



California Regional Water Quality Control Board
Central Valley Region
Katherine Hart, Chair



Linda S. Adams
Acting Secretary for
Environmental Protection

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Edmund G. Brown Jr.
Governor

11 April 2011

Mr. Doc Heath
Glenn Springs Holdings, Inc.
5005 LBJ Freeway, Ste 1350
Dallas, TX 75244-6119

**NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2008-0149-027,
OCCIDENTAL CHEMICAL IN-SITU REMEDIATION OF VOLATILE ORGANIC
COMPOUNDS, SAN JOAQUIN COUNTY**

Glenn Springs Holding Company, who conducts environmental business on behalf of Occidental Chemical Company (OxyChem), submitted a Notice of Intent dated 20 January 2011, 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 your submittal, it is our determination that this project meets the required conditions to be approved under Order No. R5-2008-0149. All of the requirements contained in the General Order and those listed in the General Information section below are applicable to your project. You are assigned Order No. R5-2008-0149-027.

Project Location: The project is at 1904 Charter Way, Stockton as shown on attached Figure 1. The Assessor's Parcel Number is 163-020-41, and is in Township 1N, Range 6E, Section 16, Mount Diablo Baseline and Meridian.

Project Description: As described in the 29 November 2010 *Workplan for Enhanced In-Situ Remediation (EISB) of Shallow Groundwater* and in the 16 February 2011 *Addendum to the Work Plan for Enhanced In-Situ Bioremediation (EISB) of Shallow Groundwater*, prepared by The Source Group, Inc., OxyChem will be conducting insitu remediation of shallow groundwater in two phases. This first phase consists of injecting a blend of HRC® Primer and a microemulsion soybean oil (3DME™) into about 62 direct push injection points and three injection wells distributed over an area of about 1,800 square feet. The target pollutants are 1,2-dichloropropane, 1,2,3-trichloropropane, dinoseb, and nitrate. If the remediation proceeds as anticipated, the second phase, an expansion of the injection area, will be proposed in a supplemental work plan and a revised notice of intent will be submitted at a future date.

California Environmental Protection Agency

The existing phytoremediation plantation is exerting hydraulic control and will control exceedances within the treatment and transition areas. If the injection itself physically translocates pollutants beyond the area of hydraulic control, this will be evidenced by a sustained increase in 1,2-dichloropropane in the compliance point wells. As discussed with Ms. Kristene Tidwell of the Source Group in a 21 February 2011 telephone call, the Contingency Plan as described in the 16 February Addendum is refined to specify that if 1,2-dichloropropane concentrations in either of the two compliance point wells (MW-26 and MW-27) meet or exceed a 5 ug/L threshold, that well shall be sampled in the following quarter. If the exceedance persists for 2 consecutive quarters, then groundwater extraction will be initiated from MW-5B until concentrations fall below the threshold.

We received one comment on the draft Notice of Applicability and Monitoring and Reporting Program during the 30-day public comment period ending 4 April 2011. The comment was a question whether the pollutants were also in neighborhood tapwater. Since the neighborhood is supplied with municipal water, the supply wells are not near the groundwater pollution, and the water purveyor routinely monitors for these pollutants, the comment did not result in any changes to the project proposal, monitoring program, or Notice of Applicability.

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 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 HRC® Primer and 3DME™ Microemulsion 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. The project will implement the final contingency plan included as part of the 16 February 2011 Addendum and as refined above within 30-days of it being triggered.

6. The Discharger shall comply with the attached Monitoring and Reporting Program, Order No. R5-2008-0149-027, and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, please call Amy Terrell at (916) 464-4680 or contact her at aterrell@waterboards.ca.gov.

Fredrick Moss

for PAMELA C. CREEDON
Executive Officer

Attachments

cc: Della Kramer, Regional Water Quality Control Board, Sacramento
Mr. Michael Infurna, San Joaquin County Environmental Health Dept., Stockton
Ms. Kristene Tidwell, The Source Group, Inc., Pleasant Hill
Mr. Kyle Rutherford, Union Oil Co. of California, San Luis Obispo

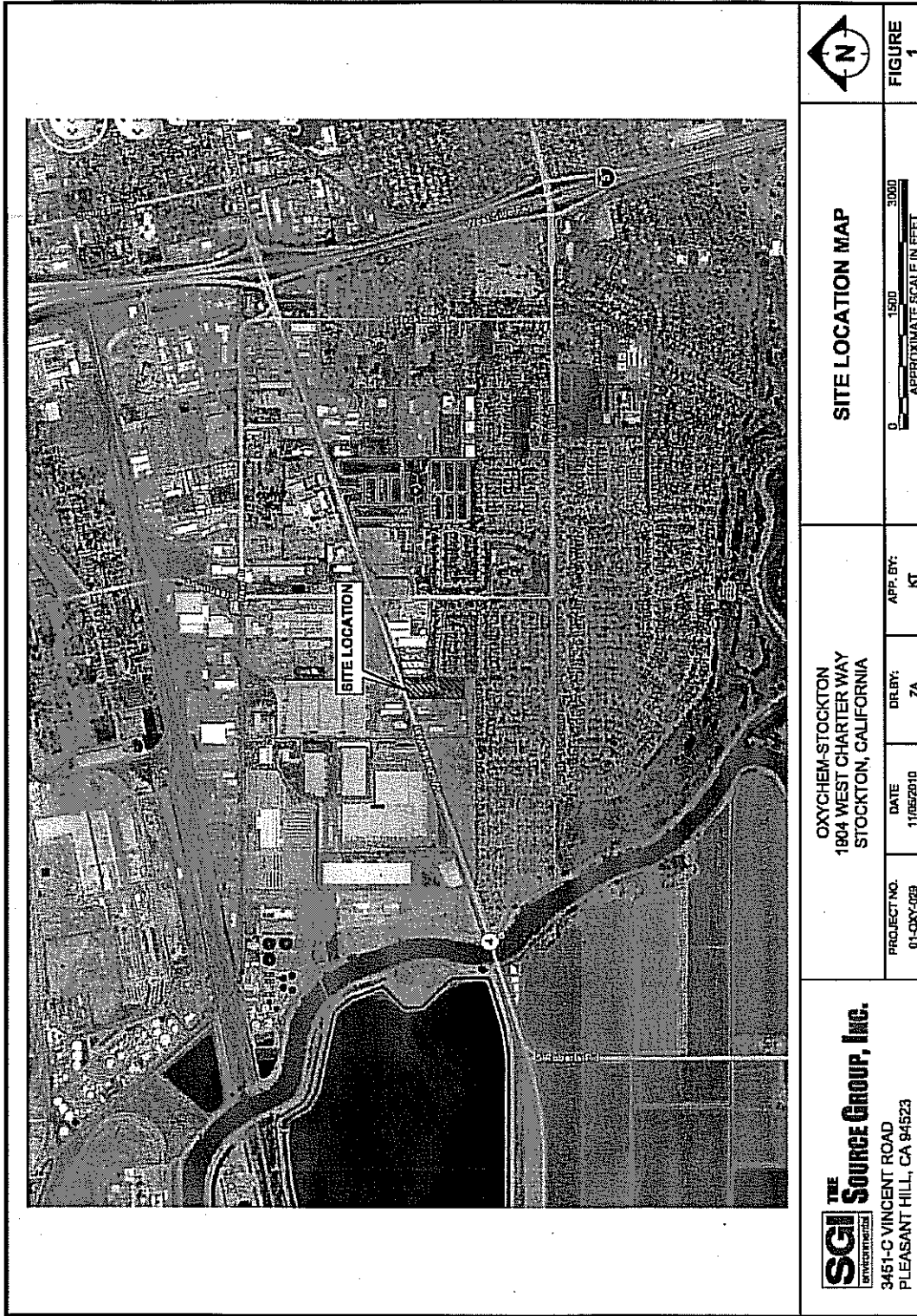


FIGURE
1

SITE LOCATION MAP



OXYCHEM-STOCKTON
1804 WEST CHARTER WAY
STOCKTON, CALIFORNIA

PROJECT NO. 01-OXY-009	DATE 11/05/2010	DR BY: ZA	APP BY: KT
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SGI THE SOURCE GROUP, INC.
3451-C VINCENT ROAD
PLEASANT HILL, CA 94523

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0149-027

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

OXYCHEM – STOCKTON
1904 CHARTER WAY,
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater treatment system at 1904 Charter Way in Stockton. 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 (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 1 there are five monitor wells and three injection wells associated with the remedial activities at this Site. Only the eight wells per Table 1 will be included in this MRP to assess remedial progress. Currently, a separate monitoring and reporting program (R5-2002-0831) requires semiannual groundwater monitoring, which will continue to be implemented in addition to the activities presented herein. If duplicative sampling is ordered between the two monitoring programs, a single sample will suffice for both reporting objectives. Duplication of monitoring efforts is not intended. The groundwater monitoring program for these eight wells and any remediation monitoring wells installed subsequent to the issuance of this MRP shall be sampled according to the schedule in Table 1 and the samples shall be analyzed by the methods in Table 2. Sample collection and analysis shall follow standard EPA protocol.

Table 1: Sampling Frequency and Constituent Suite

Well Number ¹	Frequency	Constituent Group ³	Monitoring Objective
MW-26, MW-27	Month 0 ² , quarterly for Year 1, semi-annually thereafter	D & E	Compliance ⁴
EISB-1, EISB-2, EISB-3, MW-5B	Month 0 ² , Month 1, Month 2, quarterly for Year 1, semi-annually thereafter.	A & E	Treatment Zone ⁵
EISB-1, EISB-2, EISB-3, MW-5B	Quarterly for Year 1, semi-annually thereafter	B	Treatment Zone ⁵
MW-1, MW-11	Month 0 ² , quarterly for Year 1, semi-annually thereafter	A & E,	Background ⁶

¹ Well numbers as shown on Figure 1.

² Month 0 occurs before amendments are added to groundwater.

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 used to develop background concentrations.

Table 2: Analytical Methods

Group	Constituent	Method ¹	Maximum Practical Quantitation Limit (ug/L) ²
A	Alkalinity	SM 2320B	5,000
A	Nitrate	EPA 300.0	200
A	Sulfate	EPA 300.0	1,000
B	Ammonia	EPA 350.1	500
B	Carbon Dioxide	RSK 175M	1,000
B	Ethane	RSK 175M	1.3
B	Ethene	RSK 175M	1.3
B	Fumigants	CA DOHS	0.01
B	Metabolic Acids	APPLE SOP-VFA	1,000
B	Volatile Organic Compounds	EPA 8260B	0.5 – 20
C	Chloride	EPA 300.0	2,000
C	Chromium (total)	EPA 200.7	4
C	Nitrite	EPA 300.0	100
C	Potassium	EPA 200.7	1,000
C	Sulfide	EPA 300.0	2,000
D	1,2,3-Trichloropropane	SRL GC/MS	0.005
D	Methane	RSK 175M	5.0
E	Dissolved Iron	EPA 6010B	50
E	Dissolved Manganese	EPA 6010B	5.0
E	Dissolved Organic Carbon	SM 5310B	500
E	Total Dissolved Solids	EPA 160.1	10,000

Footnotes to Table 2

- 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.

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, Below Top of Casing	Measurement
Oxidation-Reduction Potential	Millivolts	Grab
Electrical Conductivity	microSiemens/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. 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 Volume	gallons per day	Meter
Amendment(s) Added	kilograms per day	Measured
Biocide Added	kilograms per day	Measured

AMENDMENT ANALYSIS

An amendment analysis has been satisfactorily performed and delivered to Regional Water Quality Control Board staff. The contents of the analysis are proprietary.

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 following the procedures found in CCR Section 20415(e) (10). The Discharger shall submit a proposal to develop the background concentrations **by 1 June 2011**.

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. 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 Central Valley Water 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 or semi-annual electronic data reports, as specified in Table 1, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The quarterly and semi-annual reports shall be submitted electronically over the internet to the Geotracker database system by the 1st day of the second month following the end the calendar quarter in which samples were collected (**1 May and 1 November**) until such time as the Executive Officer determines that the reports are no longer necessary. In addition, hard copies of semi-annual reports shall be submitted to the Central Valley Board **by 1 May and 1 November**. These remediation monitoring reports may be combined with groundwater monitoring reports as may be required by a separate monitoring and reporting program for this site. Each 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 Central Valley Water Board by **1 November** of each year, and may be combined with an Annual Report that may be required by a separate Monitoring and Reporting Program for this site. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation, and may be substituted for the second semi-annual 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.

The semi-annual and annual reports required may be combined with general semi-annual and annual monitoring reports. 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.

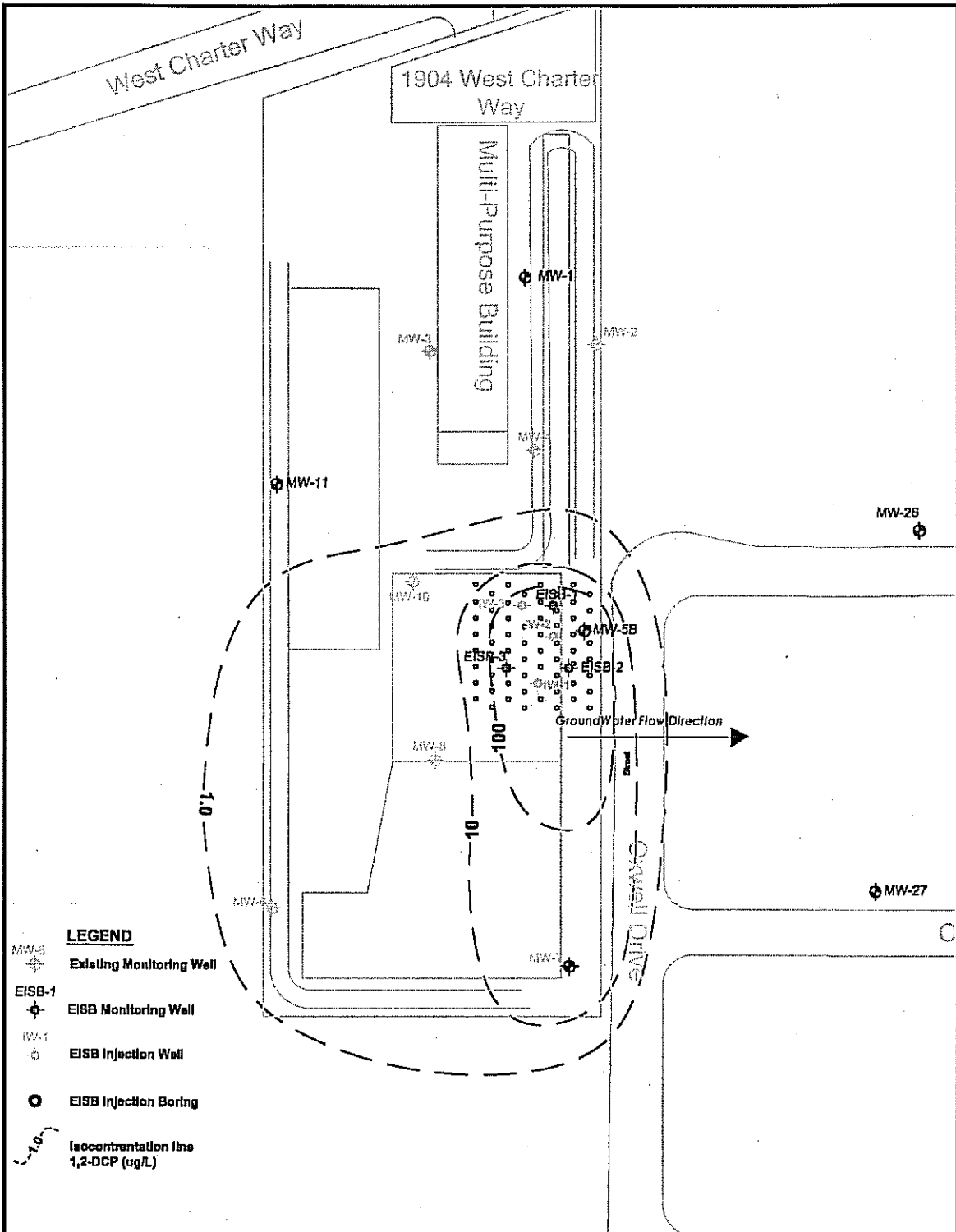
The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by:

Frederick J. Moss
for PAMELA C. CREEDON, Executive Officer

4/7/11

(Date)



- LEGEND**
- MW-5 Existing Monitoring Well
 - EISB-1 EISB Monitoring Well
 - IW-1 EISB Injection Well
 - EISB Injection Boring
 - Isocentration line 1,2-DCP (ug/L)

 3451-C VINCENT ROAD PLEASANT HILL, CA 94523	OXYCHEM-STOCKTON 1904 WEST CHARTER WAY STOCKTON, CALIFORNIA		INJECTION WELL, MONITORING WELL, AND PROPOSED PHASE I INJECTION BORING LOCATIONS	 FIGURE 1
	PROJECT NO. 01-OXY.030	DATE 2/23/11	DR. BY: KT	

HORIZONTAL SCALE IN FEET