Central Valley Regional Water Quality Control Board

29 August 2017

Mr. Brian Duggan
Environmental Manager
Crop Production Services, Inc.
3005 Rocky Mountain Ave.
Loveland, Colorado 80538-9001

NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2015-0012-032 CROP PRODUCTION SERVICES, 1905 N. BROADWAY, STOCKTON, SAN JOAQUIN COUNTY

Crop Production Services, Stockton (Discharger) submitted the 5 April 2017 Pilot Test WorkPlan, and the 1 June 2017 Notice of Intent (NOI) requesting coverage for a proposed pilot study treating 1,2-dichloropropane, 1,2,3-trichloropropane and nitrogen in shallow groundwater using the carbon substrate 3-D Microemulsion (3DME) and Chemical Reducing Solution (CRS). On 7 August 2017, the Discharger provided the Revised Contingency Plan. Based on information in the Discharger's submittal, it is our determination that this project meets the required conditions to be covered under the General Order for In-Situ Remediation, Order No. R5-2015-0012. All of the requirements contained in the General Order are applicable to your project. You are assigned Order No. R5-2015-0012-032.

Project Location:

The project is located in the City of Stockton, San Joaquin County, Latitude 37° 58' 50.5" N, Longitude 121°15' 11.47" W, Assessor's Parcel No. 101-21-005. The physical location of the pilot test is on the west side of 1905 North Broadway Avenue.

Project Description:

The primary constituents of concern in groundwater are 1,2-dichloropropane, 1,2,3-trichloropropane, nitrate and ammonium.

For this pilot study, the Discharger proposes to inject 3DME as the source of organic carbon and molecular hydrogen, and CRS as the source of ferrous iron. The injectants will foster conditions for anaerobic reductive dechlorination and abiotic chemical reduction of the constituents of concern in the first water-bearing zone. The injection will be performed at the north pond and adjacent to the south tank farm. These activities are described in the 5 April 2017 *Pilot Test Workplan* with additional detail in the 1 June 2017 *Notice of Intent Information*, and 7 August 2017 *Revised Contingency Plan,* prepared by Rubik Environmental.

The Discharger will also be conducting groundwater sampling to evaluate the effectiveness of the injections and the results will be reported as described in the attached Monitoring and Reporting Program.

On 17 July 2017, the Discharger circulated a fact sheet describing the pilot project and providing interested parties with 30 days to submit comments or questions. No comments were received by 24 August 2017.

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 June 2017 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 rescinded.

3. Injection of materials other than 3DME and CRS 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. The project will implement the 7 August 2017 Revised Contingency Plan within 30 days of it being triggered.

6. The Discharger shall comply with the attached Monitoring and Reporting Program, Order No. R5-2015-0012-032, and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, you may contact Ms. Amy Terrell by telephone at (916) 464-4680 or by email at amy.terrell@waterboards.ca.gov.

For PAMELA C. CREEDON
Executive Officer

Attachments: Monitoring and Reporting Program R5-2015-0012-032
General Order No. R5-2015-0012
Standard Provisions

cc: Mr. Michael Kith, San Joaquin County Environmental Health Dept., Stockton (w/ MRP)
Ms. Della Kramer, Regional Water Quality Control Board, Sacramento (w/ MRP)
Mr. Todd Leonard, Rubik, Reno NV (w all attachments)

ATTACHMENT C

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-032

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

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater remediation system for Crop Production Services, Stockton facility at 1905 North Broadway Avenue in Stockton. 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 multiple monitoring wells associated with the site, and 16 of these are associated with this remediation pilot study (MW-1, MW-2A, MW-3, MW-5, MW-6, MW-8, MW-10, MW-13A, MW-14A, MW-22A, MW-23A, MW-25A, MW-26A, MW-27A, MW-28A, and MW-29A). Currently, a separate Monitoring and Reporting Program R5-2008-0817 requires sem-iannual groundwater monitoring, which will continue to be implemented in addition to the activities presented herein. If duplicative sampling is ordered between the two monitoring programs, a single sample will suffice for both reporting objectives. Duplication of monitoring efforts is not intended. The groundwater monitoring program for these 16 remediation wells and any remediation monitoring wells installed subsequent to the issuance of this MRP shall be sampled according to the schedule in Table 1 and the samples shall be analyzed by the methods in Table 2. Sample collection and analysis shall follow standard EPA protocol.

Table 1. Remediation Monitoring Schedule[1] (Analytical Methods are listed in Table 2)

	Monitoring Point	Dissolved Ions (K, Fe, Mn, Cl)	Nitrate-N, Ammonium, Sulfate	Dissolved Gases (CO_2, CH_4, ethene, ethane)	Total Dissolved Solids	Alkalinity	Chemical Oxygen Demand	Total Organic Carbon	Volatile Organic Compounds, EDB, DBCP	1,2,3-Trichloropropane
Treatment Zone Monitoring[2]	MW-2A	Q/S	Q/S	Q/S	S	Q/S	S	S	S	S
	MW-26A	Q/S	Q/S	Q/S	S	Q/S	S	S	S	S
	MW-28A	Q/S	Q/S	Q/S	S	Q/S	S	S	S	S
	MW-23A	Q/S	Q/S	Q/S	S	Q/S	S	S	S	S
Transition Zone Monitoring[3]	MW-14A	S	S	S	S	S	S	S	S	S
	MW-27A	S	S	S	S	S	S	S	S	S
	MW-22A	S	S	S	S	S	S	S	S	S
	MW-25A	S	S	S	S	S	S	S	S	S
	MW-29A	S	S	S	S	S	S	S	S	S
Compliance Zone[4]	MW-1	Q/S				Q/S		S		
	MW-5	Q/S				Q/S		S		
	MW-6	Q/S				Q/S		S		
	MW-8	Q/S			Q/S	Q/S		S		
Baseline[5]	MW-3	Q/S			Q/S	Q/S				
	MW-10	Q/S			Q/S	Q/S				
	MW-13A	Q/S			Q/S	Q/S				

[1] Within 3 months prior to the initial injection, all wells shall be analyzed for their respective analytes.
Key to Abbreviations: Q/S – Quarterly (Jan-Mar, April-June, July-Sept, Oct-Sept) for first 4 quarters, then Semi-annually in 1st and 3rd quarters (Jan-March, July-Sept). S -Semi annual samples to be obtained in 1st and 3rd quarters (Jan-March, July-Sept).
[2] Wells sampled to evaluate in-situ bioremediation progress inside the treatment zone.
[3] Wells sampled to evaluate migration of pollutants within the treatment zone.
[4] Wells used to determine compliance with water groundwater limitations.
[5] Wells used to develop treatment zone baseline concentrations.

Table 2: Analytical Methods

Constituent	Method[1]	Maximum Practical Quantitation Limit (ug/L)[2]
Dissolved Cations (K, Fe, Mn)	EPA 200.7	100
Chloride	EPA 300	100
Nitrate-N plus Nitrite-N	EPA 353.2	100
Ammonium	SM 4500	100
Sulfate	EPA 6500	200
Dissolved Gases (CO2, CH4, ethene, ethane, propene)	RSK 175	100
Total Dissolved Solids	EPA 160.1	10,000
Alkalinity	EPA 2310B	2,000
Chemical Oxygen Demand	EPA 410.4	10,000
Total Organic Carbon	EPA 415.1	100
Volatile Organic Compounds	EPA 8260 B	0.5-20
1,2-dibromoethane (EDB), 1,2-dibromo-3-chloropropane (DBCP)	EPA 504.1	0.05
1,2,3-Trichloropropane[3]	SRL 524M-TCP, EPA 504.1, or EPA 8260B	0.005, 0.02, 5

[1] Or an equivalent EPA or Standards Method that achieves the maximum Practical Quantitation Limit.
[2] For constituents not detected. All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.
[3] If, based on the most recent sample results, 1,2,3-trichloropropane is expected to exceed 0.02 ug/L, EPA Method 504.1 may be used for analysis. Similarly, if 1,2,3-trichloropropane is expected to exceed 5 ug/L, EPA Method 8260B may used. If 1,2,3-TCP is not detected greater than 0.02 µg/L, then SRL 524M-TCP must be used in the next regularly scheduled sampling event.

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 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	20 millivolts	Field Meter
Electrical Conductivity	uhmos/cm	50 µS/cm^2	Field Meter
Dissolved Oxygen	mg/L	0.2 mg/L	Field Meter
pH	pH Units (to 0.1 units)	0.2 units	Field Meter
Temperature	°F/°C	0.1 °F/°C	Field Meter

All wells that are purged shall be purged until pH, temperature, conductivity and dissolved oxygen are within approximately 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 5. Each amendment addition shall be recorded individually, along with information regarding the time period over which the amendment was injected into the aquifer.

Table 5: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Injected Volume	gallons per day	Meter
Amendment(s) Added	pounds per day	Measured
Biocide Added (if used)	pounds per day	Measured

AMENDMENT ANALYSIS

Central Valley Water Board staff has received the analytical analysis of 3DME and CRS from the manufacturer, Regenesis.

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

The Discharger submitted a proposal to develop background (baseline) concentration values in all four compliance wells and in MW-3, MW-10, and MW-13A. Background concentrations of constituents such as dissolved iron, dissolved manganese, potassium, chloride, and total dissolved solids in groundwater will be developed from four quarters of monitoring in these seven wells and continuing semi-annual monitoring in upgradient and side-gradient wells MW-3, MW-10, and MW-13A.

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. 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** for the first four quarters. Following the first year of data collection, the frequency of data submittals becomes semi-annually until such time as the Executive Officer determines that the reports are no longer necessary.

The reports required by this General Order Monitoring and Reporting Program may be combined with the reports required by Monitoring and Reporting Program No. R5-2008-0817. Two separate reports documenting the same time period are not required.

Each quarterly and semi-annual 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 November** 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.

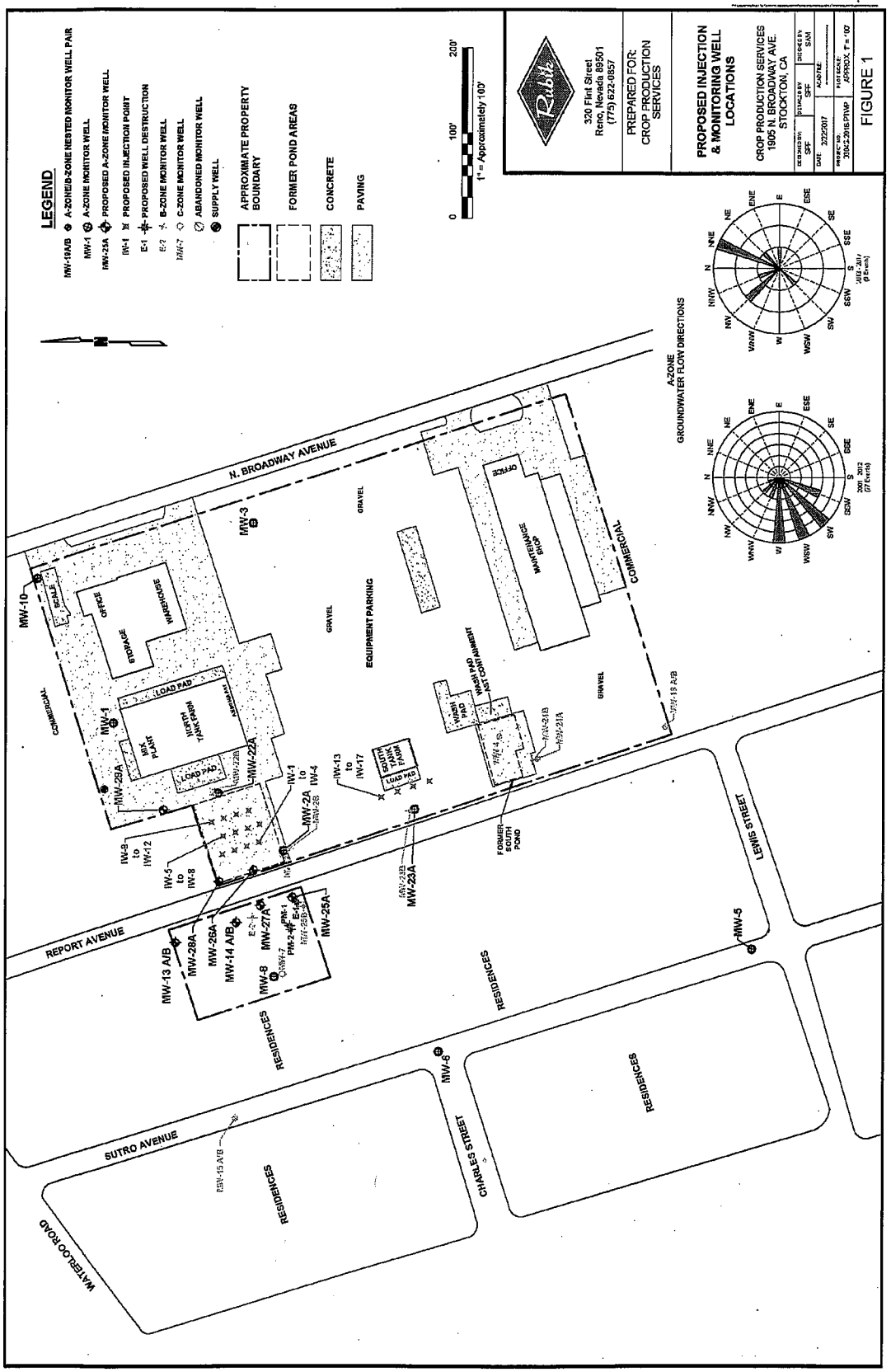
A letter transmitting the monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger 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.

Ordered by: _____
for PAMELA C. CREEDON Executive Officer

8/29/17
(Date)

09/22/14:AMM,AST,MLP


LEGEND
MW-19A/B A-ZONE/B-ZONE NESTED MONITOR WELL PAIR
MW-1 A-ZONE MONITOR WELL
MW-25A PROPOSED A-ZONE MONITOR WELL
IW-1 PROPOSED INJECTION POINT
E-1 PROPOSED WELL DESTRUCTION
B-ZONE MONITOR WELL
C-ZONE MONITOR WELL
ABANDONED MONITOR WELL
SUPPLY WELL
APPROXIMATE PROPERTY BOUNDARY
FORMER POND AREAS
CONCRETE
PAVING
0 100' 200'
1" = Approximately 100'
320 First Street
Reno, Nevada 89501
(775) 622-0857
PREPARED FOR:
CROP PRODUCTION SERVICES
PROPOSED INJECTION & MONITORING WELL LOCATIONS
CROP PRODUCTION SERVICES
1905 N. BROADWAY AVE.
STOCKTON, CA
DESIGNED BY: SFF
DRAWN BY: SAM
DATE: 2/22/2017
SCALE: AS NOTED
PROJECT NO: 2004-2016.01
FILE NAME: APPROX. 1" = 100'
FIGURE 1
A-ZONE GROUNDWATER FLOW DIRECTIONS
2009, 2012 (FEET/YR)
N. BROADWAY AVENUE
REPORT AVENUE
SUTRO AVENUE
WATERLOO ROAD
CHARLES STREET
LEWIS STREET
COMMERCIAL
RESIDENCES
OFFICE
MAINTENANCE SHOP
EQUIPMENT PARKING
GRAVEL
SCALE
STORAGE
WAREHOUSE
LOAD PAD
MIX PLANT
NORTH TANK FARM
SOUTH TANK FARM
WASH PAD
WASH PAD WITH CONTAINMENT
FORMER SOUTH POND
MW-1
MW-2A
MW-3
MW-4
MW-5
MW-6
MW-8
MW-10
MW-13 A/B
MW-14 A/B
MW-22A
MW-23A
MW-25A
MW-27A
MW-28A
IW-1 to IW-4
IW-5 to IW-8
IW-9 to IW-12
IW-13 to IW-17