

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-079
FOR
IN-SITU GROUNDWATER REMEDIATION
AND DISCHARGE OF TREATED GROUNDWATER TO LAND

COPPERWOOD SHOPPING MALL
7000 SUNRISE BLVD,
CITRUS HEIGHTS, SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater remediation system to treat tetrachloroethylene (PCE) pollution at the Copperwood Shopping Mall and at 7000 Sunrise Blvd, Citrus Heights, Sacramento County, CA. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. As appropriate, California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) staff shall approve specific sample station locations before 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.

GROUNDWATER MONITORING

As shown on Figure 1, there are 4 monitoring wells associated with this MRP. (MW-4, MW-5, MW-7, and MW-14). Site groundwater elevations range from 124.93 to 157.56 feet above mean sea level. The groundwater monitoring program for these wells and any treatment system wells installed subsequent to the issuance of this MRP shall follow the schedule below. Sample collection and analysis shall follow standard EPA protocol and sample analyses shall be conducted by a California State certified laboratory.

The monitoring wells shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 2. Any sampling done more frequently than specified in Table 1 shall also be reported to Central Valley Water Board staff.

COPPERWOOD SHOPPING MALL
SACRAMENTO COUNTY**Table 1: Sampling Frequency and Constituent Suite**

Well Number (see table note 1)	Constituent (see table note 2)	Frequency (see table note 3)	Monitoring Objective
MW-4	See Table 2	Quarterly	Transition zone
MW-5	See Table 2	Quarterly	Treatment zone
MW-7	See Table 2	Quarterly	Compliance Well
MW-14	See Table 2	Quarterly	Background

Table 1 Notes:

1. Well numbers and locations as shown on Figure 1.
2. Constituent analytical methods are listed in Table 2.
3. Quarterly monitoring will begin after three initial events are conducted at 60-day intervals.

Table 2: Analytical Methods

Constituent	Method (see table note 1)	Maximum Practical Quantitation Limit (µg/L) (see table note 2)
Volatile Organic Compounds	EPA 8260B	0.5
Ethane	Modified EPA 602	0.1
Ethene	Modified EPA 602	0.1
Methane	Modified EPA 602	0.1
Total Dissolved Solids (TDS)	EPA 160.1	10,000
Total Organic Carbon (TOC)	EPA 415	300
Chloride	EPA 6500	300
Sulfate	EPA 6500	200
Sulfide	Hach Method 8131	30
Boron	EPA 200.7/200.8	100
Nitrate and Nitrite	EPA 300.1	300
Iron, Total and Dissolved	EPA 6010	4.1
Manganese, Total and Dissolved	EPA 6010	0.93

Table 2 Notes:

1. Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.
2. All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.

COPPERWOOD SHOPPING MALL
SACRAMENTO COUNTY

FIELD SAMPLING

In addition to the above sampling and laboratory analyses, field sampling and analysis shall be conducted each time a monitoring well is sampled. The sampling and analysis of field parameters shall be as specified in Table 3.

Table 3: Field Sampling Requirements

Parameters	Units	Practical Quantitation Limit	Analytical Method
Groundwater Elevation	Feet, Mean Sea Level	0.01 feet	Measurement
Oxidation-Reduction Potential	Millivolts	10 millivolts	Field Meter
Electrical Conductivity	uhmos/cm	50 $\mu\text{S}/\text{cm}^2$	Field Meter
Dissolved Oxygen	mg/L	0.2 mg/L	Field Meter
pH	pH Units (to 0.1 units)	0.1 units	Field Meter
Temperature	$^{\circ}\text{F}/^{\circ}\text{C}$	0.1 $^{\circ}\text{F}/^{\circ}\text{C}$	Field Meter
Turbidity	NTU	NA	Field Meter
Volume purged (monitoring wells)	gallons	1 gallon	Measurement

All wells that are purged shall be purged until pH, temperature, conductivity, and dissolved oxygen are within 10% of the previous sampling value.

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 item (b) of the "Reporting" section of this MRP.

COPPERWOOD SHOPPING MALL
SACRAMENTO COUNTY

IN-SITU DISCHARGE MONITORING

The Discharger shall monitor daily the discharge of water and amendments that are injected into the groundwater according to the requirements specified in Table 4. Each amendment addition shall be recorded individually, along with information regarding the time over which the amendment was injected into the aquifer.

Table 4: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Injected Volume	gallons per day	Meter
Injection rate	Gallons per minute	Measured
Amendment (s) Added	pounds per day	Measured
Extraction and/or Injection duration	Hours	Measured

COPPERWOOD SHOPPING MALL
SACRAMENTO COUNTY

AMENDMENT ANALYSIS

Prior to use, amendments shall be analyzed for the constituents listed in Table 5. The analysis should be done on a mixture of the amendment and water at the estimated concentration that would be injected during the project.

Table 5: Amendment Analytical Requirements

Constituent	Method (see table note 1)	Maximum Practical Quantitation Limit (µg/L) (see table note 2)
Volatile Organic Compounds	EPA 8020 or 8260B	0.5
General Minerals (see table note 3 below)	Various	Various
Metals, Total and Dissolved (see table note 4 below)	EPA 200.7, 200.8	Various
Semi-Volatile Organic Compound	EPA Method 8270	5.0
Total Dissolved Solids	EPA 160.1	10,000
pH	meter	NA
Electrical Conductivity	meter	NA

Table 5 Notes:

1. Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.
2. All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.
3. General Minerals include alkalinity, bicarbonate, potassium, chloride, sulfate, total hardness, nitrate, nitrite, ammonia.
4. Metals include arsenic, barium, cadmium, calcium, total chromium, copper, iron, lead, manganese, magnesium, mercury, molybdenum, nickel, selenium, and silica.

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

The Discharger shall develop background values for concentrations of constituents such as total dissolved solids and electrical conductivity in groundwater following the procedures found in CCR Section 20415(e)(10). The Discharger shall complete a baseline monitoring event to establish background concentrations prior to implementation of the remedial activity.

COPPERWOOD SHOPPING MALL
SACRAMENTO COUNTY

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 clearly illustrate the compliance with this Order. In addition, the Discharger shall notify the Central Valley Water Board within 48 hours of any unscheduled shutdown of any soil vapor and/or 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 Civil Engineer or Geologist or their subordinate and signed by the registered professional.

The Discharger shall submit a Pilot Study Completion Report following the initial three 60-day groundwater sampling events. After submittal of the Pilot Study Completion Report, the Discharge shall submit quarterly electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The quarterly 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 each calendar quarter by **1 February, 1 May, 1 August, and 1 November** until such time as the Executive Officer determines that the reports are no longer necessary.

The Pilot Study Completion Report and each quarterly report shall include the following minimum information:

- (a) a description and discussion of the groundwater sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume(s) is delineated.
- (b) field logs that contain, at a minimum, water quality parameters measured before, during, and after purging, method of purging, depth of water, volume of water purged, etc.
- (c) groundwater contour maps for all groundwater zones, if applicable.
- (d) pollutant concentration maps 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 water quality analytical results and depth to groundwater.
- (h) a copy of the laboratory analytical data report.
- (i) the status of any ongoing remediation, including any field notes pertaining to the operation and maintenance of the system; and
- (j) if applicable, the reasons for and duration of all interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions.

COPPERWOOD SHOPPING MALL
SACRAMENTO COUNTY

An Annual Report shall be submitted to the Central Valley Water Board by **1 February** of each year. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation. The Annual Report may be substituted for the fourth quarter monitoring report if it contains all the information required for that report plus that required for the Annual 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 effectively treated.
- (e) a description of all remedial activities conducted during the year, and an analysis of their effectiveness in removing the pollutants.
- (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 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.

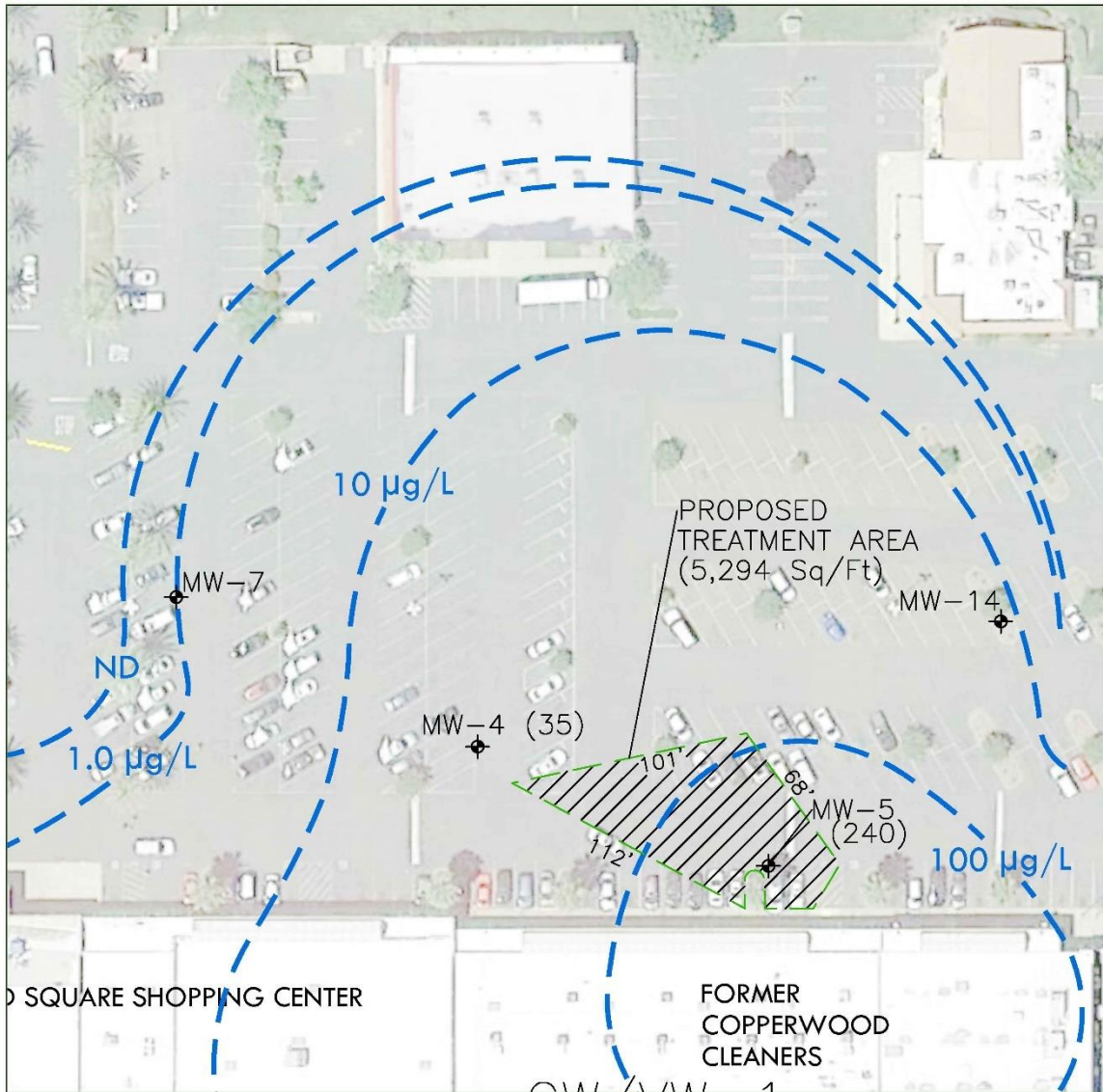
Ordered by:

ORIGINAL SIGNED BY JOHN J. BAUM FOR

PATRICK PULUPA, Executive Officer

11/30/2022

Date



LEGEND		 APPROXIMATE SCALE IN FEET	
 MW-4	GROUNDWATER MONITORING WELL		
	PCE CONCENTRATION IN GROUNDWATER		
	TREATMENT AREA	5,294 SQ/FT	

SCS ENGINEERS ENVIRONMENTAL CONSULTANTS 4693 CHABOT DRIVE, SUITE 200 PLEASANTON, CALIFORNIA 94588 PHONE: (925) 426-0060 FAX: (925) 426-0707	SITE PLAN SHOWING CONCEPTUAL CHEMICAL INJECTION PLAN	FIGURE	PROJECT NO. 01217273.03
	7000 SUNRISE BOULEVARD CITRUS HEIGHTS, CALIFORNIA	1	DATE: 12-14-2021