10 October 2013

Ruth Santos
40135 Highway 41
Oakhurst, CA 93644

NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2008-0149-047, MR. GAS TEXACO UNDERGROUND STORAGE TANK RELEASE, 40135 HIGHWAY 41, OAKHURST, MADERA COUNTY, RB 5T20000202, WDID 5B20UT003, RM 393467

The Responsible Party, Ruth Santos, and the project operator, ASR Engineering, Inc., (collectively Dischargers), submitted on 14 June 2012 the *Notice of Intent*, dated 12 June 2012, on 8 August 2012 the *Notice of Intent – Supplemental Information Memorandum*, and on 27 June 2013 the *Ozone Injection Deleterious Effect Contingency Plan & Adjacent Property Owners/Occupant Survey* requesting coverage under General Order No. R5-2008-0149, General Waste Discharge Requirements for In-situ Groundwater Remediation at Sites with Volatile Organic Compounds, Nitrogen Compounds, Perchlorate, Pesticides, Semi-Volatile Compounds and/or Petroleum Compounds. Based on information in the submittals, it is the Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff determination that this project meets the required conditions to be approved under Order No. 2008-0149. All of the requirements contained in the general order are applicable to the project. The project is assigned Order No. R5-2008-0149-047

Project Location:

The project is at 40135 Highway 41, Oakhurst, Madera County.

Project Description:

The site is an operating service station that dispenses gasoline and diesel. Three underground storage tanks (USTs) were removed in 1999 and gasoline was detected in soil. Approximately 180 cubic yards of impacted soil were removed from the site. Subsequent investigations determined that groundwater had been impacted, and three wells in the area contained gasoline constituents. Well head treatment units have been placed on the wells. The primary constituents of concern are total petroleum hydrocarbons as referenced to gasoline (TPHg), benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl tertiary butyl ether (MTBE).

Soil vapor extraction and air sparging commenced at the site in 2006. Concentrations of total TPHg and benzene were as high as 31,000 micrograms per liter (µg/L) and 92 µg/L in the extracted vapor during 2006. By March 2010, the concentrations had dropped to non-detect. About 14,000 pounds of gasoline were removed from the subsurface. However, groundwater pollution remains at unacceptable levels. During the sampling event performed in

February 2012, concentrations of TPHg, BTEX, and MTBE were as high as 11,000 µg/L, 260 µg/L, 450 µg/L, 190 µg/L, 1,900 µg/L, and 42 µg/L, respectively.

The Discharger submitted the *Installation and System Operation Work Plan* (Work Plan) dated 21 September 2010. The Work Plan noted that soil vapor extraction can no longer be efficiently operated due to excessive condensate in the extracted vapor resulting in the system shutdown. The excessive condensate is believed to be caused by shallow groundwater.

The Work Plan proposed to mitigate groundwater pollution with ozone sparging. Five ozone sparging wells were installed to depths of 30 to 35 feet in August 2012. The wells were plumbed together and connected to an ozone generator. Once ozone sparging commences, up to 2.7 pounds per day of ozone will be injected.

No pilot test was performed for this project. However, the equipment to be used for this project was used for a project approximately ten miles away under very similar geologic and hydrologic conditions. The equipment was successful in remediating the project without producing undesirable products such as hexavalent chromium or arsenic.

The Work Plan also proposed two shallow soil vapor extraction wells to depths of 14 to 17 feet in the source area, which were installed in August 2012. The wells were installed above the groundwater, and four-inch casing used to minimize generation of condensate water. The wells were connected to the vapor extraction blower. If allowed by the San Joaquin Valley Air Pollution Control District, the vapor extracted from the new wells will be vented to the atmosphere. If concentrations of volatile organic compounds are too high in the extracted vapor, then granular activated carbon will be used for emission control prior to venting. This portion of the remediation of the site is not covered under the Order, but was approved by Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff letter of 15 February 2012.

The Dischargers submitted a Contingency Plan to address any unforeseen negative impacts as follows:

- Monitoring Wells MW-2, MW-4, and MW-5 are compliance wells.
- Monitoring Wells MW-1 and MW-3 are treatment zone wells.
- MW-7 is a background well and was sampled twice in 2012 and the samples analyzed for hexavalent chromium (Cr^{6+}). The average concentration was 0.39 µg/L, which is considered the baseline concentration. The action level for Cr^{6+} is 20% above baseline (0.47 µg/L).
- If the action level is exceeded in MW-2 for two consecutive quarters, ozone injection will be temporarily ceased and groundwater extraction will be performed at MW-1 and MW-3 until concentrations in MW-2 are below action levels.
- If the action level is exceeded in MW-4 or MW-5 ozone injection will be temporarily ceased and groundwater extraction will be performed at MW-3 until concentrations in MW-4 and/or MW-5 are below action levels.
- Groundwater will be extracted using a submersible pump and the extracted water stored in a Baker tank.
- If the action level is exceeded in MW-1 or MW-2 during two successive monthly sampling events ozone injection will be temporarily ceased until concentrations are below action levels.

No comments were received on the draft Notice of Applicability and Monitoring and Reporting Program during the 30-day public comment period ending 27 September 2013.

The Madera County Resource Management Agency prepared a Mitigated Negative Declaration (ND #2013-01) dated 5 March 2013, and the project is in compliance with the California Environmental Quality Act.

General Information:

1. The project will be operated in accordance with the requirements contained in the General Order and the information submitted in the 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 ozone 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 Discharger shall comply with the attached Monitoring and Reporting Program, Order No. R5-2008-0149-047, and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, please call Jeff Hannel (559) 445-6193 or contact him at jhannel@waterboards.ca.gov.

Original signed by: *Clay L Rodgers for*

Pamela C. Creedon
Executive Officer

Attachments: MRP
Standard Provisions

cc w/attachment: Ann Rolan, MCEHD, Madera
Saboor Rahim, ASR, Fresno

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0149-047

FOR
IN-SITU GROUNDWATER REMEDIATION AT SITES WITH VOLATILE ORGANIC COMPOUNDS, NITROGEN COMPOUNDS, PERCHLORATE, PESTICIDES, SEMI-VOLATILE COMPOUNDS AND/OR PETROLEUM HYDROCARBONS

MR. GAS TEXACO
40135 HIGHWAY 41
OAKHURST, MADERA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater extraction and treatment 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, 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 H-2 of the Notice of Intent – Supplemental Information Memorandum (copy attached), there are 10 monitor wells, 7 vapor extraction wells, 6 air injection wells, and 5 ozone injection 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, at a minimum, follow the schedule below. Monitoring may be performed more frequently to assess effectiveness of treatment, especially during initial operations. Monitoring wells with free phase petroleum product or visible sheen shall be monitored, at a minimum, for product thickness and depth to water. Sample collection and analysis shall follow standard EPA protocol.

The monitoring 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 Frequency and Constituent Suite

Well Number[1]	Frequency[2]	Constituent Suite(s)[3]	Monitoring Objective
DW-1, DW-2, DW-3, MW-5, MW-6	Quarterly	Suite A	Compliance[4]
	Semi-Annually	Suite B	
MW-1, MW-3	Weekly for first month, monthly for first quarter, then quarterly thereafter	Suite A, Suite B	Treatment Zone[5]

MW-2, MW-4,	Monthly for first quarter, then quarterly thereafter	Suite A, Suite B	Transition Zone[6]
MW-7	One Month, three months, and quarterly thereafter	Suite A, Suite B	Background[7]

1 Well numbers as shown on Figure H1.
2 i.e., weekly, monthly, quarterly, annually, other.
3 Constituent suite components listed in Table 2.
4 Wells used to determine compliance with water groundwater limitations.
5 Wells sampled to evaluate in-situ bioremediation progress inside the treatment zone.
6 Wells sampled to evaluate migration of pollutants within the treatment zone.
7 Wells used to develop background concentrations.

Table 2: Analytical Methods

Constituent	Method[1]	Maximum Practical Quantitation Limit (µg/L)[2]
Suite A		
Volatile Organic Compounds	EPA or 8260B	Various
TPH-gasoline	EPA 8260B or 8020 or SW8015	50
Hexavalent Chromium	EPA 7199	1.0
Suite B		
Metals, Total and Dissolved[3]	EPA 200.7, 200.8	Various
Anions[4]	SM 4500	Various
Total Dissolved Solids	EPA 160.1	1,000

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 Metals include barium cadmium, calcium, total chromium, copper, lead, magnesium, manganese, mercury, molybdenum, nickel and silica.
4 Anions include bromide, chloride, nitrate, sulfate

FIELD SAMPLING

In addition to the above sampling and analysis, field sampling and analysis shall be conducted each time a monitoring 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

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 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 period over which the amendment was injected into the aquifer.

Table 4: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Injected Ozone Volume	pounds per day (average)	Meter/estimate

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

The Discharger developed an average background concentration of hexavalent chromium of 0.39 µg/L.

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 treatment 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** 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**. 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 historical lateral and vertical (if applicable) flow directions and gradients;

(f) cumulative data tables containing the water quality analytical results and depth to groundwater;

(g) a copy of the laboratory analytical data report, which may be submitted in an electronic format;

(h) 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

(i) 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 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: Clay L. Rodgers for*

PAMELA C. CREEDON Executive Officer

10 October 2013

(Date)

Attachment: Figure H-2