Rec
2/2/93

Chevron U.S.A. Products Company
2410 Camino Ramon, San Ramon, California • Phone (510) 842-9500
Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

January 28, 1993

Ms. Eva Chu
Alameda County Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

Re: Chevron station # 9-5542, 7007 San Ramon Valley Blvd., Dublin, CA
Attached workplan for remediation pilot testing (GM, 1/19/93)

Dear Ms. Chu:

Attached is a workplan dated January 19, 1993, which was prepared by Chevron's consultant, Geraghty & Miller (GM), to describe the proposed pilot testing for soil vapor and groundwater extraction remediation options at the subject site.

I have authorized Geraghty & Miller to begin the scheduling of the proposed work. I will forward a copy of the pilot test report to your office after it is completed.

If you have any questions or comments, I can be reached at (510) 842-8658.

Sincerely,

Clint B. Rogers
Environmental Engineer

Attachment

cc: Eddy So, San Francisco Bay RWQCB, Oakland, CA

GERAGHTY
& MILLER, INC.
Environmental Services

Ground Water *Engineering* *Hydrocarbon* *Remediation* *Education*

January 19, 1993
Project No. RC09304

Mr. Clint Rogers
Chevron U.S.A. Products Company
2410 Camino Ramon
San Ramon, CA 94583

SUBJECT: Work Plan for Ground-Water Extraction and Soil-Vapor Extraction Pilot Tests
Chevron Service Station #9-5542
7007 San Ramon Road, Dublin, California.

Dear Mr. Rogers:

In accordance with our telephone conversation of December 14, 1992, Geraghty & Miller, Inc. (Geraghty & Miller) has prepared this work plan for the proposed performance of ground-water extraction and soil-vapor extraction pilot tests at the Chevron U.S.A. Products Company (Chevron) service station referenced above. The objective of the ground-water extraction test is to determine the appropriate pumping rate which will be required to dewater the area near Extraction Well MW-1 for possible future soil-vapor extraction (SVE). The objectives of the SVE pilot test are to determine 1) the radius of influence and the suitability of the existing wells at the site for use as SVE wells and 2) whether these wells can be used for possible future remediation of the previously identified petroleum hydrocarbons within the subsurface soils at the site.

SCOPE OF WORK

TASK 1: WORK PLAN AND COST ESTIMATE

Geraghty & Miller will develop and prepare the work plan, cost estimate, and schedule for the planned activities at the site. This work plan has been based on the following documents:

- Letter report on the Installation of Ground-Water and Vapor-Extraction Well and Vacuum-Monitoring Wells prepared by Geraghty & Miller, January 5, 1993.
- Boring Logs prepared by Chempro (March 27, 1990) and Geraghty & Miller (January 5, 1993).
- Cross section prepared by Geraghty & Miller, January 5, 1993.
- Available Ground-Water Sampling Report data by Sierra Environmental, July 28, 1992; October 21, 1992; and January 8, 1993.

- Tank Removal Report sampling data by Blaine Tech Services, Inc., February 13, 1990.

TASK 2: PREFIELD ACTIVITIES

Geraghty & Miller will prepare and submit the application for a Dublin/San Ramon Services District Special Discharge Permit. The Special Discharge Permit is required for direct discharge to the sanitary sewer of the ground water extracted from Extraction Well MW-1. An additional ground-water sample may also need to be collected and analyzed for lead in order to complete the Dublin/San Ramon Services District permit process.

If the Special Discharge Permit for direct discharge is not approved by the Dublin/San Ramon Services District, then arrangements will be made for the use of an on-site water storage tank and water disposal by either Balch Petroleum (Balch) or Erickson, Inc. (Erickson).

Geraghty & Miller will complete the necessary notification of the Bay Area Air Quality Management District (BAAQMD) prior to beginning the short-term SVE pilot test. A site-specific Health and Safety Plan will be prepared prior to initiating any of the on-site testing activities.

TASK 3: GROUND-WATER EXTRACTION TEST

A ground-water extraction test will be completed on Extraction Well MW-1 to determine what sustainable rate of ground-water extraction can be achieved from this well in order to draw down the water level in the well at least 10 feet below the current static water level in the well. Determination of a sustainable extraction rate to draw down the well will be necessary to complete the SVE test on this well. The sustainable rate determined by this extraction test will also be needed for future remediation system design and planning for the determination of flow rates of extraction pumps and for permitting of sewer discharge permits.

Ground water will be extracted from Well MW-1 using a downhole submersible pump and variable-speed pump controller to vary the extraction rate from the well. The extraction rate, based on data for previous quarterly ground-water sampling from this well by Sierra Environmental, is estimated to be approximately 1 gallon per minute (gpm). During the extraction test, Well MW-1 will be monitored for total flow, flow rate, and the ground-water parameters of pH, temperature, and specific conductance. Drawdown will also be measured

and recorded for Well MW-1. Drawdown observed in any of the nearby Observation Wells VW-1, VW-2, and MW-4 will also be recorded. Ground-water level recovery data after pumping has stopped will also be recorded. A small amount of ground water may also be pumped from Wells VW-1 and VW-2 if drawdown is necessary to complete the SVE pilot test on these two wells. At the end of the extraction test a sample of the water extracted from Well MW-1 will be collected and analyzed for total petroleum hydrocarbons (TPH) as gasoline (USEPA Method 8015, modified), and for benzene, toluene, ethylbenzene, and xylenes (BTEX) (USEPA Method 8020).

It is estimated that the extraction test at Well MW-1 will be completed within one field day and that less than 5,000 gallons of ground water will be generated during the test, unless water produced by pumping from Well MW-1 exceeds 3 gpm during the initial pumping.

TASK 4: GROUND-WATER EXTRACTION TEST REPORT

A letter report will be prepared by Geraghty & Miller detailing the activities and results of the ground-water extraction test completed on Extraction Well MW-1. A radius of influence of Well MW-1 will be determined if drawdown is observed in Observation Wells VW-1 and VW-2. If the information is available from the extraction test, determination of aquifer coefficients of transmissivity, hydraulic conductivity, and storativity will also be made. If no drawdown is observed in Observation Wells VW-1 and VW-2, then it may not be possible to determine the aquifer coefficients. All recorded pumping rates, volumes, and drawdown will be presented. Tables and graphs of the pumping data may include:

- Pumping rates and total volumes extracted over time.
- Measured ground-water parameters.
- Observed drawdown in the extraction and observation wells.
- Recovery data for all measured wells.

TASK 5: SOIL-VAPOR EXTRACTION PILOT TEST, DATA ANALYSIS, AND PILOT TEST REPORT

A one-day SVE pilot test will be performed on MW-1 and the two vapor-monitoring wells VW-1 and VW-2 in order to determine the vacuum capture zone, measure the pneumatic characteristics of each extraction well, and provide data on the concentration of the extracted vapors. The SVE pilot test will be performed immediately after the ground-water extraction test so as to take advantage of the depressed ground-water levels for the SVE test on Well

MW-1. Wells MW-1, VW-1, and VW-2 were selected because they are within the region in which ground water and soil have been affected and, should remedial SVE be implemented, it is likely that these wells will be incorporated into the remedial system. The boring logs indicate that the soils around these wells include layers of clay, silt, and silty sand. Based on the boring logs, it is anticipated that the monitor wells will have low to moderate permeabilities to soil vapors. All three wells will be tested in order to gather more complete data and to confirm the soil-vapor concentrations and radius of influence observed. The test will last for up to 8 hours total.

Prior to conducting the pilot test, Geraghty & Miller will notify the BAAQMD. The BAAQMD's policy is to allow short-term SVE pilot tests without obtaining an air permit if two activated carbon vessels are utilized as abatement equipment. Chevron will provide and later dispose of two 200-pound vapor-phase carbon vessels. The pilot test will be conducted using two electric 1-horsepower regenerative blowers with their associated valves, piping, and instrumentation. The blower assembly can produce a maximum vacuum of 90 inches of water column (in.w.c.) and a maximum flow rate of 150 standard cubic feet per minute (scfm). The extracted vapor flow rate will be measured using blower performance curves developed by Geraghty & Miller and a venturi flowmeter connected to a differential pressure gauge.

A range of diaphragm-actuated, differential pressure gauges will be used to measure the vacuum produced at the extraction wells and the vacuum induced at the observation wells while vacuum is applied to the extraction wells. Before the test, the pressure or vacuum in each well will be measured and recorded. A Gastech™ Model 1314 combustible vapor analyzer will be utilized during the pilot test to measure the hydrocarbon and oxygen concentrations in the extracted soil vapors. A grab sample of the extracted vapors will be collected for laboratory analysis of TPH as gasoline (USEPA Method 8015, modified), benzene, toluene, ethylbenzene, and xylenes (BTEX) (USEPA Method 8020), and atmospheric gases (ASTM Method D-3416, modified).

Analysis will include an evaluation of the suitability of the existing wells as SVE wells, and whether any additional wells are required to address the extent of previously identified subsurface hydrocarbons. A report documenting the results of the pilot test will be presented to Chevron after receipt of the analytical results. The report will include a vacuum response table, a vacuum vs. distance graph, and a pneumatic yield graph for each of the extraction wells along with boring logs as an attachment. The suitability of the existing wells for SVE will be

discussed and, if they are found unsuitable, a description of a more appropriate design or spacing of SVE wells, or the need for additional SVE wells, will be given. This task does not include well-field design or layout; rather, it focuses on characterization of the wells' performance, soil vapor flow, and vacuum response. Selection of a SVE blower, abatement equipment, and well-field layout will be covered by the design phase of a subsequent work plan.

LABORATORY ANALYSIS

Grab samples of soil vapors and the abatement-unit effluent will be analyzed for TPH as gasoline (USEPA Method 8015, modified), BTEX (USEPA Method 8020), and atmospheric gases (O_2, N_2, CO_2, and CH_4) (ASTM Method D-3416, modified). Laboratory analytical results will be used to apply for a BAAQMD permit. The water sample collected at the end of the extraction test will be analyzed for total petroleum hydrocarbons (TPH) as gasoline (USEPA Method 8015, modified), and for benzene, toluene, ethylbenzene, and xylenes (BTEX) (USEPA Method 8020). Laboratory services will be provided by GTEL Environmental Laboratories, Inc. located in Concord, California.

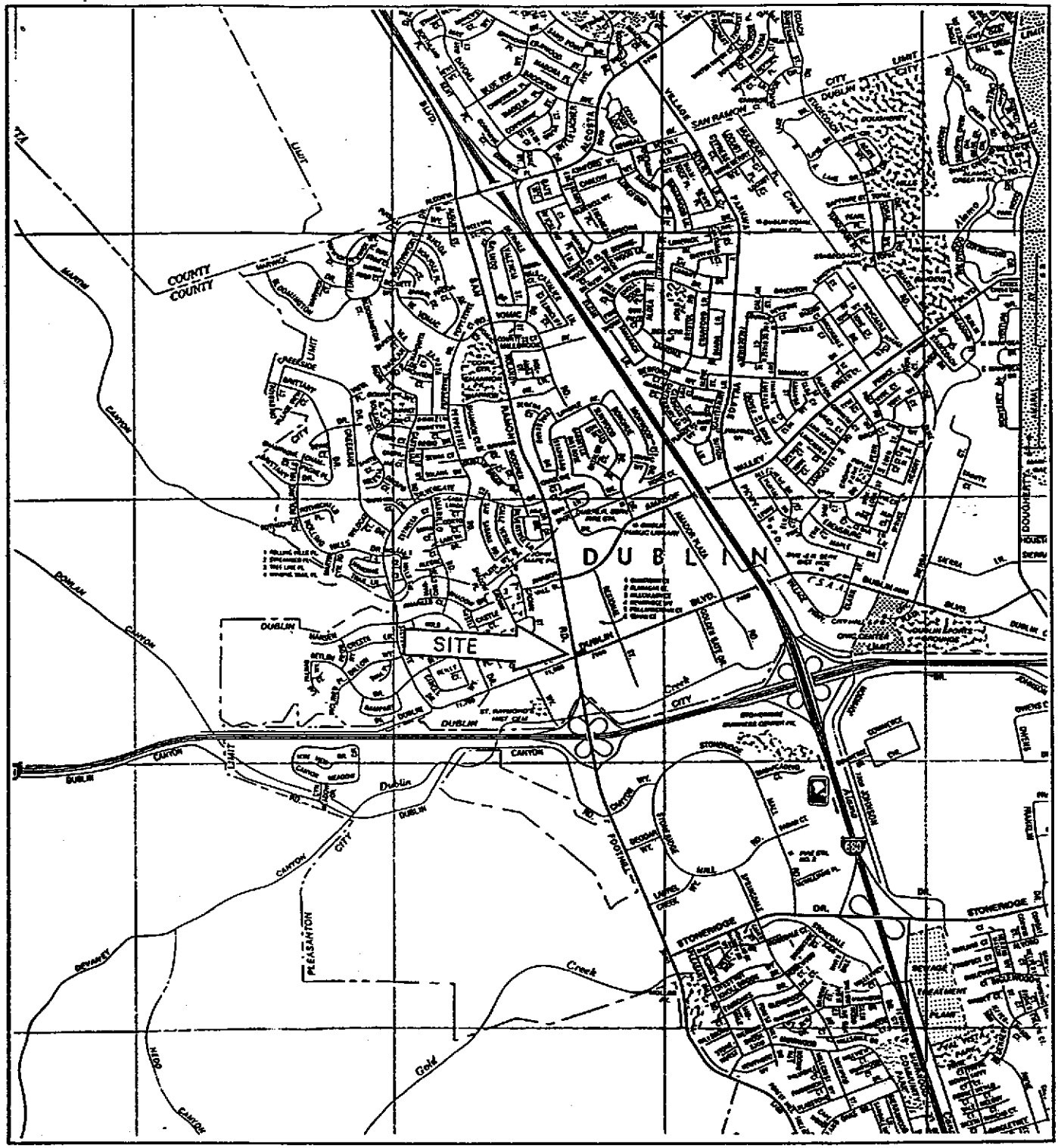
Geraghty & Miller is pleased to be of service to Chevron. If you have any questions or need further information regarding this work plan, please contact the undersigned.

Sincerely,
GERAGHTY & MILLER, INC.

Paul V. Hehn
Project Hydrogeologist/Project Manager

Gary W. Keyes, P.E.
Principal Engineer/Associate
Richmond, California Office Manager

Attachments: Figure 1 Site Location
Figure 2 Well Locations



Reference: California State Automobile Association
Map of Pleasanton and Vicinity
Scale: 1: 24,000

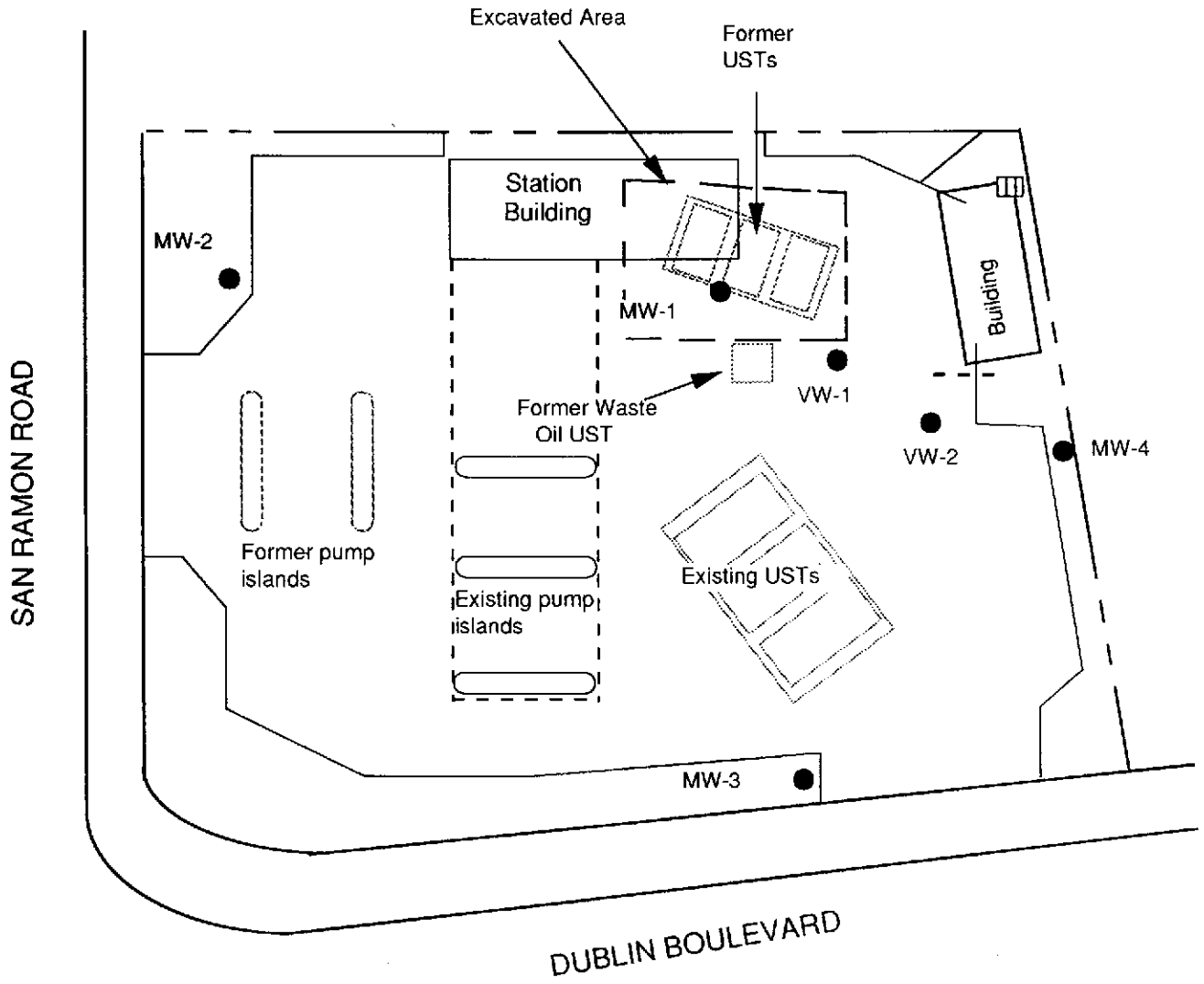
GERAGHTY & MILLER, INC.
Environmental Services
Project No. RC09300

SITE LOCATION

Chevron Service Station # 9-5542
7007 San Ramon Road
Dublin, California

FIGURE
1

Historical range of ground-water flow direction



EXPLANATION

MW-3 ● Approximate locations of ground-water monitor wells.

USTs Underground Storage Tanks

N

0 30

Scale feet

Reference: Sierra Environmental Services

GERAGHTY & MILLER, INC.
Environmental Services

Project No. RC09300

WELL LOCATIONS

Chevron Service Station #9-5542
7007 San Ramon Road
Dublin, California

FIGURE
2