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## Central Valley Regional Water Quality Control Board

July 8, 2015

Mr. Brian Silva  
GHD  
10969 Trade Center Dr., Suite 107  
Rancho Cordova, CA 95670

***NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2015-0012-010, ORCHARD SUPPLY COMPANY FACILITY GROUNDWATER REMEDIATION, 1731 17<sup>TH</sup> STREET, SACRAMENTO, SACRAMENTO COUNTY***

Conestoga-Rovers & Associates submitted a completed Notice of Intent, dated June 29, 2015, requesting coverage under Order No. R5-2015-0012, *Waste Discharge Requirements General Order for In-situ Groundwater Remediation and Discharge of Treated Groundwater to Land*. Conestoga-Rovers & Associates is now named GHD as of July 1, 2015. Based on information in the submittal, it is our determination that this project meets the required conditions to be approved under Order No. 2015-0012. All of the requirements contained in the general order are applicable to this project. The project is assigned Order No. R5-2015-0012-010.

**Project Location:**

The project is in Sacramento County, Township 8N, Range 4E, Section 1, Mount Diablo Baseline & Meridian. Assessor's Parcel No. 006-0296-018; Latitude 38°34'8" N, Longitude 121°29'12"W.

**Project Description:**

The Orchard Supply Company property occupies the northeast corner of R street and 17<sup>th</sup> street in Sacramento. The property has been vacant since 2001. An agricultural chemical retail and wholesale outlet operated at the property from approximately the late 1940s until about 2001. From approximately 1907 to the late 1940s, the Property was used as a junkyard and for storage of lead-acid batteries. Historically, the property contained fuel underground storage tanks and aboveground agricultural chemical tanks.

Historical activities at the site have resulted in soil pollution by petroleum hydrocarbons, herbicides, pesticides, and metals. In 2002, the Department of Toxic Substances Control funded soil cleanup at the site which included excavating and removing soil contaminated with lead, arsenic, pesticides and gasoline from the property. The cleanup of the soil at the property has been certified to be complete and the property is considered suitable for industrial/commercial use.

Previous investigations at the site have installed monitoring wells into three distinct water-bearing units (shallow, deep, and deeper). The shallow water-bearing unit is approximately 5 to 10 feet thick and composed of silty to gravelly sand located at a depth of about 30 feet. The groundwater in the shallow water-bearing unit appears to be confined below a silty clay layer based on drilling observations of groundwater first encountered at about 30 feet but static water levels as measured in groundwater monitoring wells at about 15 feet. The deep water-bearing unit is generally encountered at depths of 55 to 68 feet and ranges in thickness from 5 to 25 feet. The deep water-bearing unit is composed of fine-grained sand and separated from the shallow aquifer by 20 to 40 feet of silty clay/clayey silt. The deeper water-bearing unit is first encountered at 115 feet. Overall vertical hydraulic gradients at the site have been observed to be downward.

The primary constituents of concern at the site impacting groundwater are benzene, 1,2-dichloroethane (1,2-DCA), 1,2-dichloropropane (1,2-DCP), and carbon tetrachloride (CTCL). Benzene is the most limited in extent with the highest concentrations detected in shallow zone MW-2 and near the former gasoline underground storage tank (UST) location. Benzene concentrations have been decreasing significantly with time. 1,2-DCA, which was historically used in leaded gasoline, also appears to be centered near the former UST. However, concentrations of 1,2-DCA have shifted further south (MW-12, MW-14, MW-15) in the shallow water-bearing unit than benzene and are at higher concentrations in the deep groundwater unit directly beneath the former UST location (MW-36). Similarly, 1,2-DCP, which was historically used as a soil fumigant, has the highest concentrations in deep groundwater beneath the former UST location (MW-36) and shallow groundwater concentrations have shifted further from this location.

CTCL, a former grain fumigant, is located at the highest concentrations in deep groundwater beneath the southeastern corner of the site (MW-10A). Lower concentrations of CTCL in shallow groundwater are detected only in MW-15 which is located down gradient and off-site. Concentration distributions for each of the chlorinated constituents follow a similar pattern with higher concentrations located in deep groundwater directly beneath the site and shallow groundwater containing lower to significantly lower concentrations that have shifted generally offsite and to the south.

The in-situ groundwater remediation project consists of injecting a slurry solution of EHC into the source area shallow and deep groundwater to treat concentrations of 1,2-DCA, 1,2-DCP, and CTCL. EHC is a mixture of controlled-release carbon, zero valent iron (ZVI), and nutrients for stimulating in-situ chemical reduction of otherwise persistent chemicals in groundwater. Very strong reducing conditions are needed to dechlorinate CTCL because it is a highly stable molecule. EHC has been shown to be able to destroy CTCL at other sites. Up to 40,000 gallons of injection substrate containing up to 105,000 pounds of EHC (30 percent EHC solids mixed with water) may be injected using direct push tooling in the source area groundwater within the areas shown on the Figure 1 of the attached Groundwater Monitoring and Reporting Program.

The Central Valley Water Board circulated a fact sheet describing the project. No comments were received in the 30-day comment period. GHD will be conducting sampling and reporting the results as described in the attached Groundwater Monitoring and Reporting Program.

**General Information:**

1. The project will be operated in accordance with the requirements contained in the General Order and in accordance with the information submitted in the completed Notice of Intent.
2. The required annual fee (as specified in the annual billing you will receive from the State Water Resources Control Board) shall be submitted until this Notice of Applicability is officially revoked.
3. Injection of materials other than EHC and water into the subsurface is prohibited.
4. Failure to abide by the conditions of the General Order could result in an enforcement action as authorized by provisions of the California Water Code.
5. GHD shall comply with the attached Monitoring and Reporting Program, Order No. R5-2015-0012-010 and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, please call Nathan Casebeer at (916) 464-4665.

***ORIGINAL SIGNED BY ANDREW ALTEVOGT FOR***

PAMELA C. CREEDON  
Executive Officer

Attachment

cc: Ms. Della Kramer, Regional Water Quality Control Board, Rancho Cordova  
Mr. Todd Leon, Capitol Area Development Authority, Sacramento  
Jennifer Hartman King, Esq., King Williams & Gleason LLP, Sacramento

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-010

FOR  
IN-SITU GROUNDWATER REMEDIATION  
AND DISCHARGE OF TREATED GROUNDWATER TO LAND

ORCHARD SUPPLY COMPANY FACILITY  
1731 17<sup>TH</sup> STREET  
SACRAMENTO, SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater remediation system for the Orchard Supply Company facility. 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 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.

**GROUNDWATER MONITORING**

As shown on Figure 1, there are 7 monitoring wells associated with this site. 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. The volume of extracted groundwater, if applicable, shall also be provided in quarterly monitoring reports. Sample collection and analysis shall follow standard EPA protocol. The monitoring wells shall be sampled according to the schedule in Table 1, as follows:

**Table 1: Sampling Frequency and Constituent Suite**

| Well Number <sup>1</sup>       | Constituent <sup>2</sup> | Frequency <sup>3</sup>      | Monitoring Objective         |
|--------------------------------|--------------------------|-----------------------------|------------------------------|
| MW-19                          | VOCs                     | Quarterly (8 quarters only) | Compliance <sup>4</sup>      |
| MW-10A, MW-14,<br>MW-17, MW-36 | VOCs                     | Quarterly (8 quarters only) | Treatment Zone <sup>5</sup>  |
| MW-12, MW-39                   | VOCs                     | Quarterly (8 quarters only) | Transition Zone <sup>6</sup> |

<sup>1</sup> Well numbers and locations as shown on Figure 1.

<sup>2</sup> Volatile organic compounds (VOCs) analyzed by EPA Method 8260B.

<sup>3</sup> i.e., weekly, monthly, quarterly, semi-annually, annually, other. Semi-annual sampling occurs 1<sup>st</sup> and 3<sup>rd</sup> quarters, annual sampling occurs in the 1<sup>st</sup> quarter, biennial sampling occurs every two years in the 1<sup>st</sup> quarter, with the first sample during year two.

<sup>4</sup> Wells used to determine compliance with water groundwater limitations.

<sup>5</sup> Wells sampled to evaluate in-situ bioremediation progress inside the treatment zone.

<sup>6</sup> Wells sampled to evaluate migration of pollutants from the treatment zone.

## FIELD SAMPLING

In addition to the above sampling and laboratory analyses, 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 2.

**Table 2: 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       |

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

## 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 3. Each amendment addition shall be recorded individually, along with information regarding the time period over which the amendment was injected into the aquifer.

**Table 3: Discharge Monitoring Requirements**

| Parameters         | Units           | Type of Sample |
|--------------------|-----------------|----------------|
| Injected Volume    | gallons per day | Meter          |
| Amendment(s) Added | pounds per day  | Measured       |

## 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 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 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.

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 the 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 an estimate of the cumulative 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 interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions.

An Annual Report shall be submitted to the Central Valley Water Board by **1 February (1 November for semi-annual monitoring)** 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 (**or second semi-annual**) monitoring report as long as it contains all of 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, 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 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.

**ORIGINAL SIGNED BY ANDREW ALTEVOGT FOR**

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON Executive Officer

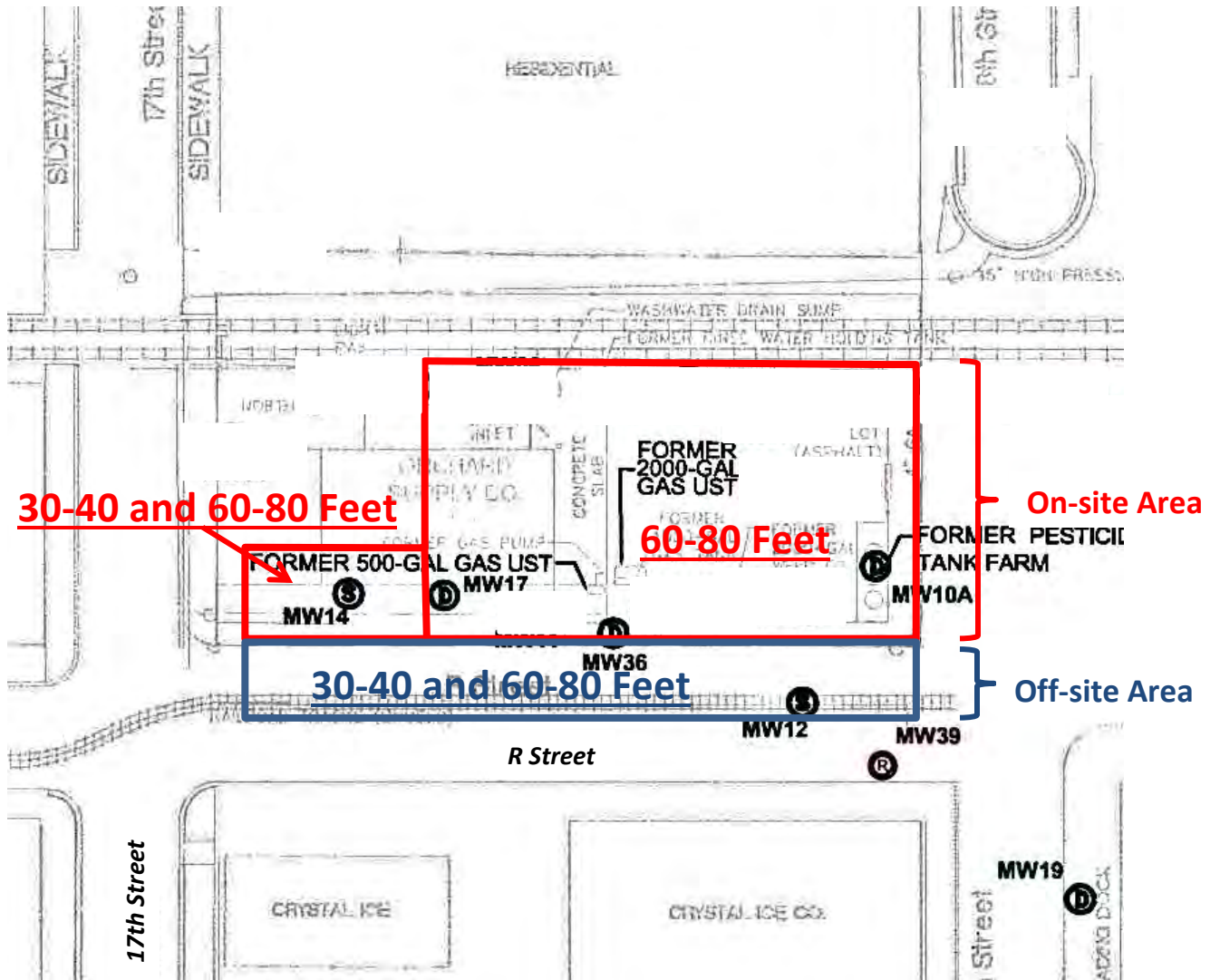
**7/7/2015**

\_\_\_\_\_  
(Date)



Figure 1.

### Injection Area for In-Situ Groundwater Remediation



Proposed depths of Injection indicated.