

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

**MONITORING AND REPORTING PROGRAM NO. R6V-2003-028
WDID NO. 6B360207001**

**WATER RECYCLING REQUIREMENTS
FOR
VICTOR VALLEY WASTEWATER RECLAMATION AUTHORITY (VWVRA) and
CITY OF VICTORVILLE;
WESTWINDS GOLF COURSE**

San Bernardino County

I. MONITORING

For the purposes of the Monitoring and Reporting Program, the City of Victorville is the User and VWVRA is the Producer.

A. Producer Flow Monitoring

The following shall be recorded:

1. The volume, in million gallons, of recycled water delivered to the User for each day.
2. The total volume, in million gallons, of recycled water delivered to the User for each month.
3. The maximum instantaneous flowrate, in million gallons per day (mgd), of recycled water delivered to the User that occurs each day.
4. The average flowrate, in mgd, of recycled water delivered to the User for each month.
5. The cumulative volume, in acre-feet, of recycled water delivered to the User for the calendar year.

B. Producer Recycled Water Monitoring

1. Representative samples shall be collected and analyzed for the parameters listed in Table 1. The Producer is currently collecting some of this information as required in a separate Order, however it must be reported as required herein.

Table 1 - Recycled Water Monitoring

Parameter	Station	Units	Sample Type	Analytical Method	Minimum Frequency
Flow	Final Effluent Station	Mgd	Continuous	SCADA ¹	see below
Turbidity	CCT ²	NTU	Continuous	EPA 180 – field	see below
Chlorine Residual	CCT ³	Mg/L	Continuous	EPA 330	see below
CT	CCT	Mg-minutes/L	Calculated	SCADA	Daily – see below
Total Coliform	CCT	MPN/100ml	Grab	SM 9221	Daily - see below
PH	SBMS	PH Units	Grab	EPA 150 – field	Daily
Dissolved Oxygen	SBMS	Mg/L	Grab	SM 4500 – field	Weekly
Total Dissolved Solids (TDS)	Storage Pond	Mg/L	Grab	EPA 160	Quarterly

2. For CT calculation, the following information must be taken from 24-hour chart readings:
 - a. Modal contact time under the highest flow and corresponding chlorine residual at that time;
 - b. Lowest residual and corresponding modal contact time;
 - c. Highest residual and corresponding modal contact time; and
 - d. Modal contact time under lowest flow and corresponding residual.

CT values are calculated from these four sets of data and the lowest value would be used to determine worst case CT for the daily period. For purposes of this determination, modal contact time would be derived from a pre-determined plot correlating modal contact times to varying flow conditions. Continuous flow and chlorine residual monitoring shall be conducted. The Producer may propose alternate methods for determining daily CT compliance for review and approval by the California Department of Health Services (DHS) (e.g. for delivery periods less than 24-hours). A copy of the request and DHS approval shall be provided to the Regional Board and implemented. Individual data and all four calculations for each day shall be reported. Any CT values less than 450 mg-min/l with a minimum modal contact time of at least 90 minutes based on a peak dry weather design flow (stated in each report) shall be reported.

3. Filter effluent turbidity analysis should be conducted continuously using a continuous monitoring and recording turbidimeter. The following information must be collected and reported:
 - a. Turbidity readings at 72-minute (1.2 hour) intervals (representing 5% of a 24 hr period).

¹ SCADA - Supervisory Control and Data Acquisition system
² CCT – Chlorine Contact Tank
³ CCT – Chlorine Contact Tank effluent prior to dechlorination

- b. These readings are minimum to evaluate compliance during a 24-hour period. Additional readings may be taken if included in compliance calculations. For delivery periods less than 24-hours (e.g. irrigation only at night), the Producer may propose to the DHS an alternate data recording plan so that sufficient data are collected to evaluate turbidity levels during 5 percent of the time within a 24-hour period. A copy of the request and DHS approval shall be provided to the Regional Board and implemented.
 - c. The daily average operating filter effluent turbidity (must be less than 2 NTU) should be determined by averaging the levels of recorded turbidity taken as specified in 3.a.above (arithmetic mean).
 - d. Evaluation of compliance with the turbidity standard of not exceeding 5 NTU more than 5 percent of the time over a 24-hour period should be determined using the levels of recorded turbidity. In the first monitoring report submitted provide a description of the Producer's evaluation approach.
 - e. The maximum reading during recycled water delivery in a 24-hour period must be used to evaluate the 10 NTU maximum at-any-time criteria.
 - f. Should the continuous turbidity meter and/or recorder fail, grab sampling at a minimum frequency of 1.2 hours may be substituted for a period of up to 24-hours. Continuous turbidity monitoring should also be provided prior to filtration to ensure adequate process control.
 - g. Daily maximum turbidity.
 - h. The percent of samples greater than 5 NTU in any 24-hour period.
4. Coliform samples shall be obtained immediately after disinfection. Daily total coliform bacteria results shall be reported along with a running 7-day median calculation. Any coliform bacteria sample results exceeding the following shall be reported:
- a. A median MPN of 2.2 /100 ml for a running seven-day period;
 - b. A total MPN of 23/100 ml in more than one sample in any running 30-day period; and
 - c. A total MPN of 240/100 ml in any sample.

C. User Ground Water Monitoring

1. Grab samples from within the top five feet of ground water following standard well purging shall be collected from a minimum of three monitoring wells established around the golf course (Refer to Attachment "B" of the Order for existing well locations). The samples shall be analyzed to determine the magnitude of the parameters listed in Table 2.
2. Each monitoring report submitted with ground water information shall include a map showing well locations, ground water elevation contours and tables summarizing the final field and laboratory analytical data.

Table 2 – Ground Water Monitoring

Parameter	Station	Units	Sample Type	Analytical Method	Minimum Frequency
Depth to water	TBD ⁴	Feet bgs	--	Measured – field	Semiannually
Conductivity	TBD	micromhos/cm	Grab	EPA 120 – field	Semiannually
PH	TBD	pH units	Grab	EPA 150 – field	Semiannually
Dissolved Oxygen	TBD	mg/L	Grab	SM 4500 – field	Semiannually
Temperature	TBD	Deg. F or C	Grab	SM 2550 – field	Semiannually
Turbidity	TBD	NTU	Grab	EPA 180 – field	Semiannually
Static Water Level	TBD	Feet amsl	--	Determined	Semiannually
Direction of Gradient	TBD		--	Determined	Semiannually
TDS	TBD	mg/L	Grab	EPA 160	Semiannually
Alkalinity (Alk)	TBD	mg/L	Grab	EPA 300	Annually
Hardness (Hrdns)	TBD	mg/L	Grab	SM 2340	Annually
Methylene blue active substances (MBAS)	TBD	mg/L	Grab	EPA 425	Annually
Calcium (Ca)	TBD	mg/L	Grab	EPA 200	Annually
Potassium (K)	TBD	mg/L	Grab	EPA 200	Annually
Magnesium (Mg)	TBD	mg/L	Grab	EPA 200	Annually
Copper (Cu)	TBD	mg/L	Grab	EPA 200	Annually
Iron (Fe)	TBD	mg/L	Grab	EPA 200	Annually
Manganese (Mn)	TBD	mg/L	Grab	EPA 200	Annually
Zinc (Zn)	TBD	mg/L	Grab	EPA 200	Annually
Chloride (Cl)	TBD	mg/L	Grab	EPA 300	Annually
Sulfate (SO4)	TBD	mg/L	Grab	EPA 300	Annually
Nitrate (NO3)	TBD	mg/L	Grab	EPA 300	Annually
Total organic carbon	TBD	mg/L	Grab	EPA 415	Annually

3. The User shall install at least three (3) ground water monitoring wells to monitor the upper ten (10) feet of the first encountered ground water beneath the golf course. The proposed well locations, designs, well development methods, and purging methods; as well as the sample collection, handling, preservation and laboratory analysis methods shall be described in a workplan

⁴ TBD – To Be Determined.

that is to be submitted by August 1, 2003 for acceptance by the Regional Board Executive Officer prior to initiation.

At least one well shall be located upgradient of the facility and two wells downgradient. The design of the wells shall conform to the "California Well Standards, Bulletins 74-90 and 74-81" prepared by the CA Department of Water Resources. Well permits shall be obtained from San Bernardino County for the installation and demolition of any wells. Following acceptance of the workplan, the wells shall be installed according to the workplan.

The design of the ground water monitoring system, sample collection procedures and data analysis methods shall conform to methods outlined in Section 20415 and Section 20420(b),(c),(f),(h), and (i) of California Code of Regulations (CCR), Title 27, or an equivalent.

Sufficient data should be collected to establish the background values for all parameters listed in Table 2, above, except for "Depth to Water", "Static Water Level" and "Direction of Gradient." Background water quality should be determined from a minimum of four samples collected from all wells evenly spaced (no less than 60 days apart) between installation of the wells and the start of recycled water use (expected to be in February 2004).

Prior to February 1, 2004 (the approximate date of initiation of recycled water use for irrigation), the User shall submit a technical report, signed by either a CA Registered Geologist or Civil Engineer, describing the selected methods used to determine "background" groundwater quality. The approach used should follow performance standards outlined in Section 20415(e) (9, 10 & 12)(CCR) Title 27 (Data Analysis Methods Performance Standards, Background Values/Procedures, Sampling Methods, respectively), or an equivalent method. The User shall determine background concentrations for each of the parameters described in Table 2, above, except for "Depth to Water", "Static Water Level" and "Direction of Gradient."

For each subsequent ground water monitoring event, the User shall determine whether there is a "measurably significant" evidence of groundwater quality degradation from the Westwinds Golf Course as a result of recycled water use. The results of this determination shall be stated in the monthly report following semi-annual ground water sampling for the parameters analyzed except for "Depth to Water"; "Static Water Level", and "Direction of Gradient."

Additional monitoring points, over the three minimum, may be required to establish background water quality.

The U.S. Air Force has installed ground water monitoring wells at the site to investigate dieldrin in the ground water. The User may propose to use selected Air Force wells for this ground water monitoring requirement provided each of the above criteria are satisfied. Additionally, if the User proposes to utilize wells installed by the Air Force, it must submit a copy of an agreement that allows use of these wells for the life of this project plus any post-project monitoring. Otherwise, separate, properly-constructed monitoring wells must be installed so that a minimum of four (4) samples are collected and the above described technical reports are submitted prior to the first use of recycled water at Westwinds Golf Course.

D. Use Area Monitoring

1. A storage pond freeboard monitoring station shall be established and freeboard recorded weekly and reported in each report submitted.
2. A visual inspection of the golf course for compliance with Use Area Requirements shall be made monthly and the results submitted in each report.
3. A visual inspection shall be made after significant rainstorm events of large duration or intensity, (e.g. > 0.1 inches).

II. REPORTING

A. General Provisions

1. The Producer/User shall comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made part of this Monitoring and Reporting Program.
2. Laboratory and Field data sheets shall be included with each report.
3. Each report shall discuss violations and corrective actions taken or planned to bring the Producer and/or User into full compliance with Water Recycling Requirements.
4. Tables listing final observed field parameters (described in Tables 1 and 2) shall be included with each report.
5. Each report shall include an evaluation of the data in a tabular form with respect to the requirements listed in the Board Order to determine whether compliance has been achieved. Spreadsheets and supporting calculations shall be included.
6. All data collected at the approved monitoring locations, over the minimum frequency specified above, shall be reported and included in the compliance calculations.

B. Special Reporting

Any of the following conditions should be notified to the Regional Board within 24-hours of occurrence:

1. Failure of chlorination equipment;
2. Effluent total coliform bacteria MPN greater than 240/100 ml;
3. Turbidity greater than 10 NTU; and
4. CT less than 450 mg-min/l.

The State DHS and County DEHS should be contacted by the User or Producer whenever they are aware that water treated to a level requiring a 24-hour notification has been delivered to the distribution system, or if there is a question about whether the treatment plant should be returned to service. Any known direct cross-connection between recycled and potable water should be reported to the Regional Board and State DHS and County DEHS immediately, or at least within 24-hours.

C. Monthly Submittal Periods

Beginning on **July 30, 2003**, monthly monitoring reports including the preceding information shall be submitted to the Regional Board by the 30th day of the month following each monthly monitoring period. The Producer has agreed to submit all monitoring reports. Until the month after the first delivery of recycled water by the Producer to the User for the Westwinds Golf Course, a letter report may be substituted stating the status of delivery pipeline construction and time schedule of expected first recycled water delivery.

D. Annual Reports

An Annual Report shall be submitted to the Regional Board by **April 1** of each year. The report shall contain both tabular and graphical summaries of the prior year's monitoring data. The compliance record shall be evaluated and a summary provided of corrective actions taken or planned to bring the Producer and User into full compliance with the Order.

The Annual Report shall include a list of each analytical method used for testing and associated laboratory quality assurance/quality control procedures. The report shall state the laboratories used to monitor compliance and the status of their certification.

E. Summary of Monitoring and Reporting

Report Designation	Monitoring Period	Reporting Date
Monthly Reports – including Producer, Use Area Information	Monthly	30th of the following month
Semiannual Ground Water Information	April and October	with following monthly report
Ground Water Monitoring System Design	not applicable	August 1, 2003
Background Water Quality Evaluation	August 1, 2003 – February 1, 2004 – 4 evenly spaced samples	February 1, 2004
Annual Report	prior year	April 1
Special Reports	not applicable	as required

Ordered by: Harold J. Singer
HAROLD J. SINGER
EXECUTIVE OFFICER

Dated: June 11, 2003

Attachment: General Provisions for Monitoring and Reporting