
Central Valley Regional Water Quality Control Board

March 18, 2016

Mr. Kevin Garon, Senior Project Director
The Chemours Company FC, LLC
6342 Fairview Road, Suite 200
Charlotte, North Carolina 28210

NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2015-0012-017, PLUME 2 PILOT TEST – CHEMOURS OAKLEY SITE, 6000 BRIDGEHEAD ROAD, OAKLEY, CONTRA COSTA COUNTY

The Chemours Company FC, LLC (Discharger) submitted a completed Notice of Intent, dated November 9, 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*. Based on information in the submittal, it is our determination that this project meets the required conditions to be approved under Order No. R5-2015-0012. All of the requirements contained in the general order are applicable to this project. The project is assigned Order No. R5-2015-0012-017.

Project Location:

The project is in Contra Costa County, Township 2N, Range 2E, Section 15, Mount Diablo Baseline & Meridian. Assessor's Parcels No. 037-020-016; Latitude 38°00'46" N, Longitude 121°44'45".

Project Description:

Historical operations at the Chemours Oakley Site anti-knock manufacturing area caused pollution of the soil and groundwater in what is referred to as Plume 2. The primary pollutants of concern in Plume 2 are organolead, 1,2-dibromoethane, 1,2-dichloroethane, tetrachloroethene, lead, arsenic, and fluoride. Chemours is proposing a field pilot test to evaluate the effectiveness of zero valent iron in cleaning up an area of elevated organolead and 1,2-dibromoethane within Plume 2. The site cleanup is being overseen by the Department of Toxic Substances Control (DTSC).

For the Plume 2 Pilot Test, three new injections wells will be installed surrounding one existing surficial aquifer monitoring well (MW-218) to inject a solution of zero valent iron suspended in glycol and mixed with groundwater. The surficial aquifer is unconfined, composed of fine-grained sand typically from 5 to 20 feet thick and is present at the ground surface in the primary former manufacturing areas. Up to 4,000 gallons of surficial aquifer groundwater extracted from the injection wells will be used as makeup water for the ZVI solution. Up to 400 gallons of micro-scale ZVI suspended in glycerol or propylene glycol (up to 1,700 pounds of ZVI) will be injected

for the pilot test. In addition, Chemours will also install two new Surficial Aquifer monitoring wells downgradient of the injection well area to monitor the effects of the Pilot Test.

The Discharger circulated a fact sheet describing the project. No comments were received in the 30-day comment period. The Discharger will be conducting sampling and reporting the results as described in the attached 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 micro-scale ZVI suspended in glycerol or propylene glycol and groundwater 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. Chemours shall comply with the attached Monitoring and Reporting Program, Order No. R5-2015-0012-017 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.

PAMELA C. CREEDON
Executive Officer

Attachment

cc: Ms. Della Kramer, Regional Water Quality Control Board, Rancho Cordova
Ms. Carolyn Tatoian-Cain, Department of Toxic Substances Control, Sacramento
Ms. Linda McGlochlin Wolff, Parsons, Walnut Creek
Mr. Bob Deaver, The Chemours Company FC, LLC, Oakley

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-017

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

PLUME 2 IN-SITU REMEDIATION PILOT TEST
CHEMOURS OAKLEY SITE
6000 BRIDGEHEAD ROAD
OAKLEY, CONTRA COSTA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater remediation system. 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 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

Monitoring wells associated with this pilot study are shown on Figure 4-1 and listed in Table 1 below. 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.

The monitor wells, extraction wells and/or injection wells shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 2, as follows:

Table 1: Sampling Schedule

Well Number¹	Frequency^{2,3}	Monitoring Objective
MW-239	Quarterly	Compliance Zone ⁴
MW-238	Quarterly	Transition Zone ⁴
MW-218	Quarterly	Treatment Zone ⁵

¹ Well numbers as shown on Figure 4-1.

² i.e., weekly, monthly, quarterly, annually, other as indicated in the Work Plan.

³ Constituent suite components listed in Table 2.

⁴ Wells sampled to evaluate immediately down gradient of the treatment zone.

⁵ Wells sampled to evaluate remediation progress inside the treatment zone.

⁶ Wells used to develop background concentrations.

Table 2: Analytical Methods

Constituent	Method¹	Maximum Practical Quantitation Limit (µg/L)²
Organolead	HML 939-M	5.0
Volatile Organic Compounds	EPA 8260B	0.5
Glycols ³	EPA 8015C	5,000
Dissolved Arsenic and Lead	EPA 6010B	100
Dissolved Organic Carbon	EPA 9060M	300
Ferrous Iron	Hach Method 8146	100
Manganese	Hach Method 8034	10,000

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 Only required if present as a component of the amendment.

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 3.

Table 3: Field Sampling Requirements

Parameters	Units	Type of Sample
Groundwater Elevation	Feet, Mean Sea Level	Measurement
Oxidation-Reduction Potential	Millivolts	Grab
Electrical Conductivity	uhmos/cm	Grab
Dissolved Oxygen	mg/L	Grab
pH	pH Units (to 0.1 units)	Grab
Temperature	Degrees Celcius	Grab
Turbidity	NTU	Grab

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.

DISCHARGE MONITORING

The Discharger shall monitor and document weekly discharge of water and amendments and mathematically calculate average daily discharge volumes 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 period 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 or Measured
Amendment(s) Added	kilograms per day	Measured

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 deionized water at the estimated concentration that would be injected during the pilot project.

Table 5: Amendment Analytical Requirements

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

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, and reported as an estimated value.

³ 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 dissolved iron, dissolved manganese, total dissolved solids and electrical conductivity in groundwater using historic site data and following the procedures found in CCR Section 20415(e) (10). The Discharger shall collect baseline concentrations of Table 2 and Table 3 constituents from each of the wells prior to the start of the injection pilot testing.

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 Regional Board within 48 hours of any unscheduled shutdown of any soil vapor and/or groundwater extraction/injection 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 Regional 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 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.

Hard copies of quarterly reports shall be submitted to the Regional Board by the 1st day of the second month following the end of each calendar quarter (i.e., by **1 February, 1 May, 1 August, and 1 November**). Each quarterly or 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, which may be submitted in an electronic format;
- (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 Regional Board by **1 February** of each year. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation, and may be substituted for the fourth quarter 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 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

MONITORING AND REPORTING PROGRAM ORDER NO. R5-2015-0012-017
PLUME 2 IN-SITU REMEDIATION PILOT TEST
CHEMOURS OAKLEY SITE
6000 BRIDGEHEAD ROAD
OAKLEY, CONTRA COSTA COUNTY

7

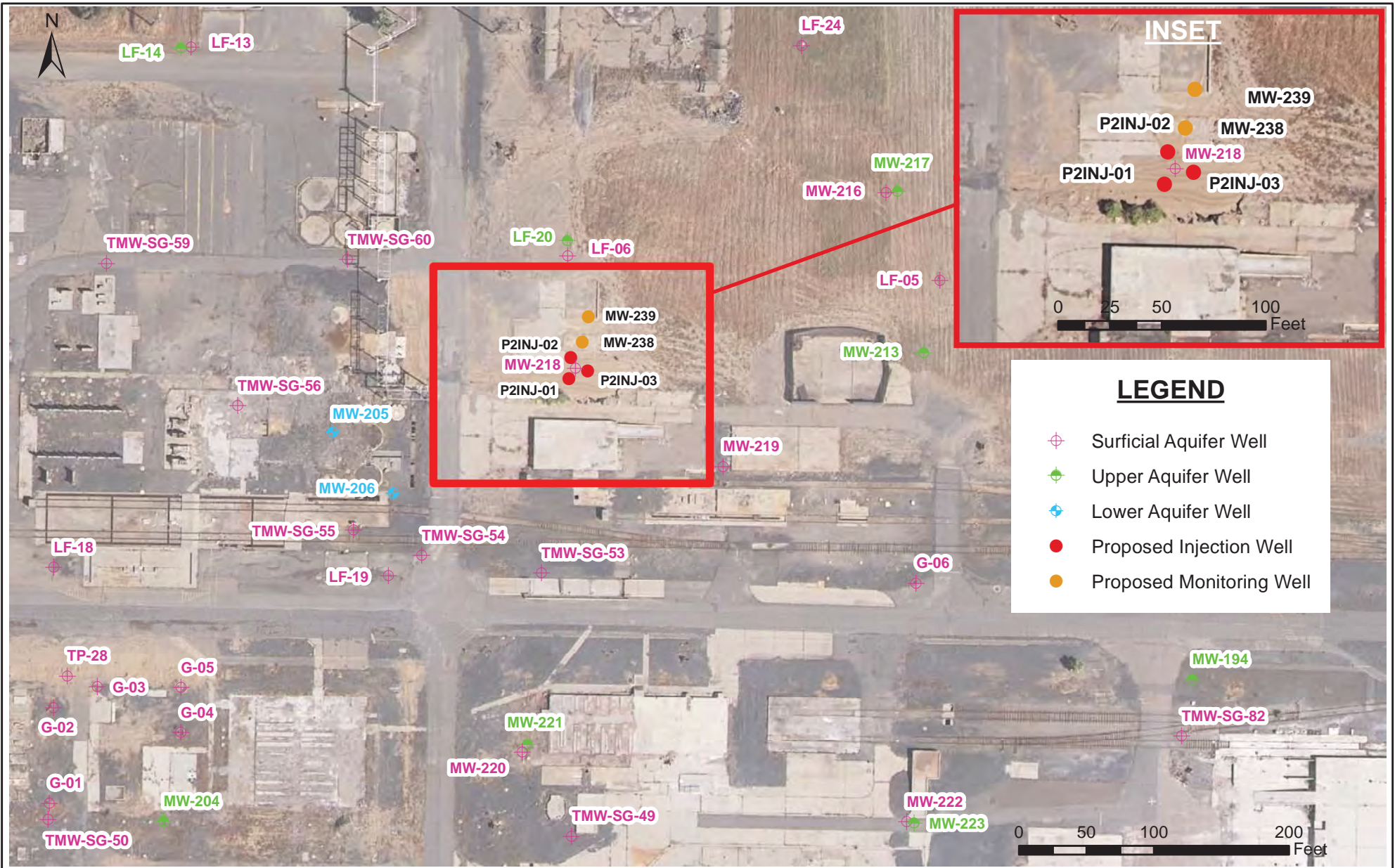
previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

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

(Date)



LEGEND

- ⊕ Surficial Aquifer Well
- ⊕ Upper Aquifer Well
- ⊕ Lower Aquifer Well
- Proposed Injection Well
- Proposed Monitoring Well

PARSONS
Parsons Environment & Infrastructure

2121 North California Boulevard
Suite 500
Walnut Creek, California 94596

Title:

Proposed Injection and Performance Monitoring Well Locations
Plume 2 Pilot Test
Chemours Oakley Site

Drawn/Approved:

RAH/XH

Date:

10/19/2015

Revised:

File Project Number:

449331.01051

Figure Number:

4-1

File Name:

FIGURE 4-1 PROPOSED LOCATIONS