

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING ORDER NO. R5-2012-XXXX

FOR
WASTE DISCHARGE REQUIREMENTS

GLENN SPRINGS HOLDING COMPANY
FORMER OCCIDENTAL CHEMICAL COMPANY
GROUNDWATER REMEDIATION PROJECT
LATHROP FACILITY
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater extraction and treatment system. This MRP is issued pursuant to Water Code Section 13267. The Discharger is required to comply with this MRP, which contains the minimum monitoring and reporting requirements necessary to determine compliance with the Waste Discharge Requirements Order (WDR) No. R5-2012-XXXX. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Central Valley Water Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

TREATMENT SYSTEM MONITORING

The monitoring program for the treatment system shall follow the schedule provided in the attached Tables 1 and analytical methods listed in Table 2.

Table 1 lists all sampling locations and the sampling frequency. Table 2 lists the sampling constituents, analytical methods, and maximum practical quantitation limits. Sample collection and analysis shall follow standard EPA protocol. If necessary, equivalent analytical methods may be used with the concurrence of the Central Valley Water Board staff.

The best currently approved analytical methods for DBCP have detection levels of 0.001 µg/L and practical quantitation levels of 0.01 µg/L. Both of these values are above the effluent limitation for DBCP, Compliance with the effluent limitation is demonstrated by measuring no detectable concentrations of DBCP when using the method(s) listed on MRP R5-2012-XXXX and achieving the specified method detection limit. If new methods are approved that improve on the detection level and practical quantitation level, the MRP will be revised.

**Table 1. SAMPLING FREQUENCY AND
 CONSTITUENT SUITE FOR TREATMENT SYSTEMS**

Monitor Point	Units	Frequenc y
Influent Monitoring-Combined Influent		
DBCP	µg/L	Monthly
EDB	µg/L	Monthly
Sulfolane	µg/L	Monthly
Gamma-BHC (Lindane)	µg/L	Monthly
Nitrate	mg/L	Quarterly
Chloride	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Total Dissolved Solids	µg/L	Monthly
Effluent Monitoring (Port B-Lead Vessel Effluent, Port C-Combined Effluent)		
DBCP	µg/L	Monthly
EDB	µg/L	Monthly
Sulfolane	µg/L	Monthly
Nitrate	mg/L	Quarterly
Chloride	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Total dissolved solids	mg/L	Monthly
Dissolved Oxygen ¹	mg/L	Monthly
Total Organic carbon	mg/L	Monthly
Oxidation/Reduction Potential ²	millivolts	Monthly
Electrical Conductivity	µmhos	Monthly
Flow-average	Gallons per minute	Monthly
Flow-cumulative	gallons per minute	Monthly

¹ Field Measurement

² As ORP data is being collected frequently, the range of ORP measurements should be reported.

Table 2. ANALYTICAL METHODS

Sampling Parameter	Analytical Method ¹	Practical Quantitation Limit ² (micrograms/liter) ³
Depth to groundwater	Not applicable	0.01 feet
Fumigants	EPA Method 8260B	
1,2-Dibromo-3-chloropane (DBCP) ⁵		0.01
Ethylene dibromide (EDB) ⁵		0.01
Organochlorine Pesticides	EPA Method 8081A	
Aldrin		0.05
alpha-BHC		0.05
beta-BHC		0.05
delta-BHC		0.05
gamma-BHC		0.05
Chlordane		0.05
4,4'-Dichlorodiphenyldichloroethane (4,4'-DDD)		0.05
4,4'-Dichlorodiphenyldichloroethylene (4,4'-DDE)		0.05
4,4'-Dichlorodiphenyltrichloroethane (4,4'-DDT)		0.05
Dieldrin		0.05
Heptachlor		0.05
Toxaphene		5
Organophosphorus Pesticides	EPA Method 8141A	
DEF(S,S,S - Tributyltrithio-phosphate)		1.0
Delnav		1.0
Dimethoate		1.0
Ethyl parathion		1.0
Methyl parathion		1.0
Disyston (Disulfoton)		1.0
Herbicides	EPA Method 8151A	
2,4-D (Dichlorophenoxyacetic acid)		0.5
2,4,5-T (Trichlorophenoxyacetic acid)		0.1
Sulfolane	APPL SOP ANASULF ⁴	10
Inorganics	EPA Method 300	
Chloride		1 mg/L
Nitrate		0.1 mg/L
Sulfate		1 mg/L
Total Dissolved Solids	EPA Method 160.1	10 mg/L

¹ If necessary, equivalent analytical methods may be used with Central Valley Water Board staff concurrence.

² For non-detectable results.

³ Except where indicated.

⁴ In accordance with APPL laboratory provided information.

⁵ Water quality requirements for reinjected groundwater for these compounds are 0.01 µg/L EDB, 0.0017 µg/L DBCP and 16 µg/L sulfolane.

GROUNDWATER INJECTION SYSTEM MONITORING

The injection aquifer is overlain by a thick confining layer of relatively impermeable clay (referred to as the Corcoran clay). Treated groundwater by the treatment system is discharged beneath the Site in wells located both above and below the Corcoran clay. Flow distribution of the treated groundwater is not controlled by any means other than the natural receptivity of the injection wells and hydrogeologic characteristics of the confined aquifer. The injection system operation must comply with the WDR issued for the Site.

Attached Table 3 lists the injection wells and the sampling frequency. Table 2 lists the sampling constituents analytical methods, and the maximum practical quantitation limits. Sample collection and analysis shall follow standard EPA protocol.

COMPLIANCE WELL GROUNDWATER MONITORING

Monitoring of the compliance well shall be conducted according to the frequency listed in Table 3, and using methods listed in Table 2, which includes the sampling constituents, analytical methods, and the maximum practical quantitation limits. Sample collection and analysis shall follow standard EPA protocol. If necessary, equivalent analytical methods may be used with Central Valley Water Board staff concurrence.

FIELD SAMPLING

In addition to the above sampling and analysis, field sampling and analysis shall be conducted each time a monitor well or extraction well is sampled. The sampling and analysis of field parameters shall be as specified in Table 4 as follows:

Table 4: FIELD SAMPLING REQUIREMENTS

Parameters	Units
Groundwater Elevation	Feet, Mean Sea Level
Electrical Conductivity	µmhos
Dissolved Oxygen	mg/L
pH	pH Units (to 0.1 units)
Temperature	°C
Extraction Rate ¹	GPM
Purge Rate ²	GPM
Turbidity	NTU
Total Gallons Purged	Gallons
Water Level	ft MSL

1. This applies only to extraction wells.

2. This applies only to monitoring wells.

Field test instruments (such as those used to test pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. 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 this MRP.
5. Groundwater level sampling is being conducted pursuant to Order No. R5-2004-0800.

REPORTING

When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with this Order. In addition, the Discharger shall notify the Central Valley Water Board within 48 hours of any unscheduled shutdown of a groundwater extraction system. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Central Valley Water Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or their subordinate and signed by the registered professional.

The Discharger shall submit semi-annual electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The semi-annual reports shall be submitted electronically over the internet to the Geotracker database system by the 1st day of the second month following the end of a 6 month period (i.e., by **1 August, and 1 February**) until such time as the Executive Officer determines that the reports are no longer necessary.

Each semi-annual report shall include the following minimum information:

- (a) a description and discussion of the groundwater treatment system, the City of Lathrop water supply wells, and results, including trends in the concentrations of pollutants and groundwater elevations in the monitoring wells, how and when samples were collected, and whether the pollutant plume(s) is completely delineated;
- (b) field logs that contain, at a minimum, sampling method, water quality parameters measured during purging (if purging is necessary for the sample method) or sampling, method of purging, depth of water, volume of water purged, etc.;

- (c) groundwater potentiometric contour maps for all groundwater zones, if applicable;
- (d) pollutant concentration maps for all wells included in the semi-annual event for all groundwater zones, if applicable;
- (e) a table showing well construction details such as well number, groundwater zone being monitored, coordinates (longitude and latitude), ground surface elevation, reference elevation, elevation of screen, elevation of bentonite, elevation of filter pack, and elevation of well bottom;
- (f) a table showing historical lateral and vertical (if applicable) flow directions and gradients;
- (g) cumulative data tables containing the water quality analytical results and depth to groundwater;
- (h) a copy of laboratory analytical data reports;
- (i) a description of remedial and system optimization activities and the status of ongoing remediation, including influent and effluent concentrations, extraction well and injection well pumping rates, treatment system flow rates, effectiveness of the remediation system, and cumulative information on the mass of pollutant removed from the subsurface, system operating time, the effectiveness of the remediation system, and any field notes pertaining to the operation and maintenance of the system; and
- (j) if applicable, the reasons for and duration of all significant interruptions in the operation of remediation system, and actions planned or taken to correct and prevent interruptions; and
- (k) A log of GAC replacement, if applicable along with transportation date(s) and destination of disposal.

An Annual Report shall be submitted to the Regional Board by **1 February** of each year. The Annual Report shall also serve as the Semi-Annual Report also due on **1 February** of each year. This Annual Report shall contain an evaluation of the effectiveness and progress of the investigation and remediation, and may be substituted for the concurrent semi-annual monitoring report. The Annual Report shall contain the following minimum information:

- (a) both tabular and graphical summaries of all data obtained during the year;
- (b) groundwater contour maps and pollutant concentration maps containing all data obtained during the previous year;

- (c) a discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells;
- (d) an analysis of whether the pollutant plume is being captured by an extraction system or is continuing to spread;
- (e) a description of all remedial activities conducted during the year, an analysis of their effectiveness in removing the pollutants, and plans to improve remediation system effectiveness;
- (f) an identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and
- (g) if desired, a proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by:

PAMELA C. CREEDON Executive Officer

XX October 2012

(Date)

9/04/2012:SS