS, Nitrate, Kjeldahl Nitrogen, Ammonia, TDS, Chlorides, Temperature , pH, DO and chlorine residual.

6. Graphs (concentration versus time) showing long-term trends in concentrations of the following constituents in the effluent to Nebeker Ranch and Agricultural Site No. 1: BOD, CBOD, COD, TSS, Nitrate, Kjeldahl Nitrogen, and Ammonia.

7. Graphs (concentration versus time) showing long-term trends in concentrations of the following constituents in the recycled water to Apollo Park: BOD, CBOD, COD, N03, KjeIdahl Nitrogen, Ammonia, Turbidity, Chlorine residual.

8. Graphs (concentration versus time) showing long-term trends in concentrations of the following constituents in the lakes at Apollo Park: TDS, Chloride.

J. Surface Water Monitoring

Surface water monitoring station RS-2 is located in Piute Ponds within 150 feet downgradient of the Challenger Way. (The point of discharge from the effluent outfall channel to Piute Ponds/Impoundments A, B and C is the spillway located on Challenger Way.) Surface water monitoring station RS-4 is located in Piute Ponds at the spillway to Rosamond Dry Lake.

Samples shall be collected at the above stations and analyzed to determine the magnitude of the following parameters:

Parameter	**Units**	**Type of Sample**	**Frequency**
Dissolved Oxygen	mg/L	Grab[5]	Quarterly
pH	0-14	Grab[5]	Quarterly
Residual Chlorine	mg/L	Grab[5]	Quarterly
Temperature	^{0}F	Grab[5]	Quarterly
Total Dissolved Solids	mg/L	Grab[5]	Quarterly
Chloride	mg/L	Grab[5]	Quarterly
Nitrate Nitrogen	mg/L as N	Grab[5]	Quarterly
Kjeldahl Nitrogen	mg/L as N	Grab[5]	Quarterly
Ammonia Nitrogen	mg/L as N	Grab[5]	Quarterly
Copper	mg/L	Grab[5]	Quarterly
Zinc	mg/L	Grab[5]	Quarterly
Total Chromium[10]	mg/L	Grab[5]	Quarterly
Hexavalent Chromium[10]	mg/L	Grab[5]	Quarterly
Selenium	mg/L	Grab[5]	Quarterly
Total Hardness	mg/L as $CaCO_3$	Grab[5]	Quarterly

Observations of Piute Ponds for the presence of color, odor, foam, floating material and oil and grease shall be recorded quarterly at the surface water sampling station when the surface water samples are collected.

K. Chronic Toxicity

The Discharger shall perform toxicity testing, as described, below, on samples of undiluted treatment Facility effluent and surface water monitoring station RS-2. Test shall be conducted on either samples collected after

dechlorination or chlorinated samples, dechlorinated after collection. The following tests shall be performed annually for a period of five years from the time they were initiated to allow statistical analysis of the results. The results of tests shall be submitted to the Water Board by **April 15th of each year**.

1. All tests shall be conducted on grab samples of treatment Facility effluent and receiving waters. Analysis of Variance (ANOVA) shall be used to determine whether differences between control and sample results are significant. Multiple-dilution, dose-response testing shall be used to characterize any toxic response and track quantitative changes or trends in toxicity. IC25 defined calculations shall be used pursuant to US EPA methods or other approved statistical methods to assess whether effluent exceeds a biologically significant toxicity threshold on a consistent basis.

   The Discharger shall conduct a seven-day chronic test with fathead minnows (*Pimephales Promelas*) using test method No. 1001 on samples of undiluted effluent.

2. If any one ambient water test indicates that the toxicity threshold is exceeded, then another confirmatory chronic toxicity test using the specified methodology and test species shall be conducted on a new sample within 30 days of obtaining test results. In no case shall the second confirmatory test results be submitted to the Water Board later than 60 days after completion of the confirmatory test.

3. All test species, procedures, and quality assurance criteria used shall be in accordance with the most recently approved US EPA methods. The Discharger may use control water formulated in accordance with the U.S. EPA method protocol (Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms, Third Edition, EPA/600/4-91/002). The standard synthetic control water approximates the characteristics of the District's effluent discharge and surface receiving waters. The standard synthetic control water for chronic toxicity testing is allowed by the U.S. EPA toxicity testing protocol. Alternate control water for the toxicity tests shall be submitted to Water Board staff for review and approval prior to use.

L. Acute Toxicity

1. Acute Toxicity Testing Methods

   The Discharger shall conduct quarterly acute toxicity testing using a control and undiluted effluent in accordance with US EPA approved methods and their subsequent revisions and appropriate organisms as determined by the Water Board, SWRCB, and the US EPA. Tests shall be conducted on either samples collected after dechlorination or chlorinated samples, dechlorinated after collection.

2. Acute Toxicity Testing Schedule

a. The Discharger shall perform acute toxicity tests using fathead minnows and methods specified in “Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms” (March 1985, EPA/600/4-85/013).

b. Regular test schedule: The Discharger shall conduct acute toxicity on a quarterly basis following the approval of the representative test species by the Executive Officer of the Water Board, see 2(a), above.

M. Toxicity Identification Evaluation/Toxicity Reduction Evaluation

1. The Discharger shall begin monitoring of effluent chronic toxicity in accordance with Monitoring and Reporting Program Requirements No. I.K. and I.L., above. If in any chronic receiving/ambient test, toxicity is revealed as a result of the discharge, the test shall be repeated within 30 days.

2. If two repeated chronic toxicity tests, other than from chlorine and ammonia, reveal toxicity as a result of the discharge, the Discharger shall complete a Toxicity Identification Evaluation (TIE) and a Toxicity Reduction Evaluation (TRE), beginning with Phase 1 of the TIE, on the Facility effluent to identify compounds causing chronic toxicity for an indicator organism approved by the Executive Officer. This monitoring and reporting program requires the Discharger submit a copy of its initial TRE workplan to the Executive officer for consideration of approval.

3. A technical report shall be submitted at the end of the toxicity study that identifies the toxic component(s), and details the toxicity evaluations performed and the manner in which the component(s) was (were) identified.

4. Should toxic components be something other than chlorine and ammonia, and be determined difficult to identify, the Discharger may be granted a limited time extension by the Executive Officer for completion of the TIE and TRE.

5. The TIE shall be performed in accordance with USEPA manuals EPA/600/3-88/035, 035 and 036, dated September 1988 and February 1989, and any subsequent revisions. The TRE shall be performed in accordance with USEPA manual EPA/600/2-88/062, dated April 1989, and any subsequent revisions.

6. The Discharger shall take all reasonable steps to control toxicity once the source of the toxicity is identified.

7. Failure of the Discharger to conduct required toxicity tests or a TRE as required shall result in the establishment of effluent limitations for chronic toxicity in an amendment to WDRs or an appropriate enforcement action.

N. Pretreatment Reporting - Annual Report

The Discharger shall submit, by **July 1st of each year**, a report to US EPA Region 9, the SWRCB and the Water Board, describing the Discharger's pretreatment activities over the previous calendar year.

In the event that the Discharger is not in compliance with any condition or requirement of this updated Order, then the Discharger shall also include the reason for noncompliance and state how and when the Discharger shall comply with such conditions and requirements. This Annual Report is due on **July 1st of each year** and shall contain, but is not be limited to, the following information:

1. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the publicly owned treatment work's (POTW) influent and effluent for those pollutants US EPA has identified under Section 307(a) of the Act, which are known or suspected to be discharged by industrial clean water users. The Discharger is not required to sample and analyze for asbestos. Biosolids shall be analyzed pursuant to the current federal requirements (40 CFR Part 503). Biosolids results shall be expressed in mg/kg dry sludge, 100% dry weight basis.

   Wastewater sampling and analysis shall be performed at the intervals specified in the Discharger's Permit. The Discharger shall also provide any influent, effluent, or biosolids monitoring data for nonpriority pollutants that the Discharger believes may be causing or contributing to interference, pass through, or adversely impacting biosolids quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto.

2. A discussion of Upset, Interference, or Pass Through incidents, if any, at the POTW that the Discharger knows or suspects were caused by industrial users of the POTW system. The discussion shall include the reason(s) why the incident(s) occurred, the corrective action(s) taken, and, if known, the name and address of the industrial user(s) responsible. The discussion shall also include a review of the applicable local or federal discharge limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass Through, Interference, or noncompliance with sludge disposal requirements.

3. An updated list of the Discharger's significant industrial users (SIU), including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Discharger shall provide a brief explanation for each deletion. The SIU list shall identify the SIUs subject to Federal Categorical Standards by specifying which set(s) of standards are applicable to each SIU. The list shall also indicate which SIUs are subject to local limitations.

4. The Discharger shall characterize the compliance status of each significant industrial user by providing information, which includes:

   a. SIU name;

   b. Industrial category;

   c. Number of samples taken by the POTW during the year;

   d. Number of samples taken by the SIU during the year;

   e. A description that states the procedures used to ensure that all needed certificates were provided for Facilities which have a toxic organic management plan;

   f. Standards violated during the year (Federal and local, reported separately);

   g. Whether the facility was in Significant Non-Compliance (SNC), as defined by 40 CFR 403.12 (f)(2)(vii), at any time in the year; and

   h. A summary of enforcement or other actions taken during the year to return the SIU to compliance, including the type of action, and amount of fines assessed/collected (if any). Briefly describe any proposed actions, for bringing the SIU into compliance.

5. A short description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to changes concerning: the program's administrative structure; local industrial discharge limitations; monitoring program or monitoring frequencies; legal authority or enforcement policy; funding mechanisms; resource requirements; or staffing levels.

6. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.

7. A summary of public participation activities that involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 CFR 403.8 (f)(2)(vii).

8. A description of any changes in sludge disposal methods and a discussion of any concerns not described elsewhere in the report.

9. A description of any changes in biosolids disposal methods and a discussion of any concerns not described elsewhere in the report, and a brief description of any program the POTW implements to reduce pollutants from nondomestic users that are not classified as SIUs.

O. Biosolids Disposal

The following shall be recorded monthly:

1. Total quantity of biosolids generated during the monitoring period.

2. Date and quantity of biosolids removed off site, location of use, recipient (including name and address) and biosolids reuse of disposal method. The type of crop grown, if biosolids are directly land applied at an offsite location,

3. Cumulative total quantity of biosolids currently on site including the quantity of biosolids added during this monitoring period.

By **July 1st of each year**, the Discharger shall submit a copy of its annual federal biosolids report.

The Discharger shall include in each monitoring report the volume and type of all grit and screenings, and undigested sludge waste hauled off site for disposal or recycle. The person or company doing the hauling and the legal point of disposal or recycle shall also be recorded.

P. Annual Cropping Plan

1. An Annual Cropping Plan shall be submitted on November 15 of each year containing, but not limited to, the following items

   a. Information on the cropping results for the third and fourth quarters of the previous calendar year (and the first and second quarters of the current calendar year). The information shall include:

      i. Crop acreage, crop names and types, approximate planting and harvest dates and irrigation methods;
      ii. Sufficient information demonstrating the Discharger is using deficit irrigation (Application of recycled water

limited to an amount that does not cause significant migration of recycled water and salts below the root zone.) The information shall include amounts for irrigation, rainfall, evapotranspiration loss and all other information needed to demonstrate whether the Discharger used deficit irrigation; and

iii. Description of the fate of nitrogen that was applied and available in the root zone and not accounted for in the crops harvested.

b. A description of the proposed cropping plan for the upcoming calendar year including the following information:

i. Crop acreage, crop names and types, approximate planting and harvest dates and irrigation methods;
ii. Sufficient information demonstrating the Discharger will use deficit irrigation, including the information described in No. I.O.1.a.ii, above; and
iii. Description of the fate of nitrogen that will be applied and that is already available in the root zone.

Q. Farm Chemical Use Monitoring

The Discharger shall record the names and chemical compositions, quantities and dates of application of all chemical fertilizers, herbicides and pesticides applied to any crop grown on the water recycling site in a permanent log book. Chemical use information shall be submitted to the Regional Board on a quarterly basis.

R. Operation and Maintenance

A brief summary of any operational problems and maintenance activities shall be submitted to the Water Board with each monitoring report.

This summary shall discuss:

1. Any major modifications or additions to the wastewater conveyance system, treatment Facilities, or disposal/water recycling facilities.

2. Any major maintenance conducted on the wastewater conveyance system, treatment Facilities, or disposal/water recycling facilities.

3. Any major problems occurring in the wastewater conveyance system, treatment Facilities, or disposal/water recycling facilities.

4. The calibration of any wastewater flow measuring devices.

5. The dates of discharge ditch cleaning, BMPs used for the protection of water quality in Piute Ponds, and effectiveness of the BMPs.

S. Duck Hunting Season

The beginning and ending dates of the annual duck hunting season (as determined by the California Department of Fish and Game), and 30-days prior to the beginning of the season, as applied to Piute Ponds during which disinfection for the restricted recreational impoundment is required shall be recorded and reported on the pertinent monthly Self Monitoring Reports and in the Annual Report.

T. Monitoring of Mitigation Measures

Each monitoring report shall include a report on the status of implementing each of mitigation measures listed in Finding No. 23 of the attached Order. The report shall include information on the effectiveness of implementation measures. The report shall also include but not be limited to the following information:

1. Impact: Downward migration of treated wastewater from storage reservoirs would degrade the quality of groundwater.

   a. Status of compliance with Provision No. II.D.2 of the attached Order. Provision No. II.D.2 requires that items be submitted to the Water Board demonstrating native soils in the bottom of the proposed reservoirs are adequately compacted to minimize leakage.

   b. This Monitoring and Reporting Program (Monitoring Requirement No. I.A.5) requires that the Discharger record and report the source (treatment facility name) of the flow to the proposed reservoirs. The attached Order permits storage of tertiary effluent in the proposed reservoirs, which is of higher quality than that currently contained in existing impoundments.

   c. Status of compliance with Provision No. II.D.1 of the attached Order. Provision No. II.D.1 requires that the Discharger install an adequate monitoring networks for the vadose zone and groundwater.

   d. This Monitoring and Reporting Program (Monitoring Requirements No. I.G and I.H.) requires that the Discharger record and report results of monitoring of the vadose zone and groundwater monitoring networks. This data will be used to: (i) characterize the volume and quality of downward migration of treated wastewater from storage reservoirs, and (ii) determine if

there is a threatened violation of receiving water limits in groundwater for TDS and nitrate.

2. Impact: Downward migration of treated wastewater applied at Eastern Agricultural Site No. 1 would degrade the quality of groundwater.

   a. This Monitoring and Reporting Program (Monitoring Requirement No. I.A.5) requires that the Discharger record and report the source (treatment facility name) of the flow to Agricultural Site No. 1. The attached Order permits use of tertiary effluent at Agricultural Site No. 1.

   b. Status of compliance with Provision No. II.E.1 of the attached Order. Provision No. II.E.1 requires that the Discharger install an adequate monitoring networks for the vadose zone and groundwater.

   c. This Monitoring and Reporting Program (Monitoring Requirements No. I.G and I.H.) requires that the Discharger record and report results of monitoring of the vadose zone and groundwater monitoring networks. This data will be used to: (i) demonstrate deficit irrigation is being practiced and recycled water is not percolating past the plant root zone, and (ii) determine if there is a threat of degradation of underlying groundwater and/or a threatened violation of receiving water limits in groundwater for TDS and nitrate.

3. Impact: Eastern Agricultural Site No. 1 run on and/or runoff would result in degradation of the quality of surface water.

   a. Status of compliance with Provision No. II.E.3 of the attached Order. Provision No. II.E.3 requires that the Discharger construct drainage controls to prevent run on and runoff at Agricultural Site No. 1 for protection of surface-water quality.

4. Impact: Flow of treated wastewater down abandoned wells located at Eastern Agricultural Site No. 1 would degrade the quality of groundwater.

   a. Status of compliance with Provision No. II.E.2 of the attached Order. Provision No. II.E.2 identify and properly destroy abandoned groundwater wells.

5. Impact: Eliminating effluent-induced overflows from the Piute Ponds will cause existing total dissolved solids concentrations (500 to 1400 mg/L) to increase to concentrations (>3000 mg/L) that will impact beneficial uses of Piute Ponds.

a. Status of compliance with Provision No. II.F.2 of the attached Order.

b. Status of work completed toward implementing a project that will maintain an acceptable quality of water in Piute Ponds.

II. REPORTING

A. General Provisions and Reports

1. The Discharger shall comply with the "General Provisions for Monitoring and Reporting," (GPMR - Attachment "A") dated September 1, 1994, which is attached to and made part of this Monitoring and Reporting Program.

2. Pursuant to General Provision 1.d of the GPMR, the Discharger shall submit a Sampling and Analysis Plan (SAP) to the Water Board within two months of Water Board staff's acceptance of the groundwater and vadose zone monitoring workplans requested in the Provisions of the attached Order. The SAP shall cover sampling and analysis wastewater, the vadose zone and groundwater. In the SAP, the Discharger may recommend analytical methods other than the methods specified in this Monitoring and Reporting Program.

3. The Discharger shall submit by **December 15, 2006**, a copy of its initial Toxicity Reduction Evaluation (TRE) Workplan to the Executive officer for consideration of approval. The Discharger shall use the USEPA manual, Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833B-99/002 as guidance. This workplan shall describe in detail the steps the discharger intends to follow in the event toxicity (not as a result of ammonia or chlorine) is observed in both the original and confirmatory chronic toxicity test conducted on effluent discharged to Piute Ponds.

4. Monitoring Section No. I.3. of this Monitoring and Reporting Program requires the Discharger prepare graphs (concentration versus time) showing long-term trends in concentrations of the following constituents in lysimeters and groundwater monitoring wells for the proposed storage reservoirs: TDS, Nitrate, Chloride. If the long-term trends are not as predicted by the Discharger's water quality effects analysis described in the attached Order, the Discharger shall provide additional technical information in the monitoring report. The additional information shall be sufficient to demonstrate whether the observed long-term trend could potentially have an adverse effect on the quality of underlying groundwater. Such information may include results of additional site investigation, more in-depth evaluation of the information, completion of calibration and sensitivity analysis for the mathematical model, etc.

B. Submittal Periods

The Discharger must submit monitoring reports according to the following schedule:

1. Beginning on **October 1, 2006**, monthly monitoring reports shall be submitted to the Regional Board by the 1st working day of the second month following each monthly monitoring period. Data that is required on a frequency longer than one month will be incorporated into the monthly report for the month the analyses are required. For example, analyses that are to be performed on a semi-annual frequency will be included in the monthly report for June and December. The following reports shall be provided on a monthly frequency:

   a. Flow Monitoring

   b. Facility Influent Monitoring Report

   c. Facility Effluent Monitoring Report

   d. Operation and Maintenance Report

2. Beginning **November 1, 2006**, quarterly monitoring reports shall be submitted to the Regional Board by the 1st working day of the second month following each quarterly monitoring period. The quarterly monitoring period shall end on March 31st, June 30th, September 30th, and December 31st of each calendar year. Data that are required on a frequency longer than one quarter will be incorporated into the quarterly report that coincides with the period for which the analyses are required. The following reports shall be provided on a quarterly frequency:

   a. Ground Water Monitoring Report

   b. Vadose Zone Monitoring Report

   c. Surface Water Monitoring including Acute Toxicity Monitoring

   d. Effluent Management Site Monitoring Report

   e. Effluent Management Site Operations Report

   f. Chemical Use Monitoring Report

   Chronic toxicity reports shall be submitted by the April 15 of each year. Pretreatment reports shall be submitted by the July 1 of each year.

3. An annual monitoring report for the period from January to December shall be submitted by April 1st of each year. The report must contain:

   a. A summary and evaluation of the monthly and quarterly information in Reporting Requirement II.B.1 and II.B.2, which also includes compliance status;

   b. The names and grades of all the certified operators;

   c. Chemical Use Monitoring reporting information discussed in section I.P; and

   d. The annual Federal Biosolids Report

Ordered by: _____ Dated: September 13, 2006

HAROLD J. SINGER
EXECUTIVE OFFICER

Attachments: A. Tables No. 1 through 4
B. General Provisions for Monitoring and Reporting

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1 Biochemical Oxygen Demand (5 day, 20°C of a filtered sample).
2 Carbonaceous Biochemical Oxygen Demand (5 day, 20°C of a filtered sample).
3 Chemical Oxygen Demand of a filtered sample.
4 Methylene Blue Active Substances.
5 Grab samples as defined for respective parameters in current Sampling and Analysis Plan.
6 Use USEPA Test Method SW 8015 with method calibration based on an appropriate fuel standard.
7 Analysis shall be conducted for those substances known to the Discharger to be discharged to the sewer system.
8 Sample results greater than or equal to the reported Minimum Level (ML) shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample). Sample results less than the reported ML, but greater than or equal to the laboratory's Method Detection Limit (MDL), shall be reported as "Detected , but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy, (+/- a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory. Analysis for the purgeable organics, 0-xylene and m+p-xylene, is acceptable for meeting the requirement to analyze for xylene. Monitoring for dioxins and polychlorinated biphenyls (PCBs) is not required.
9 Total coliform bacteria samples may be collected at the most appropriate point in the treatment process.
10 Use appropriate USEPA approved methods that will quantify concentrations down to 0.0025 mg/l for hexavalent chromium and 0.05 mg/l for total chromium.
11 For each 24-hour period, record and report the following:
   a. 0.5 mgd tertiary treatment plant: average turbidity, amount of time (minutes) the turbidity exceeded five (5) NTUs (if any), and the maximum turbidity.
   b. 1.0 pilot tertiary treatment plant: amount of time (minutes) the turbidity exceeded 0.2 NTUs (if any) and the maximum turbidity.
12. The modal contact time at the highest and lowest flows must be recorded and reported for each 24-hour period where there is production of disinfected tertiary recycled water. The “modal contact time" is 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. For the purpose of this determination, modal contact time shall be derived from a predetermined plot correlating modal contact times to varying flow conditions. (*22CCR§60301.600*)

13 When chlorine is used as the disinfectant in production of disinfected tertiary recycled water, the lowest CT value must be calculated for each 24-hour period. CT (mg-minutes per liter) = chlorine residual (mg/L) x modal contact time (minutes). To calculate the lowest value, first record the following data for the 24-hour period:

a. Modal contact time under highest flow and corresponding total chlorine residual at that time.
b. Lowest total chlorine residual and corresponding modal contact time.
c. Highest total chlorine residual and corresponding modal contact time.
d. Modal contact time under lowest flow and corresponding total chlorine residual at that time.

Next, calculate CT values for each of the four conditions, above. The lowest of the four calculated CT values is the lowest CT for the period. (*22CCR§60301.230(a)*

Table No. 1

Sampling Frequency for Existing and Proposed Monitoring Wells in the Vicinity of the Treatment Plant and Storage Reservoirs

Parameter	Upper Aquifer Wells	Perched Groundwater Wells				Upper Aquifer (Proposed Storage Reservoirs)		
	MW15, MW16, MW17, MW115, MW117, MW119, MW207, MW208	MW107	MW114	MW116	MW118	MW209	MW210	Four Proposed Wells
Kjeldahl Nitrogen	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Nitrate	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Nitrite	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Ammonia	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Chloride	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Sodium	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Sulfate	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Total Hardness	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Alkalinity	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Total Organic Carbon	S	S	S	S	S	Q [1]	Q [1]	Q [1]
Total Dissolved Solids	S	S	S	S	S	S	S	S
MBAS	Y	Y	Y	Y	Y	Y	Y	Y
Bromoform	Y	Y	Y	Y	Y	Y	Y	Y
Chloroform	Y	Y	Y	Y	Y	Y	Y	Y
Dibromo-chloromethane	Y	Y	Y	Y	Y	Y	Y	Y
Dichloro-bromomethane	Y	Y	Y	Y	Y	Y	Y	Y
Total Petroleum Hydrocarbons	Y	Y	Y	Y	Y	Y	Y	Y
Total chromium	Y	Y	Y	Y	Y	Y	Y	Y
Hexavalent chromium	Y	Y	Y	Y	Y	Y	Y	Y
Total Cyanides	Y	Y	Y	Y	Y	Y	Y	Y
Total Phenols	Y	Y	Y	Y	Y	Y	Y	Y
Purgeable Organics	Y	Y	Y	Y	Y	Y	Y	Y
Base/Neutral Extractible Organics	Y	Y	Y	Y	Y	Y	Y	Y
Acid Extractible Organics	Y	Y	Y	Y	Y	Y	Y	Y
Heavy Metals	Y	Y	Y	Y	Y	Y	Y	Y
MTBE	Y	Y	Y	Y	Y	Y	Y	Y

Y = Annually, S = Semiannually and Q = Quarterly

[1] Quarterly for two years until background conditions are established. Semiannually, thereafter

Table No. 2

Sampling Frequency for Monitoring Wells in the Vicinity of Paiute Ponds

Parameter	Piute Ponds Wells								Piute Ponds Peripheral Wells				
	Upper Aquifer	Shallow Groundwater							Upper Aquifer		Shallow Groundwater		
	MW18	MW108	MW120	MW122	MW124	MW125	MW203	MW204	MW206	MW211	MW202	MW205	MW212
Kjeldahl Nitrogen	S	2	2	2	2	2	2	2	S	2	2	2	2
Nitrate	S	2	2	2	2	2	2	2	S	2	2	2	2
Nitrite	S	2	2	2	2	2	2	2	S	2	2	2	2
Ammonia	S	2	2	2	2	2	2	2	S	2	2	2	2
Chloride	S	2	2	2	2	2	2	2	S	2	2	2	2
Sodium	S	2	2	2	2	2	2	2	S	2	2	2	2
Sulfate	S	2	2	2	2	2	2	2	S	2	2	2	2
Total Hardness	S	2	2	2	2	2	2	2	S	2	2	2	2
Alkalinity	S	2	2	2	2	2	2	2	S	2	2	2	2
Total Organic Carbon	S	2	2	2	2	2	2	2	S	2	2	2	2
Total Dissolved Solids	S	2	2	2	2	2	2	2	S	2	2	2	2
MBAS	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Total Trihalomethanes	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Total Petroleum Hydrocarbons	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Total chromium	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Hexavalent chromium	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Total Cyanides	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Total Phenols	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Purgeable Organics	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Base/Neutral Extractible Organics	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Acid Extractible Organics	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Heavy Metals	Y	2	2	2	2	2	2	2	Y	2	2	2	2
Methyl Tertiary Butyl Ether	Y	2	2	2	2	2	2	2	Y	2	2	2	2

Y = Annually, S = Semiannually and Q = Quarterly

[2] Monitoring shall continue at the specified frequency until a minimum of four samples have been analyzed for this constituent. Thereafter, the wells shall be sampled for field parameters at a frequency of once every two year.

Table No. 3

Sampling Frequency for Monitoring Wells at Nebeker Ranch

Parameter	LWRP Upper Aquifer Wells				
	MW10	MW11	MW12	MW13	MW14
Kjeldahl Nitrogen	S	S	S	S	S
Nitrate	S	S	S	S	S
Nitrite	S	S	S	S	S
Ammonia	S	S	S	S	S
Chloride	S	S	S	S	S
Sodium	S	S	S	S	S
Sulfate	S	S	S	S	S
Total Hardness	S	S	S	S	S
Alkalinity	S	S	S	S	S
Total Organic Carbon	S	S	S	S	S
Total Dissolved Solids	S	S	S	S	S
MBAS	Y	Y	Y	Y	Y
Bromoform	Y	Y	Y	Y	Y
Chloroform	Y	Y	Y	Y	Y
Dibromo-chloromethane	Y	Y	Y	Y	Y
Dichloro-bromomethane	Y	Y	Y	Y	Y
Total Petroleum Hydrocarbons	Y	Y	Y	Y	Y
Total chromium	Y	Y	Y	Y	Y
Hexavalent chromium	Y	Y	Y	Y	Y
Total Cyanides	Y	Y	Y	Y	Y
Total Phenols	Y	Y	Y	Y	Y
Purgeable Organics	Y	Y	Y	Y	Y
Base/Neutral Extractible Organics	Y	Y	Y	Y	Y
Acid Extractible Organics	Y	Y	Y	Y	Y
Heavy Metals	Y	Y	Y	Y	Y
Methyl Tertiary Butyl Ether	Y	Y	Y	Y	Y

Y = Annually, S = Semiannually and Q = Quarterly

Table No. 4

Eastern Agricultural Site - Sampling Frequency for Existing Monitoring Wells (MW30, MW31, SW30, SW31 and SW32) and Three Proposed Wells

Parameter	Sampling Frequency
Kjeldahl Nitrogen	Q [1]
Nitrate	Q [1]
Nitrite	Q [1]
Ammonia	Q [1]
Chloride	Q [1]
Sodium	Q [1]
Sulfate	Q [1]
Total Hardness	Q [1]
Alkalinity	Q [1]
Total Organic Carbon	Q [1]
Total Dissolved Solids	Q [1]
MBAS	Y
Bromoform	Y
Chloroform	Y
Dibromo-chloromethane	Y
Dichloro-bromomethane	Y
Total Petroleum Hydrocarbons	Y
Total chromium	Y
Hexavalent chromium	Y
Total Cyanides	Y
Total Phenols	Y
Purgeable Organics	Y
Base/Neutral Extractible Organics	Y
Acid Extractible Organics	Y
Heavy Metals	Y
Methyl Tertiary Butyl Ether	Y

[1] Quarterly for two years until background conditions are established.

Y = Annually, S = Semiannually and Q = Quarterly

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

GENERAL PROVISIONS
FOR MONITORING AND REPORTING

1. SAMPLING AND ANALYSIS

a. All analyses shall be performed in accordance with the current edition(s) of the following documents:

   i. Standard Methods for the Examination of Water and Wastewater

   ii. Methods for Chemical Analysis of Water and Wastes, EPA

b. All analyses shall be performed in a laboratory certified to perform such analyses by the California State Department of Health Services or a laboratory approved by the Regional Board Executive Officer. Specific methods of analysis must be identified on each laboratory report.

c. Any modifications to the above methods to eliminate known interferences shall be reported with the sample results. The methods used shall also be reported. If methods other than EPA-approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Regional Board prior to use.

d. The Discharger shall establish chain-of-custody procedures to insure that specific individuals are responsible for sample integrity from commencement of sample collection through delivery to an approved laboratory. Sample collection, storage, and analysis shall be conducted in accordance with an approved Sampling and Analysis Plan (SAP). The most recent version of the approved SAP shall be kept at the facility.

e. The Discharger shall calibrate and perform maintenance procedures on all monitoring instruments and equipment to ensure accuracy of measurements, or shall insure that both activities will be conducted. The calibration of any wastewater flow measuring device shall be recorded and maintained in the permanent log book described in 2.b, below.

f. A grab sample is defined as an individual sample collected in fewer than 15 minutes.

g. A composite sample is defined as a combination of no fewer than eight individual samples obtained over the specified sampling period at equal intervals. The volume of each individual sample shall be proportional to the discharge flow rate at the time of sampling. The sampling period shall equal the discharge period, or 24 hours, whichever period is shorter.

2. OPERATIONAL REQUIREMENTS

a. Sample Results

Pursuant to California Water Code Section 13267(b), the Discharger shall maintain all sampling and analytical results including: strip charts; date, exact place, and time of sampling; date analyses were performed; sample collector's name; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.

b. Operational Log

Pursuant to California Water Code Section 13267(b), an operation and maintenance log shall be maintained at the facility. All monitoring and reporting data shall be recorded in a permanent log book.

3. REPORTING

a. For every item where the requirements are not met, the Discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time, and shall submit a timetable for correction.

b. Pursuant to California Water Code Section 13267(b), all sampling and analytical results shall be made available to the Regional Board upon request. Results shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.

c. The Discharger shall provide a brief summary of any operational problems and maintenance activities to the Board with each monitoring report. Any modifications or additions to, or any major maintenance conducted on, or any major problems occurring to the wastewater conveyance system, treatment facilities, or disposal facilities shall be included in this summary.

d. Monitoring reports shall be signed by:

i. In the case of a corporation, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates;

ii. In the case of a partnership, by a general partner;

iii. In the case of a sole proprietorship,by the proprietor; or

iv. In the case of a municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

e. Monitoring reports are to include the following:

i. Name and telephone number of individual who can answer questions about the report.

ii. The Monitoring and Reporting Program Number.

iii. WDID Number.

f. Modifications

This Monitoring and Reporting Program may be modified at the discretion of the Regional Board Executive Officer.

4. NONCOMPLIANCE

Under Section 13268 of the 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 under Section 13268 of the Water Code.