



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

November 22, 2016

Certified with Return Receipt
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Mr. Mike Mulhern
City of Los Angeles Department of Public Works
Geotechnical Engineering Division (GED)
1140 South Broadway Street, Suite 120
Los Angeles, CA 90015-2213

**GENERAL WASTE DISCHARGE REQUIREMENTS FOR INJECTION OF 3D
MICROEMULSION, BIOAUGMENTATION CULTURE, AND CHEMICAL REDUCING
SOLUTION, AND REVISED MONITORING AND REPORTING PROGRAM
LANZIT PROJECT (FORMER CALTRANS SITE)
930 EAST 111TH PLACE, LOS ANGELES
(ORDER NO. R4-2014-0187, SERIES NO. 085; CI NO. 9760) (UST FILE NO. 900590061)**

Dear Mr. Mulhern:

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board), is the public agency with primary responsibility for the protection of ground and surface water quality for all beneficial uses within major portions of Los Angeles and Ventura Counties, including the referenced property above.

The City of Los Angeles (Discharger) owns the property located at 930 East 111th Place, Los Angeles, California. Groundwater monitoring and sampling conducted in June 2016 indicated that 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis1,2-DCE), trichloroethene (TCE), and tetrachloroethene (PCE) were detected at concentrations up to 42.1 micrograms per liter ($\mu\text{g/L}$), 270.91 $\mu\text{g/L}$, 633.7 $\mu\text{g/L}$, and 9.0 $\mu\text{g/L}$, respectively.

In October 2011, a general waste discharge requirement (WDR) permit was issued by the Executive Officer of this Regional Board (Order No. R4-2007-0019, CI No. 9760, Series No. 176) to inject 3D Microemulsion (3DMe) and hydrogen release compound (HRC) primer solution to mitigate volatile organic compounds (VOCs) contamination in the groundwater. Between November 2011 and August 2012, two injection events were conducted at the site. The last injection was completed in August 2012. A total of 78,400 pounds of 3DMe solution and 10,135 pounds of HRC primer were injected into the subsurface.

On September 13, 2016, Pinnacle Environmental Technologies (Pinnacle) on behalf of the City of Los Angeles submitted the *Third Amendment to the December 2008 Remedial Action Plan (RAP Amendment)*. The RAP Amendment proposed to install a total of 171 additional injection points and inject 3DMe and introduce a new chemical, a chemical reducing solution (CRSTM) during this phase.

On October 3, 2016, Pinnacle submitted a WDR Modification Request and indicated that the basic solution of 3DMe will be augmented with two new products: Bio-Dechlor Inoculum Plus (BDI Plus[®]) and a chemical reducing solution (CRSTM). A solution of 3DMe will be injected as in

earlier injections. 3DMe solution is a type of emulsified oil composed of lactic and fatty acids, glycerol and glycerol tripolylactate. BDI Plus[®] is an enriched natural consortium containing species of *Dehalococcoides sp.* intended to augment the bacterial populations in groundwater. CRS[™] is a liquid, iron-based solution for chemical reduction of halogenated hydrocarbon compounds in soil and groundwater. The chemical description is a ferrous gluconate solution. The injection activities are expected to take approximately four weeks.

On October 14, 2016, the Regional Board approved the RAP Amendment. On October 23, 2016, Pinnacle proposed to replace dry monitoring wells PMW-6 and PMW-7. Pinnacle anticipates the well installations will be completed prior to the next injection event.

The portion of the site for the planned injection treatment has been divided into four injection areas: Areas 1, 2, 3, and the West Barrier Area (Figure 1). An estimated total of 38,000 pounds of augmented solution containing 3DMe, 15,200 pounds of CRS[™], and 1,800 gallons of BDI Plus[®] will be applied to these areas.

Regional Board staff has completed the review of your application for coverage under General Waste Discharge Requirements (WDR) for injection of 3D Microemulsion, bioaugmentation culture (*Dehalococcoides sp.*), and Chemical Reducing Solution for groundwater remediation of volatile organic compounds. Regional Board staff has determined that the proposed discharge meets the conditions specified in Order No. R4-2014-0187, *General Waste Discharge Requirements for In-Situ Groundwater Remediation and Groundwater Re-Injection (General WDRs)* adopted by this Regional Board on September 11, 2014.

Enclosed are the WDRs, consisting of General WDRs Board Order No. R4-2014-0187 (Series No. 085), Standard Provisions, and Revised Monitoring and Reporting Program (MRP) No. CI-9760. The proposed discharge shall not cause the mineral constituents of the receiving groundwater at the compliance point, downgradient outside the application area, in excess of applicable limits given in Attachment B of General WDRs Order No. R4-2014-0187. The groundwater quality objectives are 1,200 milligrams per liter (mg/L) for total dissolved solids, 600 mg/L for sulfate, 150 mg/L for chloride, and 1.0 mg/L for boron.

The revised MRP No. CI-9760 requires you to implement the monitoring program on the effective date of this enrollment under Regional Board Order No. R4-2014-0187. All monitoring reports shall be sent to the Regional Board, ATTN: Information Technology Unit. Please include a reference to MRP No. CI-9760 when submitting technical monitoring reports to the Regional Board. This will ensure that the reports are directed to the appropriate file and staff. Do not combine other reports with your monitoring reports. Submit each type of report as a separate document.

In accordance with regulations adopted by the State Water Resources Control Board (State Board) regarding electronic submittal of information, Underground Storage Tank Program (UST) monitoring reports have been electronically submitted to the State Board GeoTracker system under the UST Global ID T0603799753. To comply with the revised MRP under this WDR, you shall upload the WDR monitoring reports to the State Geotracker Database under both Global IDs T0603799753 and WDR 100001910.

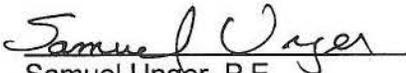
For all parties who upload electronic documents to the State GeoTracker Database, the Regional Board will no longer accept documents (submitted by either hard copy or email) that already have been uploaded to GeoTracker. Please see Electronic Submittal to the Regional Board for GeoTracker Users dated December 12, 2011 at:

<http://www.waterboards.ca.gov/losangeles/resources/Paperless/Paperless%20Office%20for%20OGT%20Users.pdf>

To avoid paying future annual fees, please submit a written request for termination of your enrollment under the general permit in a separate letter when your project has been completed and the permit is no longer needed. Be aware that the annual fee covers the fiscal year billing period beginning July 1 and ending June 30, the following year. You will pay the full annual fee if your request for termination is made after the beginning of the new fiscal year beginning July 1.

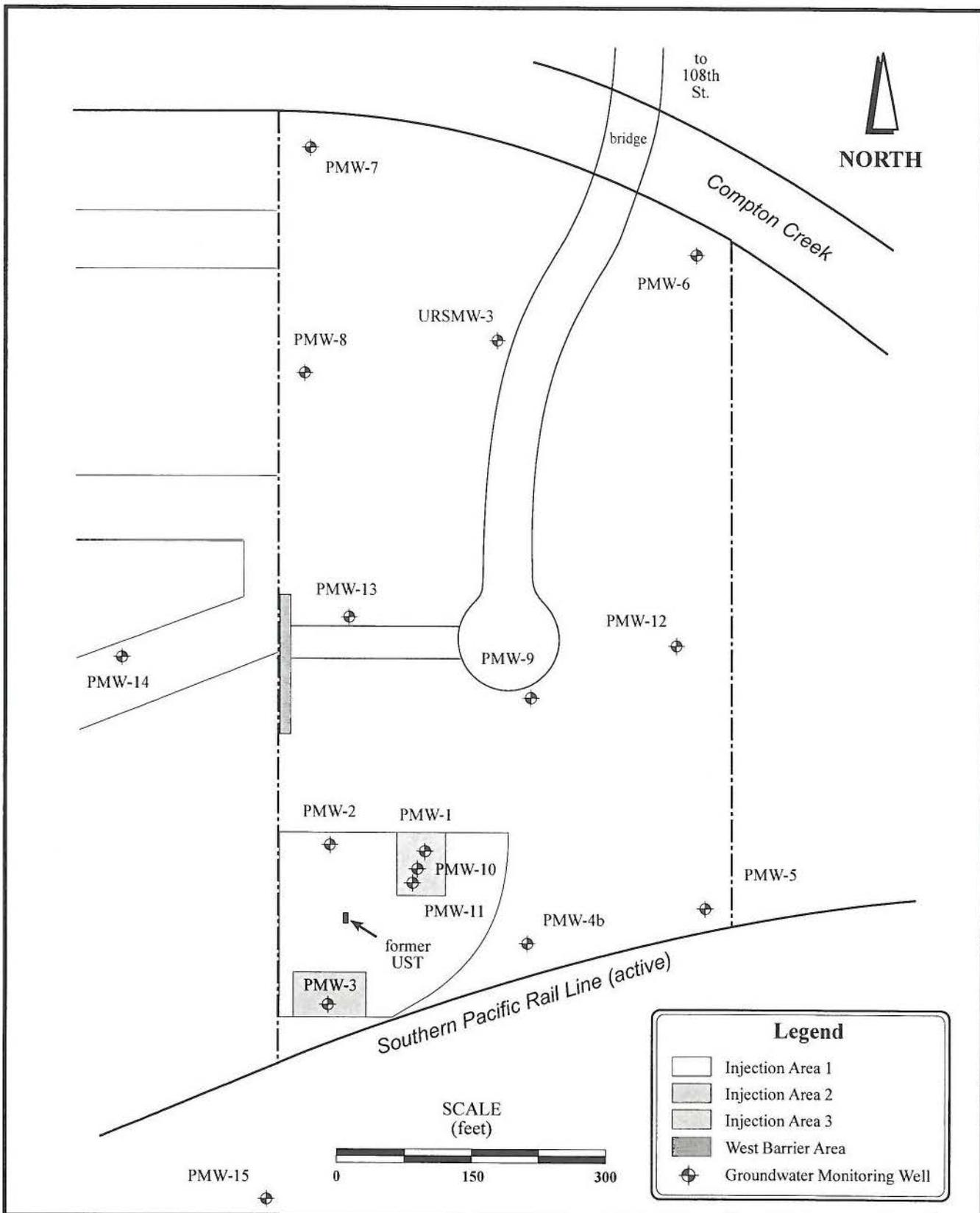
If you have any questions, please contact Ms. Chandra Tyler at (213) 576-6782 or email Chandra.Tyler@waterboards.ca.gov for issues regarding the underground storage tank program. For questions regarding the WDR, please contact Dr. Eric Wu at (213) 576-6683 or at eric.wu@waterboards.ca.gov.

Sincerely,


Samuel Unger, P.E.
Executive Officer

Enclosures: 1. General WDR Order No. R4-2014-0187
2. Standard Provisions, Applicable to Waste Discharge Requirements
3. Revised Monitoring & Reporting Program No. CI-9760
4. Figure 1 Site Map Proposed Injection Points

cc: Micah Reich, Underground Storage Tank Cleanup Fund, State Water Resources Control Board
Brian Partington, Southern California Water Replenishment District
Eloy Luna, City of Los Angeles Fire Department, Underground Tanks
Royce Long, City of Los Angeles Fire Department, Underground Tanks
Keith Thompson, Pinnacle Environmental Technologies
Christopher Johnson, City of Los Angeles, Department of Public Works, Bureau of Engineering Geotechnical Engineering Division
Alecia Simona, City of Los Angeles, General Services Department, Assessment Management Division




PINNACLE
 ENVIRONMENTAL TECHNOLOGIES
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Lanzit Site
 930 East 111th Place
 Los Angeles, California

**Proposed
 Injection Point
 Locations**

**Figure
 1**

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

REVISED MONITORING AND REPORTING PROGRAM NO. CI-9760

FOR
LANZIT PROJECT (FORMER CALTRANS SITE)
930 EAST 111TH PLACE, LOS ANGELES, CA
(3D MICROEMULSION, BIAUGMENTATION CULTURE, AND CHEMICAL REDUCING
SOLUTION FOR GROUNDWATER CLEANUP)

ENROLLMENT UNDER REGIONAL BOARD
(ORDER NO. R4-2014-0187, SERIES NO. 085)

I. REPORTING REQUIREMENTS

- A. The City of Los Angeles (hereinafter Discharger) shall implement this monitoring program on the effective date of this revised Monitoring and Reporting Program (MRP). The first monitoring report under this MRP, for the period from July to December 2016, shall be received at the Regional Board by **January 15, 2017**. Subsequent monitoring reports shall be received at the Regional Board according to the following schedule:

<u>Monitoring Period</u>	<u>Report Due</u>
January – June	July 15
July – December	January 15

The Discharger shall comply with the Electronic Submittal of Information (ESI) requirements by submitting all reports required under the MRP to the State Water Resources Control Board (SWRCB) GeoTracker database, Attention: Information Technology Unit.

If there is no discharge or injection during any reporting period, the report shall so state.

- B. Laboratory analyses – all chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by the State Board Division of Drinking Water - Environmental Laboratory Accreditation Program (ELAP). A copy of the laboratory certification shall be provided each time a new and/or renewal certification is obtained from ELAP.
- C. The method limits (MLs) employed for effluent analyses shall be lower than the permit limits established for a given parameter, unless the Discharger can demonstrate that a particular ML is not attainable and obtains approval for a higher ML from the Regional Board Executive Officer (Executive Officer). The Discharger shall submit a list of the analytical methods employed for each test and the associated laboratory quality assurance/quality control (QA/QC) procedures upon request by the Regional Board.

- D. Groundwater samples must be analyzed within allowable holding time limits as specified in 40 CFR Part 136. All QA/QC samples must be run on the same dates when samples were actually analyzed. The Discharger shall make available for inspection and/or submit the QA/QC documentation upon request by Regional Board staff.
- E. Each monitoring report must affirm in writing "All analyses were conducted at a laboratory certified for such analyses by the State Board ELAP and in accordance with current United States Environmental Protection Agency (USEPA) guideline procedures or as specified in this Monitoring Program." Proper chain of custody procedures must be followed and a copy of the completed chain of custody form shall be submitted with the report.
- F. Each monitoring report shall contain a separate section titled "Summary of Non-Compliance" which discusses the compliance record and the corrective actions taken or planned that may be needed to bring the discharge into full compliance with WDRs. This section shall be located at the front of the report and shall clearly list all non-compliance with WDRs, as well as all excursions of effluent limitations.
- G. The Discharger shall maintain all sampling and analytical results: date, exact place, and time of sampling; dates analyses were performed; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.
- H. If the Discharger performs analyses on any groundwater samples more frequently than required by this MRP using approved analytical methods, the results of those analyses shall be included in the report.
- I. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized to demonstrate compliance with the requirements and, where applicable, shall include results of receiving water observations.
- J. The Discharger should not implement any changes to the MRP prior to receiving the Executive Officer's written approval.
- K. In accordance with regulations adopted by the State Water Resource Control Board (State Board) regarding electronic submittal of information, Underground Storage Tank Program (UST) monitoring reports have been electronically submitted to the State Board GeoTracker system under the UST Global ID T0603799753. To comply with the MRP under this WDR, the Discharger shall upload the WDRs monitoring reports to the Geotracker system under both Global IDs T0603799753 and WDR 100001910.

II. DISCHARGE MONITORING REQUIREMENTS

The monitoring reports shall contain the following information regarding injection activities:

1. A location map showing the application area used for the injection of 3D Microemulsion (3DMe), bioaugmentation culture (BDI Plus[®]) and chemical reducing solution CRS[™].
2. Written and tabular summary defining depth of insertion and depth to groundwater, the quantity of 3DMe, BDI Plus[®], and CRS[™] injected per area, the application date, the cumulative quantity applied at each location, and the total amount of 3DMe, BDI Plus[®], and CRS[™] injected at the site.
3. Visual inspection at each injection point shall be conducted and recorded during the injection.
4. Groundwater monitoring wells shall not be used as injection points to avoid reduction of groundwater monitoring network, data bias, well screen clogging and alteration. Additional chemical oxidation application must be reviewed and approved by the Regional Board.

III. GROUNDWATER MONITORING PROGRAM

The Discharger shall conduct groundwater monitoring at the site to monitor the effectiveness and ensure no adverse impacts associated with the application activity. Groundwater samples shall be collected from wells PMW-3, PMW-10 and PMW-13 (source wells); PMW-4b, PMW-14 and PMW-15 (upgradient wells); PMW-12 and from the new wells proposed to replace dry wells PMW-6 and PMW-7 (downgradient wells); and surrounding wells PMW-2 and PMW-5 (Figure 1). The Discharger shall conduct a baseline sampling prior to the proposed application. Groundwater samples shall be collected approximately forty-five and ninety days after the initial application; constituents analyzed shall be the same as in the table below. Groundwater shall be monitored for the duration of remediation in accordance with the following monitoring program:

CONSTITUENT	UNITS ¹	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS ²
Total Daily Injection Waste Flow	gallons/day (to indicate solution concentration)	in-situ	Daily during injection
Total amount of 3DMe and CRS [™]	pounds/day	in-situ	Daily during injection

CONSTITUENT	UNITS ¹	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS ²
Total amount of BDI-Plus®	gallons/day	in-situ	Daily during injection
Groundwater Elevation and Depth to Groundwater	Feet, mean sea level (msl) and below ground surface (bgs)	in-situ	Semi-annually
Dissolved Oxygen	mg/L	grab	Semi-annually
Oxidation-Reduction Potential	millivolts	grab	Semi-annually
pH	pH units	grab	Semi-annually
Specific Conductivity	mS/cm	grab	Semi-annually
Temperature	°F/°C	grab	Semi-annually
Turbidity	NTU	grab	Semi-annually
Total Organic Carbon	mg/L	grab	Semi-annually
Total Dissolved Solids	mg/L	grab	Semi-annually
Sulfate	mg/L	grab	Semi-annually
Iron, ferrous iron	mg/L		
Chloride	mg/L	grab	Semi-annually
Carbon Dioxide	mg/L	grab	Semi-annually
Boron	mg/L	grab	Semi-annually
Nitrate and Nitrite	mg/L	grab	Semi-annually
MTBE	µg/L	grab	Semi-annually
Benzene, toluene, ethylbenzene, total xylenes (BTEX)	µg/L	grab	Semi-annually
Volatile Organic Compounds (EPA Method 8260B)	µg/L	grab	Semi-annually
Dissolved Gases (methane, ethane, and ethene)	µg/L	grab	Semi-annually
Total chromium ³	µg/L	grab	Semi-annually
Chromium (VI) ³	µg/L	grab	Semi-annually
<i>Dehalococcoides</i> species	cells/mL	grab	Semi-annually

1. mg/L= milligrams per liter; µg/L= micrograms per liter; mS/cm = milliSiemens per centimeter; mL = milliliter
2. One week before chemical reduction application and semi-annually thereafter.
3. The Discharger is required to monitor for total chromium and hexavalent chromium in the baseline, second and fourth semi-annual sampling. If detected at any of these sampling events, the total chromium and chromium six must be monitored semi-annually thereafter.

All groundwater monitoring reports must include, at a minimum, the following:

- a. Well identification, date and time of sampling;
- b. Sampler identification, and laboratory identification;
- c. Semi-annual observation of groundwater levels, recorded to 0.01 feet mean sea level, and calculated groundwater flow direction.

IV. MONITORING FREQUENCIES

Specifications in the MRP are subject to periodic revisions. Monitoring frequencies may be adjusted to a less frequent basis or parameters dropped by the Executive Officer if the Discharger makes a request and the Executive Officer determines that the request is adequately supported by statistical trends of monitoring data submitted.

V. CERTIFICATION STATEMENT

Each report shall contain the following completed declaration:

"I certify under penalty of law that this document, including all attachments and supplemental information, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment".

Executed on the ____ day of _____ at _____.

(Signature)

(Title)"

VI. PUBLIC DOCUMENTS

These records and reports are public documents and shall be made available for inspection during normal business hours at the office of the Regional Board, upon request by interested parties.

Ordered by: Samuel Unger
Samuel Unger, P.E.
Executive Officer

Date: November 22, 2016