

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

April 27, 2012

Ms. Nisha Dattaray, P.E.
The Boeing Company
Environment, Health & Safety
2201 Seal Beach Blvd., MC 110-SE17
Seal Beach, California 90740-5603

APPROVAL OF THE REVISED MONITORING AND REPORTING PROGRAM CI-9310, INDIVIDUAL WASTE DISCHARGE REQUIREMENTS ORDER NO. R4-2007-0040, THE BOEING COMPANY, FORMER C-6 FACILITY, 19503 SOUTH NORMANDIE AVENUE, LOS ANGELES, CALIFORNIA (FILE NO. 95-036, WDR ORDER NO. R4-2007-0040, CI-9310, GLOBAL ID WDR100000313)

Dear Ms. Dattaray:

We have received the "Request for Extension of Monitoring and Reporting Program No. CI-9310, Individual Waste Discharge Requirements (WDR) Order No. R4-2007-040, Boeing Former C-6 Facility, File No. 95-036; SLIC NO. 410; Site ID No. 1846000, 19503 South Normandie Avenue, Los Angeles, California" (Letter) dated July 29, 2011, prepared by Avocet Environmental, Inc. On August 9, 2007, an Individual WDR (WDR Order No. R4-2007-0040, CI-9310) was adopted for the Boeing Company (Boeing) to inject electron donor amendment and bioaugmentation culture, which involves the addition of selected non-pathogenic (naturally-derived, not genetically engineered) chlorinated ethane-degrading dehalococcoides ethenogenes culture (referred to as Shaw's SDC-9™ culture, or SiREM's KB-1™) in select areas to facilitate reductive dechlorination of chlorinated volatile organic compounds, with groundwater extraction to remediation shallow groundwater underlying the former Building 1/36 source area. This approach is referred to as Biorecirculation.

Since the WDR was issued, bioremediation injections have been initiated in the former Building 1/36 area and former Building 2 C-Sand wells, and monitoring and sampling have been conducted pursuant to the revised Monitoring and Reporting Program (MRP) CI-9310, dated September 23, 2010. Based on the monitoring data collected to date and in order to continue to monitor the slow progression of biodegradation, Boeing requests in the Letter that an additional Building 2 sampling event be added to the MRP, which would extend the Reporting Period for Building 2 Periodic Slug Injections to June 2012 and the Report Due Date to July 31, 2012. Therefore, Boeing proposes to submit a second addendum to the Building 2 Final WDR Report by July 31, 2012. Regional Board staff has reviewed the information provided and concurs with Boeing's proposed change. No other changes to MRP CI-9310 are being made at this time. Attached please find Revised Monitoring and Reporting Program CI-9310 dated April 27, 2012, which supersedes the Monitoring and Reporting Program dated September 23, 2010.

The Discharger shall comply with the Electronic Submittal of Information (ESI) requirements by submitting all reports required under the MRP, including groundwater monitoring data, discharge location

MARIA MEHRANIAN, CHAIR | SAMUEL UNGER, EXECUTIVE OFFICER

320 West 4th St., Suite 200, Los Angeles, CA 90013 | www.waterboards.ca.gov/losangeles

Ms. Nisha Dattaray
Boeing Environment, Health and Safety
File No. 95-036

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data, and pdf monitoring reports to the State Water Resources Control Board GeoTracker database under Global ID WDR100000313. ESI training video is available at:
<https://waterboards.webex.com/waterboards/ldr.php?AT=pb&SP=MC&rID=44145287&rKey=7dad4352c990334b>

Please see Paperless Office Notice for GeoTracker Users, dated December 12, 2011 for further details at:
<http://www.waterboards.ca.gov/losangeles/resources/Paperless/Paperless%20Office%20for%20GT%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 if your facility is connected to a sewer 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 additional questions, please contact the Project Manager, Mr. David Koo at (213) 620-6155 (dkoo@waterboards.ca.gov) or the Unit Chief, Dr. Eric Wu at (213) 576-6683 (ewu@waterboards.ca.gov) regarding this matter.

Sincerely,


Samuel Unger, P.E.
Executive Officer

Attachment: Revised Monitoring and Reporting Program CI-9310, dated April 27, 2012

cc: Shea Jones, United States Environmental Protection Agency, Region 9
Kurt Souza, State Department of Health Services, Drinking Water Field Operations Branch
Brian Hooper, Los Angeles County Department of Public Works, Waste Management Division
Carl G. Brooks, South Coast Air Quality Management District
Mark Stuart, California Department of Water Resources, Watermaster, Central Basin
Ted Johnson, Water Replenishment District of Southern California
Cheryl Ross, West Basin Municipal Water District
Alex P. Carlos, Regional Water Quality Control Board, Region 4
Ravi Subramanian, CDM
Joseph Weidmann, Haley & Aldrich

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

MONITORING AND REPORTING PROGRAM NO. CI-9310
FOR
THE BOEING COMPANY
FORMER C-6 FACILITY

FILE NO. 95-036, SCP NO. 0410

The discharger shall implement the monitoring and reporting program on the effective date of this Order.

I. GROUNDWATER MONITORING PROGRAM

The former Building 1/36 biorecirculation pilot test was initiated in the First quarter of 2008 and, former Building 2 periodic slug injections were conducted in the Second and Third quarter of 2008. The following groundwater wells and amendment points will be included in the sampling program:

Former Building 1/36 Biorecirculation Pilot Test

Group A

Group A1: AW0066UB and AW0067UB

Group A2: AW0064UB and AW0065UB

Group B

Group B1: AW0075UB, AW0076UB, AW0077UB, EWB002, AW0055UB, and AW0073C

Group B2: WCC_06S and AW0074UB

Group C: TMW_07 and WCC_12S

Group D: MWB006

Note: AW0055UB was replaced by MWB006 as the Group D well and added as a Group B1 well in August 2008. As a result, AW0055UB and MWB006 meet many of the monitoring requirements listed below prior to August 2008, but not all.

Former Building 2 Periodic Slug Injections

Group A: IRZC001, and IRZC0003 through IRZC0020

Group B: CMW026, IRZCMW003, IRZCMW002 and MWC024

Group C: CMW002

Group D: IRZCMW001

Figure 1 shows the location of the Site. Groundwater well and amendment point locations at the Site that will be used for the Building 1/36 pilot test are shown on attached Figure 2 and for the Building 2 periodic slug injections on attached Figures 3 and 4. Group A sampling points, for both areas, are amendment points where donor will be introduced. Due to the lower than anticipated flow from extraction well EWB001, Group A1 sampling points are amendment points where donor is planned to be introduced initially. Group A2 sampling points are backup amendment points where donor could be introduced in the event of higher flow from EWB001 or from the contingency extraction well WCC_06S

or the addition of another extraction well (to be decided based on evaluation of system operation). Group B wells, for both areas, consist of monitoring wells that are located within the treatment zone, which will be used to evaluate electron donor consumption and distribution and the effectiveness of the biologically active zones over time. For the Building 1/36 pilot test, all Group A and B wells will be used for performance monitoring purposes as follows:

- When donor is introduced in Group A1 wells, only Group B1 wells will be monitored per the table below.
- When donor is introduced in Group A1 and Group A2 wells, then all Group B wells (B1 and B2) will be monitored per the table below.

For the Building 2 periodic slug injections, only Group B wells will be used for performance monitoring purposes, as Group A wells are not exposed to surface and therefore are not accessible for sampling. The Group C sampling points are downgradient sample locations, and Group D points are upgradient sample locations, for both areas.

Baseline sampling will take place prior to injection and will include at least one event for the Building 1/36 pilot test and the Building 2 periodic slug injections. The samples will be analyzed for field parameters (oxidation-reduction potential [ORP], dissolved oxygen [DO], pH, specific conductance, temperature, turbidity and groundwater elevation), chlorinated volatile organic compounds (VOCs), dissolved hydrocarbon gases (methane, ethane, and ethene), total organic carbon (TOC), volatile fatty acids (VFAs), alkalinity, ferrous iron by field kit, anions (sulfate and chlorides), and bacterial DNA analysis by Quantitative Polymerase Chain Reaction test (qPCR). If a tracer test is conducted, samples will be analyzed for bromide too.

The required constituents to be analyzed and the monitoring schedule for each sample group for the Building 1/36 pilot test and periodic slug injections at Building 2 are shown below.

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS - BUILDING 1/36 PILOT TEST	MINIMUM FREQUENCY OF ANALYSIS - BUILDING 2 SLUG INJECTIONS
Total Daily Injections	Liters or Gallons	Measurement	Per injection	Per injection
Groundwater Elevation	Feet below ground surface (bgs)	In situ	Groups A1 and B1 OR A and B: Baseline, monthly following injection for first six months, quarterly for rest of Year 1 Groups C and D: Baseline and quarterly for Year 1 Groups A1 (or A)-D: Semi-annually after Year 1	Group B: Baseline, Month 1 and Month 2 following injection, quarterly for rest of Year 1 Groups C and D: Baseline and quarterly for Year 1 Groups B-D: Semi-annually after Year 1
Field Parameters (DO, ORP, pH, Temperature, Specific Conductance, and Turbidity)	mg/l, millivolts, pH units, degrees C, µS/cm, and NTU, respectively	Grab	Group A1 OR A: Baseline and quarterly post injection for Year 1 Group B1 OR B: Baseline, monthly following injection for first six months, quarterly for rest of Year 1 Groups C and D: Baseline and quarterly for Year 1 Groups A1 (or A)-D: Semi-annually after Year 1	Group B: Baseline, Month 1 and Month 2 following injection, quarterly for rest of Year 1 Groups C and D: Baseline and quarterly for Year 1 Group B-D: Semi-annually after Year 1

Chlorinated Volatile Organic Compounds (EPA Method 8260B)	µg/l	Grab	<p>Group A1 OR A: Baseline and quarterly post injection for Year 1</p> <p>Group B1 OR B: Baseline, monthly following injection for first six months, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for Year 1</p> <p>Groups A1 (or A)-D: Semi-annually after Year 1</p>	<p>Group B: Baseline, Month 1 and Month 2 following injection, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for Year 1</p> <p>Group B-D: Semi-annually after Year 1</p>
Total Organic Carbon (EPA Method 9060 Modified or equal)	mg/l	Grab	<p>Group A1 OR A: Baseline and quarterly post injection for Year 1</p> <p>Group B1 OR B: Baseline, monthly following injection for first six months, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for Year 1</p> <p>Groups A1 (or A)-D: Semi-annually after Year 1</p>	<p>Group B: Baseline, Month 1 and Month 2 following injection, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for Year 1</p> <p>Group B-D: Semi-annually after Year 1</p>
Volatile Fatty Acids	mg/l	Grab	<p>Group A1 OR A: Baseline and quarterly post injection for Year 1</p> <p>Group B1 OR B: Baseline, monthly following injection for first six months, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for Year 1</p> <p>Groups A and B: No analysis for Year 2</p> <p>Groups C and D: Semi-annually after Year 1</p>	<p>Group B: Baseline, Month 1 and Month 2 following injection, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for Year 1</p> <p>Group B: No analysis for Year 2 unless additional injections are conducted</p> <p>Groups C and D: Semi-annually after Year 1</p>
<i>Dehalococcoides</i> spp. strains (Quantitative Polymerase Chain Reaction test [qPCR])	gene copies/ml	Grab	<p>Group A1 OR A: Baseline and semi-annually post injection for Year 1</p> <p>Group B1 OR B: Baseline, quarterly following injection for first six months, semi-annually for rest of Year 1</p> <p>Groups C and D: Baseline and semi-annually for Year 1</p> <p>Groups A and B: No analysis for Year 2</p> <p>Groups C and D: Semi-annually after Year 1</p>	<p>Group B: Baseline, Month 1 and Month 2 following injection, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and semi-annually for Year 1</p> <p>Group B: No analysis for Year 2 unless additional injections are conducted</p> <p>Groups C and D: Semi-annually after Year 1</p>
Dissolved Metals (Ferrous Iron by field kit), Alkalinity, and Anions (sulfate, nitrate, nitrite and chlorides)	mg/l	Grab	<p>Group A1 OR A: Baseline and quarterly post injection for Year 1</p> <p>Group B1 OR B: Baseline, monthly following injection for first six months, and quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for rest of Year 1</p> <p>Groups A and B: No analysis for Year 2</p> <p>Groups C and D: Semi-annually only for chlorides after Year 1</p>	<p>Group B: Baseline, Month 1 and Month 2 following injection, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for Year 1</p> <p>Group B: No analysis for Year 2 unless additional injections are conducted</p> <p>Groups C and D: Semi-annually only for chlorides after Year 1</p>
Total Dissolved Solids (TDS)	mg/l	Grab	<p>Groups C and D: Quarterly following injection for Year 1, semi-annually after Year 1</p>	<p>Groups C and D: Baseline, quarterly following injection for Year 1, semi-annually after Year 1</p>
Dissolved Hydrocarbon Gases (ethane, ethene, and methane)	mg/l	Grab	<p>Group A1 OR A: Baseline and quarterly post injection for Year 1</p> <p>Group B1 OR B: Baseline, monthly following injection for first six months, and quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for rest of Year 1</p> <p>Groups A1 (or A)-D: Semi-annually after Year 1</p>	<p>Group B: Baseline, Month 1 and Month 2 following injection, quarterly for rest of Year 1</p> <p>Groups C and D: Baseline and quarterly for Year 1</p> <p>Group B-D: Semi-annually after Year 1</p>

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

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

II. AMENDMENT INJECTION MONITORING REQUIREMENTS

The reports shall contain the following information regarding injection activities:

1. Depth of injection points;
2. Quantity of amendment injected and dates injected; and
3. Total amount of amendment injected.

III. REPORTING REQUIREMENTS

The first monitoring report for Building 1/36 pilot test under this Program was due July 30, 2007. The first monitoring report for Building 2 periodic slug injections under this Program was due by July 30, 2008. This monitoring and reporting program supersedes previous requirements stated in work plan approval letters. The monitoring and reporting program provided herein for Building 2 periodic slug injections is based on the fact that the first round of injections was completed in July 2008. Any future changes will be provided in a revised monitoring and reporting program.

The Discharger is required to submit a final report including baseline and donor injection data, plus quarterly and semi-annual reports (as provided below) for the duration of the Building 1/36 pilot test and Building 2 periodic slug injections. If necessary, semiannual monitoring reports will be submitted for each additional year beyond the base duration. The groundwater monitoring wells and amendment points will be gauged and sampled, and results will be reported to the Regional Water Quality Control Board (Regional Board) under this Monitoring and Reporting Program according to the following schedules:

Building 1/36 Pilot Test

Reporting Period	Sampling Month(s)	Report Due Date
April – June 2007	May and June 2007 (Baseline Events)	July 30, 2007
July – September 2007	None (No injections performed)	October 30, 2007
October – December 2007	December 2007 (2 nd Baseline Event for EWB002)	January 30, 2008
January – March 2008	January*, February, and March 2008	April 30, 2008
April – June 2008	April, May, and June 2008	July 30, 2008
July – December 2008	September and December 2008	January 30, 2009
January – June 2009	March 2009	July 30, 2009
July – December 2009	September 2009	January 30, 2010

* - Building 1/36 pilot test was started up on December 17, 2007. The first monthly sampling event associated with the pilot test was performed in January 2008.

Building 2 Periodic Slug Injections

Reporting Period	Sampling Month(s)	Report Due Date
January – June 2008	March or April 2008 (Baseline Events)	July 30, 2008
July – December 2008	August 2008 (Month 1)* September 2008 (Month 2) December 2008	January 30, 2009
January – June 2009	March 2009 June 2009	July 30, 2009
July – December 2009	September 2009	January 30, 2010
January – June 2010	March 2010	July 30, 2010
January – June 2011	March 2011	To be included in the Addendum Final Report
January – June 2012	March 2012	To be included in the Second Addendum Final Report

* - The Building 2 injections were completed in July 2008. The first monthly sampling event associated with the injections will be performed in August 2008.

The Discharger shall submit Reports detailing the results of the Building 1/36 pilot test and Building 2 periodic slug injections. Where the reporting deadlines for Building 1/36 and 2 fall on the same dates, one single report combining the activities at both areas should be submitted. The reports should include an evaluation of the effectiveness of using the amendment solution to remediate VOC-contaminated groundwater at the Site, the impact of any by-products on the receiving groundwater quality, and any other effects the *in-situ* treatment may have. The Discharger is required to submit the following reports pursuant to their respective due dates:

Building 1/36 Pilot Test

Report	Due Dates
Final Report	January 30, 2010

Building 2 Periodic Slug Injections

Report	Due Dates
Final Report	July 30, 2010
Addendum Final Report	July 30, 2011
Second Addendum Final Report	July 31, 2012

If there is no discharge or injection during any reporting period, the report shall so state. Monitoring reports must be addressed to the Regional Board, Attention: Information Technology Unit.

Whenever wastes associated with the discharge under this Order are transported to a different disposal site, the following shall be reported in the monitoring report: type and quantity of wastes; name and address of the hauler (or method of transport if other than by hauling); and location of the final point(s) of disposal and copies of waste manifest.

IV. 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)"

V. MONITORING FREQUENCIES

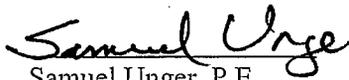
Specifications in this monitoring program are subject to periodic revisions. Monitoring requirements may be modified or revised by the Executive Officer based on review of monitoring data submitted pursuant to this Order. Monitoring frequencies may be adjusted to a less frequent basis or parameters and locations dropped by the Executive Officer if the Discharger makes a request and the request is backed by statistical trends of monitoring data submitted.

VI. ELECTRONIC SUBMITTAL OF INFORMATION (ESI) TO GEOTRACKER

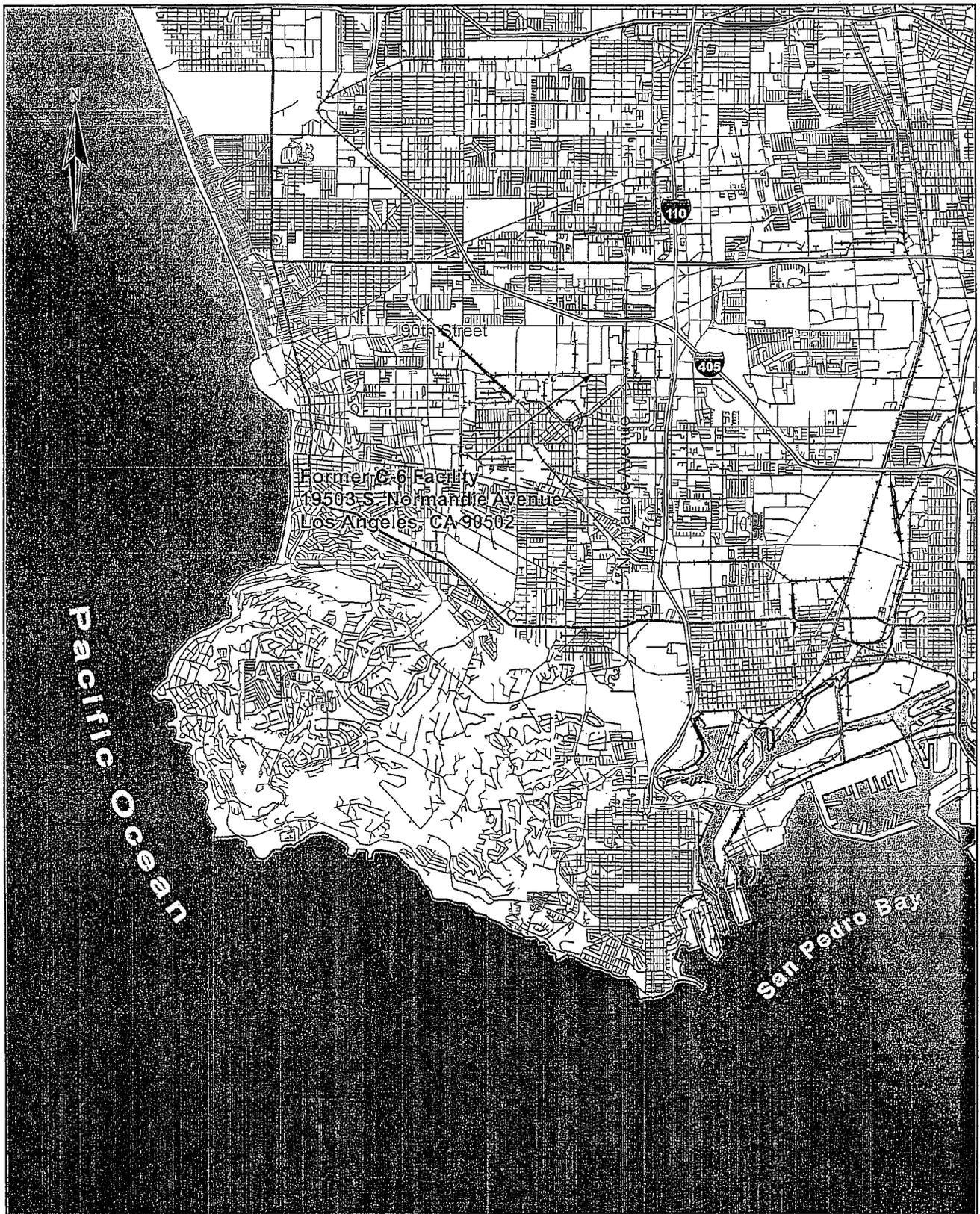
The Discharger shall comply with the Electronic Submittal of Information (ESI) requirements by submitting all reports required under the MRP, including groundwater monitoring data, discharge location data, and pdf monitoring reports to the State Water Resources Control Board GeoTracker database under Global ID WDR10000313.

All records and reports submitted in compliance with this Order are public documents and will be made available for inspection during business hours at the office of the California Regional Water Quality Control Board, Los Angeles Region, upon request by interested parties. Only proprietary information, and only at the request of the Discharger, will be treated as confidential.

Ordered by:


Samuel Unger, P.E.
Executive Officer

Date: April 27, 2012



January 21, 2008

Boeing Corporate Real Estate
Former C-6 Facility

Site Vicinity Map



Legend

Former C-6 Facility

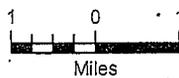
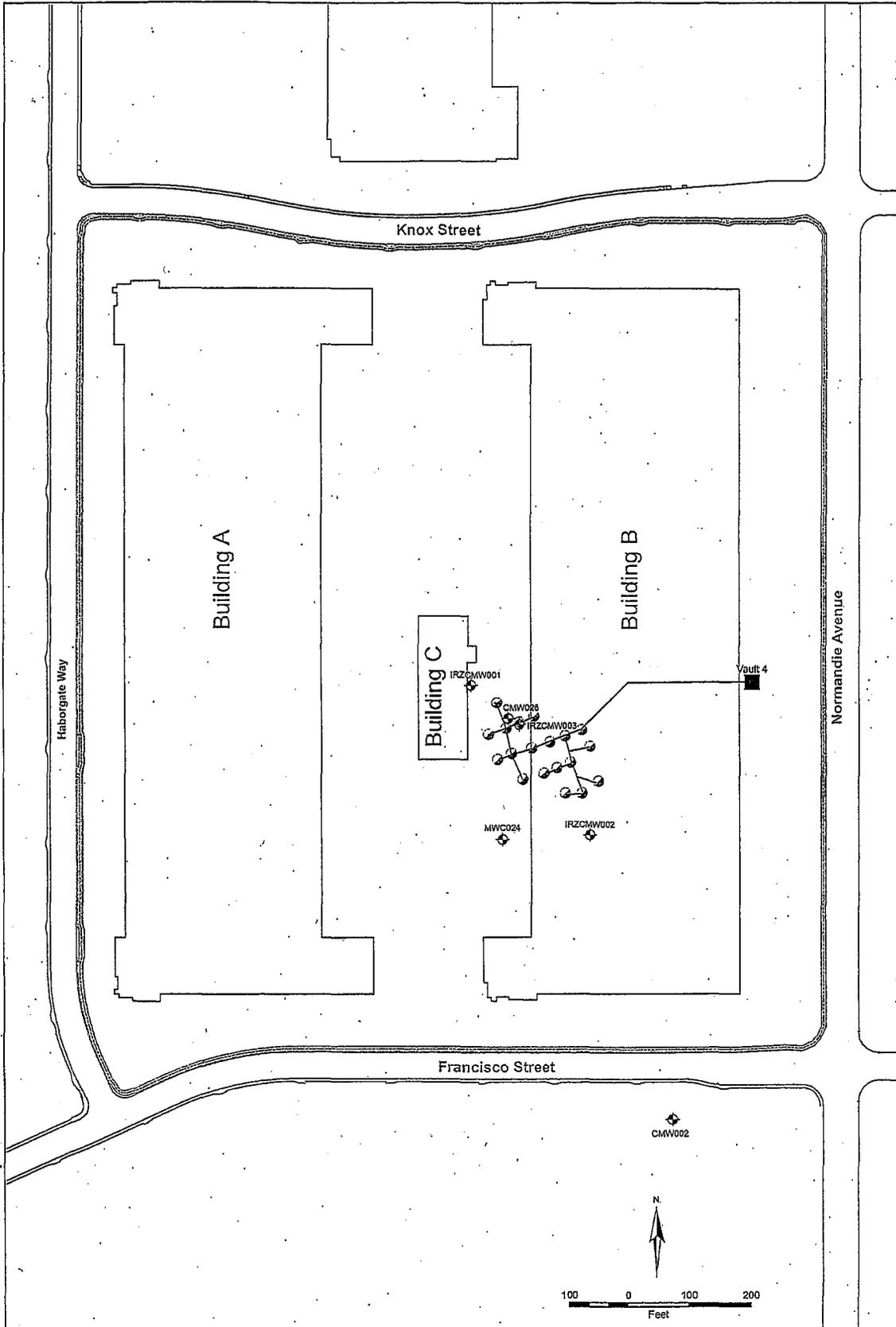


Figure 1



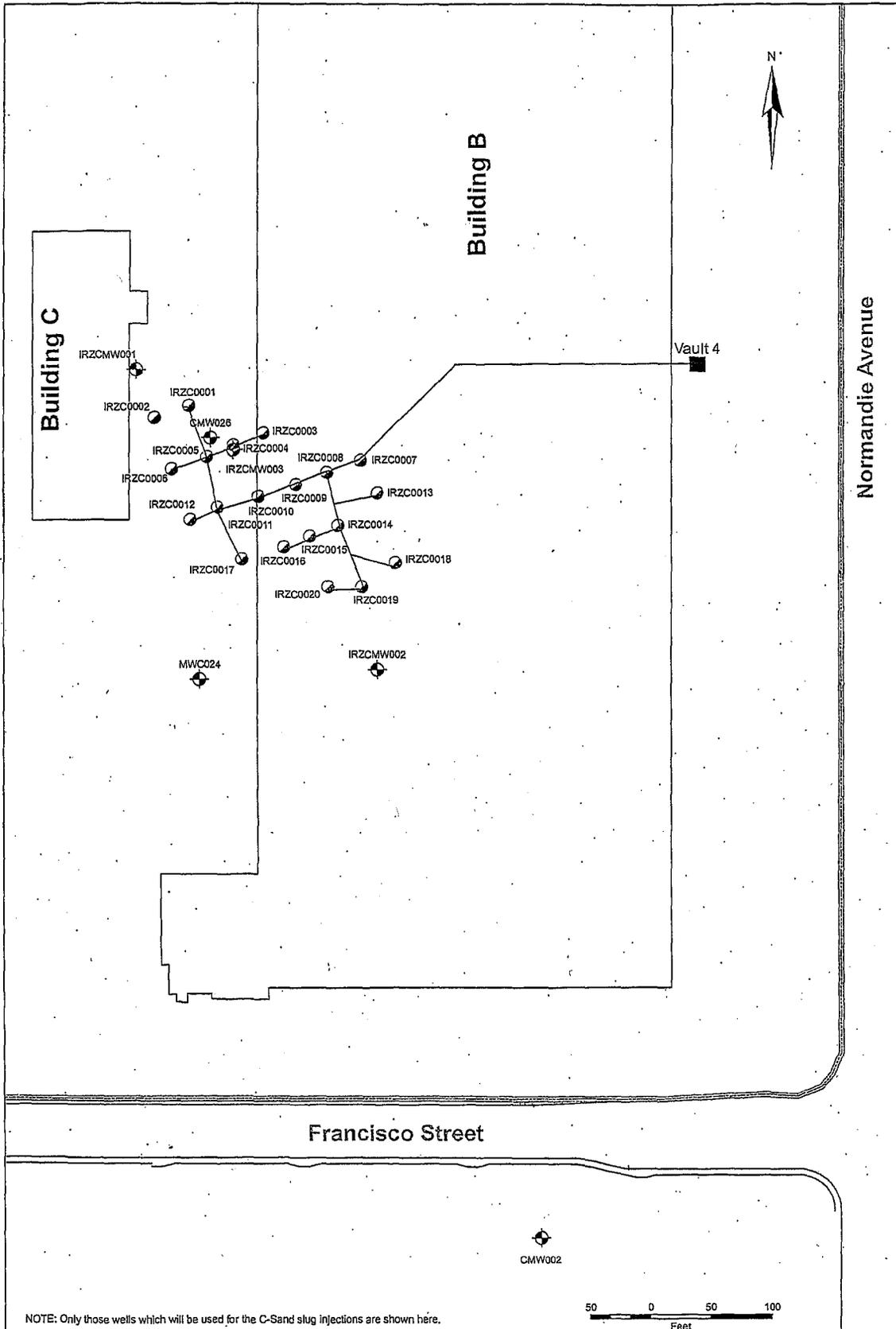
January 13, 2008

Legend



- Vault
- ◆ Existing C-Sand Monitoring Well
- Existing C-Sand Injection Wells
- Underground Pipeline
- Site Boundary

Figure 3
 Boeing Corporate Real Estate
 Former C-6 Facility
 Location Map
 C-Sand Wells of Interest
 Former Building 2



NOTE: Only those wells which will be used for the C-Sand slug injections are shown here.

January 13, 2007

CDM

- Legend**
- Site Boundary
 - Underground Pipeline
 - Vault

- C-Sand Amendment Wells (Abandoned)
- C-Sand Group A Wells (Amendment Injection)
- C-Sand Group B Wells (Treatment Zone Monitoring)
- C-Sand Group C Wells (Downgradient Monitoring)
- C-Sand Group D Wells (Upgradient Monitoring)

Figure 4
Boeing Corporate Real Estate
Former C-6 Facility
Amendment and Monitoring Well Layout
Proposed C-Sand Slug Injections at
Vault 4 - Former Building 2