California Regional Water Quality Control Board
Lahontan Region

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NOTICE OF APPLICABILITY OF GENERAL WASTE DISCHARGE REQUIREMENTS FOR THE GENERAL SITE-WIDE GROUNDWATER REMEDIATION PROJECT AT THE PG&E COMPRESSOR STATION, HINKLEY, SAN BERNARDINO COUNTY (WDID NO. 6B369107001, BOARD ORDER NO. R6V-2008-0014)

We received information that completes the Notice of Intent for the above-referenced project. The submitted documents include the September 24, 2008 Notice of Intent, the November 6, 2008 Addendum, and the November 24, 2008 revised Figure 3.

Based on the information contained in your submittals, it is our determination that this project meets the required conditions to be approved under our General Waste Discharge Requirements for the General Site-wide Groundwater Remediation Project (General Permit). All requirements contained in the General Permit will be applicable to your project.

PROJECT DESCRIPTION

The project proposes additional remediation activities for hexavalent chromium in groundwater at the site. The project consists of two components:

1) Groundwater extraction from within the northwestern portion of the chromium plume, dosing the water with reductant such as sodium lactate or ethanol, and injection of the dosed water within the plume, between the compressor station and the Central Area In-situ Remediation Project. The location of dosed water discharge is hereinafter referred to as the South Central Remediation Area. Up to 110 gallons per minute of groundwater may be extracted from wells located in the northern portion of the plume and injected into wells in the South Central Remediation Area.

2) Up to 80 gallons per minute of clean groundwater may be extracted south of the compressor station and re-injected outside the northwestern plume boundary into one or more wells. The discharges will create a hydraulic mound that will minimize the potential spread of the chromium plume.

Injected water in the South Central Remediation Area has the potential to locally increase concentrations of chromium, total dissolved solids, sulfate, and nitrate in the receiving waters. The injection of clean water in the northwest area, coupled with extraction of chromium contaminated groundwater, will likely result in improved water quality in this area.

The project includes other discharges to groundwater. Tracer compounds, fluorescein and eosine, will be injected to evaluate aquifer parameters such as groundwater flow rates and direction. Well rehabilitation compounds may be required to address reduced flow rates in wells from bio-fouling and chemical precipitation on well screens. Well rehabilitation compounds may include citric acid, acetic acid, hydrochloric acid, sodium hydroxide, and/or hydrogen peroxide. Such compounds have the ability to alter pH and oxidation conditions in and surrounding injection wells. Due to the bicarbonate nature and buffering capacity of the aquifer, no measurable changes in groundwater chemistry are expected beyond the filter packs of the wells being rehabilitated.

As a result of operating the proposed project, groundwater levels are expected to change in the aquifer. Groundwater modeling by PG&E estimates drawdown up to two feet in the eastern area of the Desert View Dairy on Mountain View Road. Modeling also estimates up to eight feet of groundwater mounding in the subsurface about 2,000 feet west of Mountain View Road and south of Santa Fe Avenue.

The project will be limited to five years of operation, followed by up to ten years of monitoring. The Discharger may propose to extend the project either during, at the end of, or any time following completion of the five years of operation. In both the clean groundwater injection and the groundwater extraction and reinjection components of the project, pumped groundwater will be conveyed through underground piping on land owned by PG&E or land with access agreements with PG&E.

The treatment effectiveness of the project will be evaluated during and after the operational period. Injection of dosed groundwater in the South Central Remediation Area during the project operational period may result in temporary lateral migration of the 4 micrograms per liter hexavalent chromium plume boundary less than 1,000 feet to the east (refer to Figure 2 for the allowable extent of lateral spreading). Any migration will not extend to areas of existing groundwater use, such as domestic wells, or outside the facility boundaries as defined in the General Permit. Any increase in chromium in groundwater will be captured by downgradient remedial pumping. Groundwater modeling predicts that any potential spreading of chromium in the South Central Remediation Area will return to the current 4 micrograms per liter hexavalent chromium iso-contour approximately ten years or less after injections cease. If the 4 micrograms

per liter hexavalent chromium iso-contour is not returned to the pre-project conditions by the end of the 15-year project period (five years of operation and ten years of monitoring), PG&E will be in violation of the NOA and Cleanup and Abatement Order No. R6V-2008-0002A2. PG&E will then be required to take all necessary actions to reduce chromium concentrations in groundwater such that the 4 micrograms per liter hexavalent chromium iso-contour is returned to the pre-project condiditons, and PG&E may be subject to other enforcement actions.

PROJECT LOCATION

The PG&E Compressor Station is located at 35863 Fairview Road, Hinkley, in the Harper Valley Subunit of the Mojave Hydrologic Unit. The project is located within the central and northern areas of the chromium plume and outside the plume boundaries in the southern and northwestern areas, as shown in Figure 1.

RECEIVING WATER LIMITATIONS

Specification I.C.5. of General Permit No. R6V-2008-0014 provides that waste discharges shall not cause groundwater to contain concentrations of salt in amounts significantly exceeding baseline conditions for that area of the project. Additionally, Finding No. 20 of the General Permit indicates that any degradation must be limited to no more than 25% above current concentrations for total dissolved solids (TDS), nitrates and sulfates. Since the General Permit did not address a specific project and background water quality fluctuates, the General Permit did not include any numeric criteria implementing these Findings and Specifications.

Based on the project proposed by the Discharger, it is now possible to develop numeric criteria for TDS in order to determine compliance with these Findings and Specifications. There is, however, insufficient historical data to develop statistically valid numerical criteria for nitrate and sulfate concentrations at many of the monitoring well locations. Where data is available, there is generally a correlation between concentrations of these salt-related compounds. For instance, relatively high concentrations of TDS are coincident with relatively high concentrations of nitrate and sulfate. Therefore, TDS will serve as an appropriate indicator parameter to evaluate the project influence on concentrations of all three of these salt-related compounds. Further, the in-situ remediation activities associated with the project are expected to reduce nitrate and sulfate concentrations in groundwater. If TDS limits are exceeded, an Evaluation Monitoring Program (EMP) is required (see General Requirements).

The TDS limits in Table 1 below reflect the lower of either (1) the most restrictive beneficial use standard or existing water quality if presently higher than the most restrictive beneficial use standard; or, (2) a 25 percent increase above the baseline conditions if existing water quality is presently below the most restrictive beneficial use standard.

Table 1. TDS Receiving Water Criteria

	Existing Average Water Quality (mg/L)	25 Percent Increase Above Existing Water Quality (mg/L)	Beneficial Use Standard (mg/L)	Criteria (mg/L)
General Area of Pumping and Injection (MW-4, -5, -8, -10, -13, -14A, -14B, -16, -28A, -28B, -38A, -38B, -44A, -44B, -45A, -45B)				
TDS	1,010[1]	1,262	1,000	1,010[2]
Area East of South Central Remediation Area (MW- 33A, -33B, -35, -49A, -49B)				
TDS	1,107[1]	1,384	1,000	1,107[2]
Area West of South Central Remediation Area (MW-37, -40, -61. -67A, -67B)				
TDS	461[3]	576	1,000	576[4]
Area of Freshwater Injection (MW-54, -57, -58, -64A, -64B, -66A)				
TDS	680[3]	850	1,000	850[4]

(1) Concentration based upon the average of each well's average value.
(2) The limit may be temporarily exceeded during the project, provided the limit is achieved by the end of the 10-year post-closure monitoring period.
(3) Concentration based upon the average of each well's historical maximum value.
(4) If the limit is exceeded during the project, the Discharger will implement an EMP to determine if the exceedance is a result of the project.

These receiving water criteria represent average concentrations in these areas at the listed well locations. Average concentrations of TDS must be determined every six months for the monitoring wells listed in Table 2.

MONITORING AND REPORTING

Compliance with the Monitoring and Reporting Program shall be as follows:

1. Prior to any discharge under this Notice of Applicability, the Discharger must sample all wells listed in Table 2 below for TDS, sulfate and nitrate as nitrogen, if not done so within 90 days of the scheduled discharge.

2. Monitoring shall be according to the Notice of Intent, Addendum, revised Figure 3, this Notice of Applicability, and Table 2 below.

Table 2. Water Level, Chromium, and TDS Monitoring Frequency

Groundwater Monitoring Well ID	Groundwater Elevation	Cr(VI) and Cr(T)	TDS
MW-4	Q	SA	SA
MW-5	Q	Q	SA
MW-7	-	SA	SA
MW-8	-	SA	SA
MW-10	-	SA	SA
MW-13	Q	Q	SA
MW-14A	Q		SA
MW-14B	-		SA
MW-16	Q	Q	SA
MW-27B	-	SA	SA
MW-28A	Q		SA
MW-28B	-	Q	SA
MW-29	Q	Q	SA
MW-33A	Q	SA	SA
MW-33B	-	SA	SA
MW-35	-	SA	SA
MW-36	-	SA	SA
MW-37	Q	SA	SA
MW-38A	Q		SA
MW-38B	-		SA
MW-40	Q	Q	SA
MW-44A	Q	Q	SA
MW-44B	Q	Q	SA
MW-45A	Q		SA
MW-45B	-	Q	SA
MW-47	Q	Q	SA
MW-49A	Q	SA	SA
MW-49B	Q		SA
MW-54	Q	Q	SA
MW-57	Q		SA
MW-58	Q	SA	SA
MW-61	Q	Q	SA
MW-64A	Q		SA
MW-64B	Q		SA
MW-66A	Q	Q	SA
MW-67A	Q		SA
MW-67B	Q		SA
EX-09	Q	-	-

Notes:
Q = Quarterly (every 3 months)
SA = Semi-annually (every 6 months during first and third quarter)

3. The monitoring parameter Total Organic Carbon (TOC) shall be added to the semi-annual monitoring program for the following wells located within, cross-gradient and downgradient of the South Central Remediation Area: MW-5, MW-7, MW-33A, MW-33B, MW-35, MW-49A, MW-49B.

4. Quarterly monitoring reports are required within 45 days following the end of the quarter in which discharges are initiated at the site. Reports must describe the type, volume, and concentration of discharge(s). The manner and methodology of discharge and monitoring must be described. Reports must contain laboratory data sheets, a description of laboratory results, and a map of monitoring locations. Average concentrations of TDS must be reported semiannually in the first and third quarter reports. Reports must describe whether chromium data indicates lateral migration of plume boundaries from the August 2008 baseline condition. Reports must contain a statement as to whether the TDS criteria were exceeded and, if so, what mitigation measure(s) to restore water quality, if any, were taken.

5. Monitoring requirements outlined in Table 2 are in addition to and do not supersede or eliminate monitoring requirements of the same well locations specified in other monitoring programs.

GENERAL REQUIREMENTS

1. The project shall be constructed and implemented in accordance with the requirements contained in the General Permit and in accordance with the information submitted in the Notice of Intent and Addendum. Project activities must be completed within the facility boundaries, as described in the General Permit.

2. Water Board staff shall be notified at least **24 hours** prior to the start of discharges to groundwater.

3. Notify the Water Board **within five (5) working days** of receipt of validated laboratory results indicating a violation of this NOA and/or a TDS criteria being exceeded in the two areas described in Table 1 as West of the South Central Remediation Area and Area of Freshwater Injection.

4. In the event that a TDS criteria in Table 1 is exceeded during a semi-annual event for the area West of the South Central Remediation Area or Area of Freshwater Injection, the Discharger shall implement **within 21 days** an EMP for the purposes of determining whether the TDS exceedance is the result of the project. Under the EMP process, wells may be re-sampled to verify monitoring results. If re-sampling is conducted, nitrate and sulfate analyses must be included in addition to TDS. Groundwater data will undergo a statistical evaluation to determine if increases in concentrations are valid. If verified data indicate that TDS exceedances are valid, remediation conditions will be evaluated to determine the factors responsible for the change. If TDS exceedances cannot logically be explained by conditions outside the project, corrective actions will be developed.

5. The EMP report must be submitted to the Water Board **within 30 days** following validation of data. In addition, the Discharger must include a mitigation plan in the EMP report if increases in TDS concentrations are likely the results of the project. The mitigation plan shall clearly describe those measures that will be taken by the Discharger and an implementation schedule to achieve compliance with receiving water criteria.

6. 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.

7. Failure to abide by the conditions of the General Permit, this Notice of Applicability and Cleanup and Abatement Order No. R6V-2008-0002A2 may result in an enforcement action as authorized by provisions of the California Water Code.

You may contact Lisa Dernbach at (530) 542-5424 if you have any questions regarding the General Permit or this Notice of Applicability.

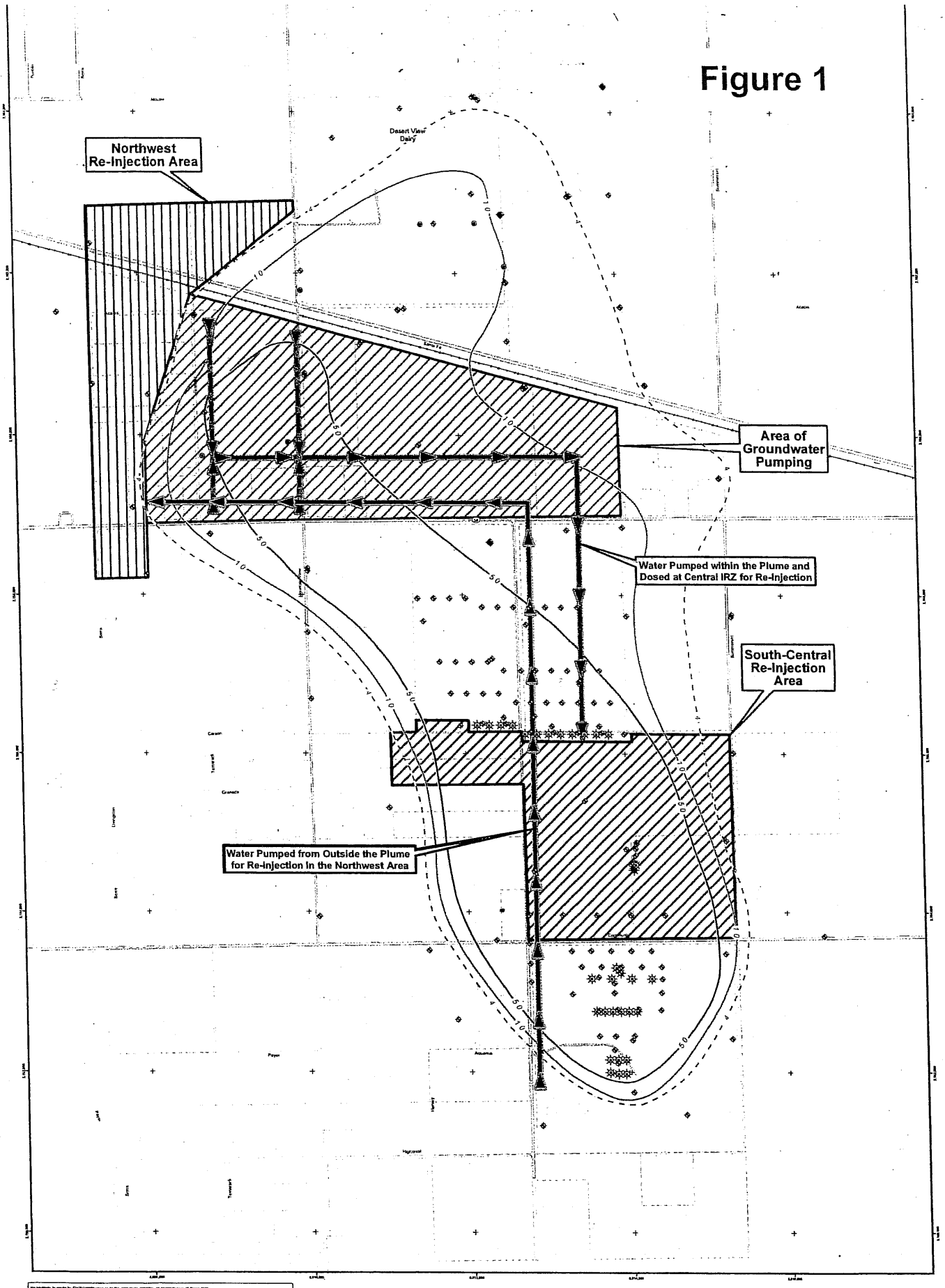
Harold J. Singer

HAROLD J. SINGER
EXECUTIVE OFFICER

Enclosure: Figure 1, Site Layout
Figure 2, Area of Allowed Plume Expansion

LSD/adw/T: PG&E Hinkley General WDR NOA.doc
[File Under: VVL- WDID NO. 6B369107001]

Figure 1



Site Layout

Proposed Injection and Extraction Areas
- Area for Re-Injection of Dosed Water
- Area for Re-Injection of Groundwater Pumped from Outside the Plume
- Area of Groundwater Pumping

Wells by Well Type
- Monitoring Wells
- Bedrock Aquifer Test Wells
- Extraction Wells
- Existing Recirculation Wells

Chromium Plume (August 2008)
Concentration of Hexavalent Chromium (µg/l)
- 50 µg/l
- 10 µg/l
- 4 µg/l

PG&E Property Boundaries

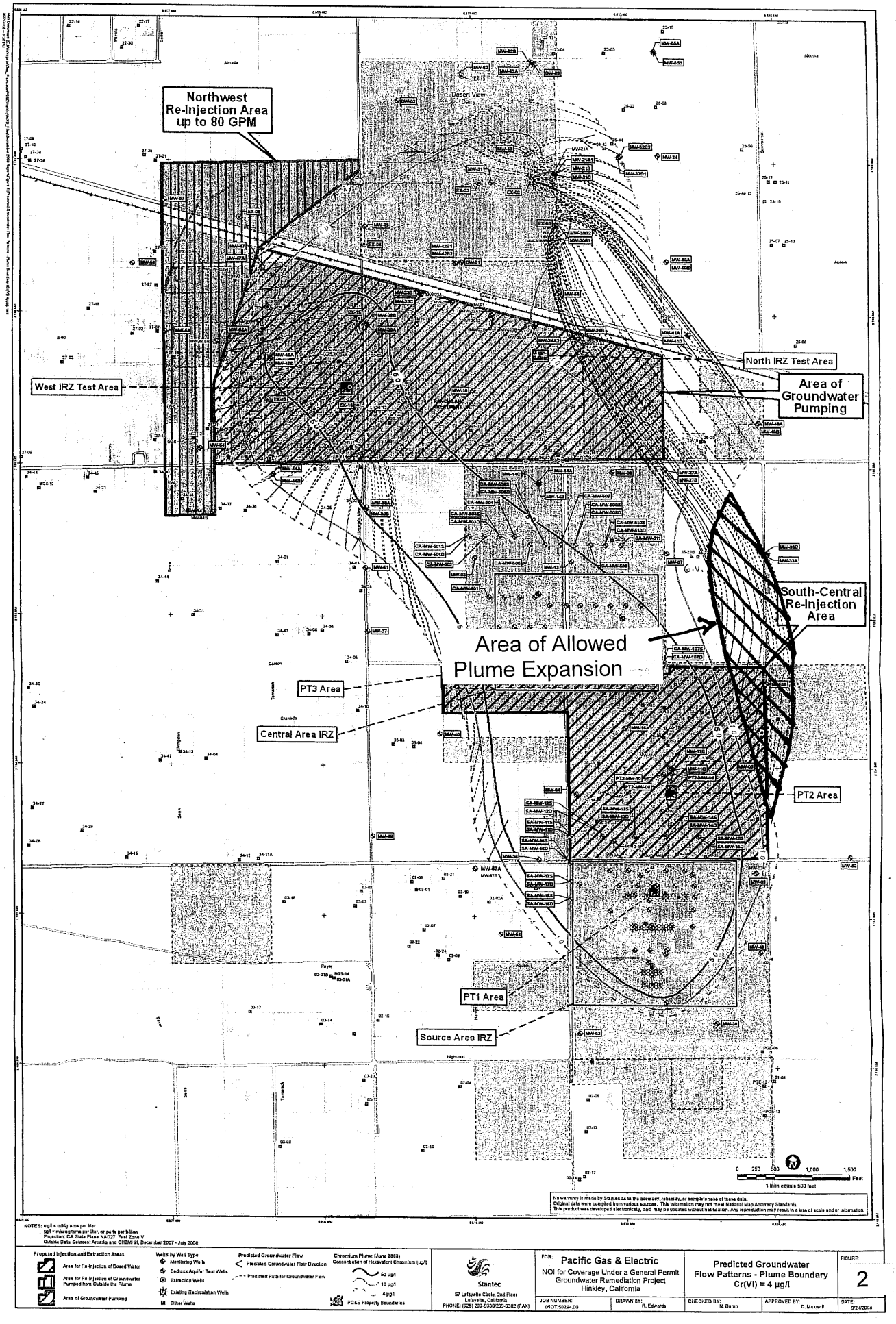
Conceptual Location of Pipeline for Groundwater Pumped Within Plume, Dosed, then Re-Injected to the South (dashed where uncertain)

Conceptual Pipeline Location for Groundwater Pumped from Outside Plume, then Re-Injected to the North

0 250 500 1,000 1,500 Feet

1 inch equals 500 feet

NOTES: mg/l = milligrams per liter
µg/l = micrograms per liter, or parts per billion
Coordinate System: California State Plane, Zone V, NAD27 Datum, Feet
Data Sources: Arcadis and CH2M Hill, December 2007 - August 2008


Northwest Re-Injection Area up to 80 GPM
West IRZ Test Area
North IRZ Test Area
Area of Groundwater Pumping
South-Central Re-Injection Area
Area of Allowed Plume Expansion
PT3 Area
Central Area IRZ
PT2 Area
PT1 Area
Source Area IRZ
Desert View Dairy
0 250 500 1,000 1,500 Feet
1 inch equals 500 feet
No warranty is made by Stantec as to the accuracy, reliability, or completeness of these data.
Original data were compiled from various sources. This information may not meet National Map Accuracy Standards.
This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and/or information.
NOTES: mg/l = milligrams per liter
µg/l = micrograms per liter, or parts per billion
Projection: CA State Plane NAD27 Feet Zone V
Outside Data Sources: Arcadis and CH2MHill, December 2007 - July 2008
Proposed Injection and Extraction Areas
Area for Re-Injection of Treated Water
Area for Re-Injection of Groundwater Pumped from Outside the Plume
Area of Groundwater Pumping
Wells by Well Type
Monitoring Wells
Bedrock Aquifer Test Wells
Extraction Wells
Existing Recirculation Wells
Other Wells
Predicted Groundwater Flow
Predicted Groundwater Flow Direction
Predicted Path for Groundwater Flow
Chromium Plume (June 2008)
Concentration of Hexavalent Chromium (µg/l)
50 µg/l
10 µg/l
1 µg/l
PG&E Property Boundaries
Stantec
57 Lafayette Circle, 2nd Floor
Lafayette, California
PHONE: (925) 299-9300/299-9302 (FAX)
FOR: Pacific Gas & Electric
NOI for Coverage Under a General Permit
Groundwater Remediation Project
Hinkley, California
Predicted Groundwater Flow Patterns - Plume Boundary Cr(VI) = 4 µg/l
FIGURE: 2
JOB NUMBER: 050T.52294.00
DRAWN BY: R. Edwards
CHECKED BY: N. Doran
APPROVED BY: C. Maxwell
DATE: 9/24/2008