

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0149-XXX

FOR
TEASDALE QUALITY FOODS
901 PACKER STREET, ATWATER
REMEDICATION OF PETROLEUM HYDROCARBON IMPACTED SOIL USING IN-SITU
INJECTION OF A CHEMICAL OXIDANT
MERCED COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring the effects of in-situ remedial treatment to reduce concentrations of petroleum hydrocarbon product in soil in accordance with General Order No. R5-2008-0149, In-Situ Groundwater Remediation at Sites with Volatile Organic Compounds, Nitrogen Compounds, Perchlorate, Pesticides, Semi-Volatile Compounds, Hexavalent Chromium, and/or Petroleum Hydrocarbons. This MRP is issued pursuant to California Water Code section 13267. The Discharger shall not implement any changes to this Order unless and until a revised MRP is issued by the Executive Officer.

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

1. As shown on Figure 1, there are three groundwater monitoring wells and 113 injection locations associated with this project. The groundwater monitoring program for these wells and any wells installed subsequent to the issuance of this MRP shall follow the schedule below. The volume of groundwater purged for sampling purposes shall be provided in quarterly reports. Sample collection and analysis shall follow standard EPA protocol.
2. The monitoring 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 Frequency and Monitoring Objectives

Well Number ¹	Frequency ²	Monitoring Objective
MW-1	Quarterly	Compliance
MW-2	Quarterly	Compliance
MW-3	Quarterly	Compliance

¹ Well numbers as shown on Figure 1

² Prior to startup and stated frequency thereafter

Table 2: Analytical Methods

Constituent	Method¹	Maximum Practical Quantitation Limit (µg/L)²
Volatile Organic Compounds	EPA Method 8260B	0.5
Anions ³	SM 4500	Various
Total Petroleum Hydrocarbons as diesel	EPA Method 8015B	50
Total Petroleum Hydrocarbons as motor oil	EPA Method 8015B	50
Metals, Total and Dissolved ⁴	EPA Method 200.7, 200.8	Various
Dissolved Silicate	EPA Method 366.0	Various
Silica	EPA Method 370.1	Various

¹ Or an equivalent EPA Method that achieves the same or lower Practical Quantitation Limit.

² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.

³ Anions include chloride, sulfate, nitrate, bromide.

⁴ Metals include chromium, total chromium, arsenic, iron, manganese, magnesium, sodium.

SOIL SAMPLING

3. Continuous soil cores shall be collected and logged in accordance with the Unified Soil Classification System. Boring logs shall include, at a minimum: soil classification; soil description (color, texture, and structure); locations and names of any samples collected for laboratory analysis; photoionization detector (PID) readings; drill rig type and drilling method; and core backfill material.
4. At each soil boring location, field-hydrocarbon vapor testing shall be performed at five-foot intervals using a photoionization detector.
5. Each confirmation soil boring shall have soil samples collected at five-foot intervals to the target depth of 42 feet below ground surface. Confirmation soil samples shall each be analyzed as specified in Table 3 to measure effectiveness inside the treatment zone and to assess whether any deleterious compounds have been generated as a result of the injectant.

Table 3: Analytical Methods

Constituent	Method¹	Maximum Practical Quantitation Limit (mg/kg)²
Volatile Organic Compounds	EPA Method 8260B	0.5
Anions ³	SM 4500	Various
Total Petroleum Hydrocarbons as diesel	EPA Method 8015B	50
Total Petroleum Hydrocarbons as motor oil	EPA Method 8015B	50
Metals, Total and Dissolved ⁴	EPA Method 200.7, 200.8	Various
Dissolved Silicate	EPA Method 366.0	Various
Silica	EPA Method 370.1	Various

¹ Or an equivalent EPA Method that achieves the same or lower Practical Quantitation Limit.

² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.

³ Anions include chloride, sulfate, nitrate, bromide

⁴ Metals include chromium, total chromium, arsenic, iron, manganese, magnesium, sodium

FIELD SAMPLING

6. In addition to the above sampling and analysis, 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 4.

Table 4: Field Sampling Requirements

Parameters	Units	Type of Sample
Groundwater Elevation	+/- 0.01 Feet, Mean Sea Level	Measurement
Dissolved Ferrous Iron (Fe 2+)	0.1 mg/L	Grab
Oxidation/Reduction Potential	Millivolts	Grab
Electrical Conductivity	µmos/cm	Grab
Temperature	Degrees C	Grab
Dissolved Oxygen	mg/L	Grab
pH	pH units (to 0.1 units)	Grab
Volume Purged	Gallons	Grab

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

- a. The operator is trained in proper use and maintenance of the instruments;
- b. The instruments are calibrated prior to each monitoring event;
- c. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
- d. Field calibration reports are submitted as described in item 11b of the "Reporting" section of this MRP.

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
Injection Rate	Gallons per minute	Meter

REPORTING

8. When reporting the data, the Discharger shall arrange the information in tabular form so that the data, 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 this MRP shall also be reported to the Central Valley Water Board.
9. 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.
10. 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 (i.e., 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.
11. Hard copies of quarterly reports shall be submitted to the Central Valley Water Board by the 1st day of the second month following the end of each calendar quarter

(1 February, 1 May, 1 August, and 1 November). 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 screened intervals, 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.
12. 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, and may be substituted for the fourth quarterly 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 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.
13. 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 MRP on the first day of the month following issuance of the Notice of Applicability of the General Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

XX JUNE 2011
(Date)