

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-__

FOR
CITY OF WEST SACRAMENTO
GEORGE KRISTOFF WATER TREATMENT PLANT
YOLO COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code section 13267. The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. Except as specified otherwise in this MRP, grab samples will be considered representative of water, wastewater, soil, solids/sludges, and groundwater.

The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991 (Standard Provisions). Field test instruments (such as those used to measure pH electrical conductivity, dissolved oxygen, wind speed, and precipitation) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated at the frequency recommended by the manufacturer;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

Laboratory analytical procedures shall comply with the methods and holding times specified in the following (as applicable to the medium to be analyzed):

- *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA);
- *Test Methods for Evaluating Solid Waste* (EPA);
- *Methods for Chemical Analysis of Water and Wastes* (EPA);
- *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA);
- *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and
- *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125).

Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health's Environmental Laboratory Accreditation Program (ELAP). The Discharger may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower than the applicable water quality objectives for the constituents to be analyzed.

If monitoring consistently shows no significant variation in a constituent concentration or parameter after at least 8 consecutive monitoring events, the Discharger may request this MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency. The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP.

A glossary of terms used in this MRP is included on the last page.

WASTEWATER FLOW MONITORING

The Discharger shall monitor wastewater flow as follows.

Flow Source	Units	Sample Type	Monitoring Frequency	Reporting Frequency
Wastewater discharged to the sanitary sewers	gpd	Meter	Daily	Quarterly
Wastewater discharged to the sludge drying ponds	gpd	Meter	Daily ¹	Quarterly

¹ Report as total daily flow to each sludge drying pond.

WASTEWATER MONITORING

Wastewater samples shall be collected upstream of the point of discharge to the sludge drying ponds as shown on Attachment B. At a minimum, effluent shall be monitored as specified below:

Constituent/Parameter	Units	Sample Type	Monitoring Frequency	Reporting Frequency
Total Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Dissolved Arsenic ¹	µg/L	Grab	Quarterly	Quarterly
Dissolved Lead ¹	µg/L	Grab	Quarterly	Quarterly
Dissolved Nickel ¹	µg/L	Grab	Quarterly	Quarterly
Total Trihalomethanes	µg/L	Grab	Quarterly	Quarterly

¹ Samples for dissolved metals shall be filtered prior to preservation and digestion using a 0.45-micron filter.

SLUDGE DRYING POND MONITORING

The sludge drying ponds shall be monitored as specified below. Dissolved oxygen monitoring applies to any drying pond containing more than two feet of standing water.

Constituent/Parameter	Units	Sample Type	Monitoring Frequency	Reporting Frequency
Dissolved Oxygen ¹	mg/L	Grab	Weekly	Quarterly
Freeboard ²	0.1 feet	Measurement	Weekly	Quarterly
pH ¹	Standard	Grab	Weekly	Quarterly
Odors	--	Observation	Weekly	Quarterly
Berm Condition	--	Observation	Weekly	Quarterly

¹ Samples shall be collected opposite the drying bed inlet at a depth of one foot.

² Freeboard shall be measured vertically from the surface of the bed water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 feet.

In addition, when wastewater is being discharged to the sludge drying ponds or when there is wastewater in the sludge drying ponds, the Discharger shall inspect the condition of the drying ponds once per week and document visual observations. Notations shall include observations of:

- a. Presence of weeds in the water or along the berm;
- b. Accumulations of dead algae, vegetation, scum, or debris on the drying pond surface;
- c. Animal burrows in the berms;
- d. Evidence of seepage from the berms or downslope of the drying ponds;
- e. Evidence of tears, abrasions, cracks, and holes in geosynthetic liners.

GROUNDWATER MONITORING

The Discharger shall maintain the groundwater monitoring well network. If a groundwater monitoring well is dry for more than four consecutive sampling events or is damaged, the Discharger shall submit a work plan and proposed time schedule to replace the well. The well shall be replaced following approval of the work plan.

Applicability of Groundwater Limitations

Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications for approval. Once installed, all new wells shall be added to the groundwater monitoring network. The following table lists all existing monitoring wells and designates the purpose of each well:

MW-1 ² MW-2 ¹ MW-3 ²

¹ Background well not used for compliance monitoring.

² Compliance well.

The Groundwater Limitations set forth in Section C of the WDRs shall apply to the specific compliance monitoring wells tabulated below. This table is subject to revision by the Executive Officer following construction of any new compliance monitoring wells.

Constituent	Groundwater Limitation	Compliance Wells to which Limitation Applies
All	Concentrations that exceed either the Primary or Secondary MCL. ¹	MW-1 and MW-3
All	Taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.	MW-1 and MW-3

¹ Compliance with this requirement shall be determined on an intra-well basis for each of the specified wells using approved statistical methods.

Groundwater Trigger Concentrations

The following groundwater trigger concentrations are intended only to serve as a means of assessing whether the discharge might potentially cause a violation of one or more of the Groundwater Limitations of the WDRs at some later date.

Constituent	Trigger Concentration, µg/L
Dissolved Arsenic	6.0
Dissolved Lead	9.0
Dissolved Nickel	60
Total Trihalomethanes	50

If the annual evaluation of groundwater quality performed pursuant to the Annual Monitoring Report section of this MRP shows that the annual average of one or more of the trigger concentrations has been exceeded in any compliance well during the calendar year, the Discharger shall submit one or both of the following technical reports, as applicable, by **1 May of the following calendar year** (e.g., if one or more trigger concentrations are exceeded for calendar year 2020, the appropriate report is due by 1 May 2021):

1. A technical evaluation of the reason[s] for the concentration increase[s] and a technical demonstration on a constituent-by-constituent basis that, although the concentration has increased more than expected in one or more compliance wells, continuing the discharge without additional treatment or control will not result in exceedance of the applicable groundwater limitation.
2. An *Action Plan* that presents a systematic technical evaluation of each component of the facility's waste treatment and disposal system to determine whether additional treatment or control is feasible for each constituent that exceeds a trigger concentration. The plan shall:

- a. Evaluate each component of the wastewater treatment, storage, and disposal system (as applicable);
- b. Describe available treatment and/or control technologies that have not yet been implemented;
- c. Provide preliminary capital and operation/maintenance cost estimates for each technology;
- d. Designate the preferred option[s] for implementation; and
- e. Specify a proposed implementation schedule. The schedule for full implementation shall not exceed one year, and the Discharger shall immediately implement the proposed improvements.

Groundwater Sampling and Analysis

Prior to purging or sampling, the groundwater depth shall be measured in each well to the nearest 0.01 feet. Groundwater elevations shall then be calculated to determine groundwater gradient and flow direction.

Low or no-purge sampling methods are acceptable, if described in an approved *Sampling and Analysis Plan*. Otherwise, each monitoring well shall be purged of at least 3 to 5 casing volumes until pH, electrical conductivity and turbidity have stabilized prior to sampling. Groundwater monitoring for all monitoring wells shall include, at a minimum, the following:

Constituent/Parameter	Units	Sample Type	Monitoring Frequency	Reporting Frequency
Depth to Groundwater ¹	0.01 feet	Measurement	Quarterly	Quarterly
Groundwater Elevation ¹	0.01 feet	Calculation	Quarterly	Quarterly
Gradient ¹	feet/feet	Calculation	Quarterly	Quarterly
Gradient Direction ¹	degrees	Calculation	Quarterly	Quarterly
pH	standard	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Dissolved Arsenic ³	µg/L	Grab	Quarterly	Quarterly
Dissolved Lead ³	µg/L	Grab	Quarterly	Quarterly
Dissolved Nickel ³	µg/L	Grab	Quarterly	Quarterly
Total Trihalomethanes ²	µg/L	Grab	Quarterly	Quarterly

¹ Groundwater elevations shall be determined based on depth-to-water measurements using a surveyed elevation reference point on the well casing.

² Individual trihalomethane constituent concentrations shall be reported (EPA Method 8260B or equivalent).

³ Samples for metals shall be filtered prior to preservation and digestion using a 0.45-micron filter.

SOLIDS/SLUDGE DISPOSAL MONITORING

The Discharger shall implement the *Sludge Management Plan* required by Provision E.1.c. The Discharger shall keep records regarding all solids disposal activities. For each discrete quality of solids removed from the facility, record keeping shall include the following information:

1. Annual production totals in dry tons or cubic yards;
2. A description of disposal methods, including the name of the hauling company and the following information related to the disposal methods used. If more than one method is used, include the percentage disposed of by each method:
 - a. For landfill disposal, include: the name, disposal date, location of the landfill, and the Order number of WDRs that regulate the disposal facility.
 - b. For land application, include: the location of the site, application date, and the Order number of any WDRs that regulate the disposal facility.
 - c. For composting, include: the location the site and the Order number of any WDRs that regulate the disposal facility.
 - d. For temporary storage, include: the location of the site, description of best management practices (BMPs), and anticipated date when material will be disposed of off-site.
3. Analytical results for any solids monitoring conducted at the request of the disposal facility.

The records shall also indicate steps taken to monitor and reduce odor and other nuisance conditions. Records shall be stored onsite and available for review during inspections. A summary of the solids disposal activities for the calendar year shall be submitted as part of the Annual Monitoring Report.

REPORTING

All monitoring reports should be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be emailed to: centralvalleysacramento@waterboards.ca.gov.

To ensure that your submittal is routed to the appropriate staff person, the following information should be included in the body of the email:

Attention: Compliance/Enforcement Section
City of West Sacramento
George Kristoff Water Treatment Plant
Yolo County
Place ID: 815290

Documents that are 50 MB or larger should be transferred to a CD, DVD, or flash drive and mailed to the following address:

Central Valley Regional Water Quality Control Board
ECM Mailroom
11020 Sun Center Drive, Suite 200
Rancho Cordova, California 95670

Please include a transmittal sheet that includes the following:

Attention: Compliance/Enforcement Section
City of West Sacramento
George Kristoff Water Treatment Plant
Yolo County
Place ID: 815290

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., wastewater, groundwater, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

Laboratory analysis reports do not need to be included in the monitoring reports; however, all laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3.

In addition to the requirements of Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the Reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated. For a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

All monitoring reports that involve planning, investigation, evaluation or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

A. Quarterly Monitoring Reports

Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by **May 1st**). Each Quarterly Monitoring Report shall include the following:

1. Results of Wastewater Flow Monitoring. Wastewater flow monitoring to the sanitary sewer and each sludge drying pond shall be arranged in tabular format for each month during the quarter and include cumulative flow to date. If no wastewater was discharged to the sludge drying ponds or sanitary sewers, the report shall so state.
2. Results of Wastewater Monitoring for wastewater discharged to the sludge drying ponds.
3. Results of Sludge Drying Pond Monitoring. Dissolved oxygen, freeboard, and pH monitoring shall be arranged in tabular format for each month during the quarter. Include a summary of the sludge drying bed inspection and any corrective actions performed during the quarter.
4. Results of Groundwater Monitoring, including:
 - a. A narrative description of all preparatory, monitoring, sampling, and sample handling for groundwater monitoring.
 - b. A field log for each well documenting depth to groundwater; method of purging; parameters measured before, during, and after purging; sample preparation (e.g., filtering); and sample preservation.
 - c. Calculation of the groundwater elevation at each monitoring well, and determination of groundwater flow direction and gradient on the date of measurement.
 - d. Summary data tables of historical and current water table elevations and analytical results.
 - e. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells, surface waters, and groundwater elevation contours referenced to an appropriate datum (e.g., NGVD).
5. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements.
6. If requested by staff, copies of laboratory analytical report(s).
7. The most recent calibration log sheet(s) verifying calibration of any field monitoring instruments (e.g., DO and pH meters) used to obtain data.

B. Annual Monitoring Reports

An Annual Monitoring Report shall be submitted to the Central Valley Water Board by **1 February** of each year. The report shall include the following:

1. Concentration versus time graphs for each monitored constituent using all historic groundwater monitoring data. Each graph shall show the current groundwater concentration range, the trigger concentration specified above, and the Groundwater Limitation as horizontal lines at the applicable concentration.
2. An evaluation of the groundwater quality beneath the site and determination whether any trigger concentrations were exceeded in any compliance well at any time during the calendar year. This shall be determined by comparing the annual average concentration for each well during the calendar year to the corresponding trigger concentration specified above. If any groundwater trigger concentrations were exceeded, include acknowledgment that the technical report(s) described in the Groundwater Trigger Concentrations section of this MRP will be submitted in accordance with the specified schedule.
3. An evaluation of the wastewater quality and comparison to the groundwater quality. Determination of whether the results reveal a previously undetected threat to water quality or indicate a change in waste character such that the discharge poses a threat to water quality. This shall be determined by comparing the annual average concentration of the effluent quality during the calendar year to the corresponding concentration of the groundwater.
4. A narrative description and summary of solids/sludge management and disposal practices.
5. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.
6. An evaluation of the performance of the treatment facility, including discussion of capacity issues, system problems, and a forecast of the flows anticipated in the next year.
7. A discussion of the following:
 - a. Waste constituent reduction efforts implemented in accordance with any required workplan;
 - b. Other treatment or control measures implemented during the calendar year either voluntarily or pursuant to the WDRs, this MRP, or any other Order;
 - c. Based on monitoring data, an evaluation of the effectiveness of the treatment or control measures implemented to date.

8. A discussion of any data gaps and potential deficiencies or redundancies in the monitoring system or reporting program.
9. Monitoring equipment maintenance and calibration records, as described in Standard Provision C.4.

A transmittal letter shall accompany each monitoring report. The letter shall include a discussion of all violations of the WDRs and this MRP during the reporting period and actions taken or planned for correcting each violation. If the Discharger has previously submitted a report describing corrective actions taken and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. Pursuant to Section B.3 of the Standard Provisions and General Reporting Requirements, the transmittal letter shall contain a statement by the Discharger or the Discharger's authorized agent certifying under penalty of perjury that the report is true, accurate and complete to the best of the signer's knowledge.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

(Date)

GLOSSARY

BOD ₅	Five-day biochemical oxygen demand
CaCO ₃	Calcium carbonate
DO	Dissolved oxygen
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
NTU	Nephelometric turbidity unit
TKN	Total Kjeldahl nitrogen
TDS	Total dissolved solids
TSS	Total suspended solids
Continuous	The specified parameter shall be measured by a meter continuously.
24-hr Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots over a 24-hour period.
Daily	Every day except weekends or holidays.
Twice Weekly	Twice per week on non-consecutive days.
Weekly	Once per week.
Twice Monthly	Twice per month during non-consecutive weeks.
Monthly	Once per calendar month.
Bimonthly	Once every two calendar months (i.e., six times per year) during non-consecutive months.
Quarterly	Once per calendar quarter.
Semiannually	Once every six calendar months (i.e., two times per year) during non-consecutive quarters.
Annually	Once per year.
mg/L	Milligrams per liter
mL/L	Milliliters [of solids] per liter
µg/L	Micrograms per liter
µmhos/cm	Micromhos per centimeter
gpd	Gallons per day
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
MTF	Multiple tube fermentation