



California Regional Water Quality Control Board

Los Angeles Region



Linda S. Adams
Cal/EPA Secretary

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Arnold Schwarzenegger
Governor

June 9, 2008

Mr. Robert Scott
Boeing Realty Corporation
4501 Conant Street
Long Beach, CA 90808

INDIVIDUAL WASTE DISCHARGE REQUIREMENTS IN-SITU CHEMICAL OXIDATION AND ENHANCED IN-SITU BIOREMEDIATION AT BUILDING 10 FOR REMEDIATION OF VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER, BOEING CORPORATE REAL ESTATE, FORMER C-1 FACILITY, LONG BEACH, CALIFORNIA (CLEANUP AND ABATEMENT ORDER NO. 95-048, FILE NO. 95-034, SLIC NO. 0399, SITE ID NO. 2044900)

Dear Mr. Scott:

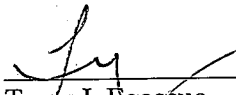
Pursuant to Division 7 of the California Water Code, this Regional Board at a public hearing held on June 5, 2008, reviewed the tentative requirements, considered all factors in the case, and adopted Order No. R4-2008-0033 (copy attached) relative to this waste discharge. Section 13263 (e) of the California Water Code provides that all Requirements shall be reviewed periodically and, upon such review, may be revised by the Regional Board.

The "Monitoring and Reporting Program" requires you to implement the monitoring program on the effective date of this Order. All monitoring reports should be sent to the Regional Board, ATTN: Information Technology Unit.

When submitting monitoring or technical reports to the Regional Board per these requirements, please include a reference to Compliance File CI-9423 and Order No. R4-2008-0033, which will assure that the reports, are directed to the appropriate file and staff. Please do not combine your discharge monitoring reports with other reports. Submit each type of report as a separate document.

Please call Ms. Ana Townsend at (213) 576-6738 or e-mail at atownsend@waterboards.ca.gov if you have any questions.

Sincerely,

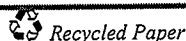

Tracy J. Egoscue
Executive Officer

Enclosures

1. Board Resolution;
2. Board Order;
3. Monitoring and Reporting Program; and
4. Standard Provisions Applicable to Waste Discharge Requirements

cc: See Mailing List

California Environmental Protection Agency



Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

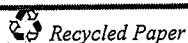
Mr. Scott
Boeing Corporate Real Estate
Former C-1 Facility

- Mailing List -

June 9, 2008

United States Environmental Protection Agency, Region 9, Permits Branch (WTR-5)
State Water Resources Control Board, Division of Water Quality
Department of Fish and Game, Region 5
Kurt Souza, State Department of Health Services, Drinking Water Field Operations Branch
Tom Cota, Department of Toxic Substances Control, Cypress
Brian Hooper, Los Angeles County Department of Public Works, Waste Management Division
Carl G. Brooks, South Coast Air Quality Management District
Ted Johnson, Water Replenishment District of Southern California
Mark Stuart – Central Basin, California Department of Water Resources
Cheryl Ross, West Basin Municipal Water District
Mitchell Yamada, City of Long Beach
Cheryl Sandel, City Of Long Beach
Steve Nakauchi, City of Long Beach, Department of Health Services
National Resources Defense Council
Los Angeles County Department of Health Services, Environmental Health
Alex P. Carlos, Regional Water Quality Control Board, Region 4
Christopher Ross, Hargis + Associates
Gregory T. Corcoran, Geosyntec Consultant

California Environmental Protection Agency



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Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

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

RESOLUTION NO. R08-008

APPROVING THE ENVIRONMENTAL CHECKLIST AND
ADOPTING A MITIGATED NEGATIVE DECLARATION FOR
GROUNDWATER REMEDIATION AT THE BUILDING 10 AREA USING IN SITU
CHEMICAL OXIDATION AND ENHANCED IN SITU BIOREMEDIATION,
BOEING CORPORATE REAL ESTATE, FORMER C-1 FACILITY,
LONG BEACH, CALIFORNIA
(FILE NO. 95-034)

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region finds that:

1. California Water Code (CWC) section 13260(a)(1) requires that any person discharging wastes, or proposing to discharge wastes other than into a community wastewater collection system, which could affect the quality of the waters of the State, shall file a report of waste discharge (ROWD) with the Regional Water Quality Control Board (Regional Board) exercising jurisdiction in the area, and that Regional Board shall then prescribe requirements for the discharge or proposed discharge of wastes.
2. The Former C-1 Facility is an inactive commercial and military airplane manufacturing and assembly plant located at 3855 North Lakewood Boulevard in the City of Long Beach, California (Latitude 33° 49' 44"N, Longitude -118 ° 9' 5"W), and the portion of the Facility where the proposed remediation is going to be implemented is currently owned by McDonnell Douglas Corporation and administered by Boeing Corporate Real Estate (hereafter Discharger). The Former C-1 Facility comprised approximately 343 acres and is located approximately 1.5 miles north of the San Diego Freeway (Interstate 405), 3 miles west of the San Gabriel River, and 3.5 miles east of the Los Angeles River. The Former C-1 Facility is bordered by Carson Street and Lakewood Country Club (LCC) on the north; Long Beach City College, Faculty Avenue, and Clark Avenue on the east; Skylinks Golf Course and Long Beach Municipal Airport (Daugherty Field) on the south; and Cover Street and Long Beach Municipal Airport on the west. The portion of the Former C-1 Facility, the Building 10 (B-10) area, where the proposed remediation is going to be implemented consists of approximately 4.9 acres located in Assessor's Parcel Number 7149-001-041. The Regional Water Quality Control Board, Los Angeles Region (Regional Board) is the lead regulatory agency for the site.
3. The Former C-1 Facility was an aircraft manufacturing facility and operations at the Facility began in 1940. During the 60 years of operation, the Facility has been used for the manufacture, testing, and repair of military and commercial aircraft. The B-10 area is approximately 4.9 acres and is located in the northwestern portion of the Former C-1 Facility. The Former C-1 Facility is being redeveloped for new uses, and is known as the Douglas Park Redevelopment Area. The B-10 area is bordered to the north and west by the LCC property and to the south and east by the remainder of the Former C-1 Facility.
4. Industrial operations consisting of manufacturing, testing, and repair of military and commercial aircraft have been conducted at the B-10 area since 1968. The B-10 area

included eight buildings that were used for various purposes in support of aircraft manufacturing operations, including chemical storage and mixing, fuel storage and testing, and electrical substations. The surface between the buildings was covered by asphalt and concrete with numerous utilities providing service to the structures including fire suppression, water, electricity, storm drains, sewer, natural gas, and telecommunications. In 2002, operations on this portion of the Former C-1 Facility were discontinued and sections began to be redeveloped, including the razing of seven of the eight buildings in the B-10 area in 2005. Selected utilities and several isolated soil impacts were also removed during the demolition. A compacted crushed miscellaneous base (CMB) material was placed over the B-10 area as a temporary measure to facilitate drainage until the area is redeveloped. An approximately 3 feet (ft) high masonry block wall and 8 ft high chain-link fence continues to separate the northern and western perimeter of the B-10 area from the adjacent LCC property. Building 25A is the only remaining structure in the B-10 area. Two 24-inch diameter corrugated metal pipe (CMP) storm drains extend from the northwest corner of the B-10 area, beneath the former footprint of B-10, and then turn due south toward the Long Beach Municipal Airport. The storm drains provide drainage for the LCC and Boeing Corporate Real Estate property.

5. The Discharger conducted a comprehensive groundwater assessment in February 2002 to identify and delineate areas where groundwater has been impacted by chemicals used at the Facility. The investigation conducted as of 2002 consisted of drilling more than 2,000 soil borings, collecting and analyzing over 3,700 soil samples, collecting and analyzing 1,100 soil gas samples, installation of 237 groundwater monitoring wells (192 conventional monitor recovery wells and 45 direct-push monitor wells), collecting and analyzing over 900 groundwater samples, and conducting over 40 hydraulic tests across the entire Former C-1 Facility as part of the assessment activities. Results from the groundwater assessment indicate primary compounds of potential concern associated with groundwater source areas are: organic solvents, principally trichloroethylene (TCE), tetrachloroethylene (PCE), and methylene chloride (MeCl); metal processing solutions that contained hexavalent chromium; and jet fuel.
6. The Remediation Plan, approved by the Regional Board, identified five candidate technologies for use in active remediation of source area groundwater where TCE concentrations exceed the active treatment goal (ATG) of 1,000 micrograms per liter ($\mu\text{g/L}$). From the five candidate technologies approved in the Remediation Plan, the Discharger has selected a combined remedy approach consisting of In-Situ Chemical Oxidation (ISCO), enhanced in situ bioremediation (EISB), and monitored natural attenuation (MNA) to achieve the active treatment goals developed for the Facility.
7. To address the B-10 source area groundwater contamination the Discharger, under the oversight of the Regional Board, proposes to inject modified Fenton's reagent with hydrogen peroxide and water to rapidly reduce MeCl concentrations to below inhibitory levels, such that EISB can subsequently be implemented to treat the residual mass (both subject of this individual WDR). ISCO implemented using modified Fenton's reagent with hydrogen peroxide provides the most favorable conditions for subsequent EISB treatment.
8. The bioaugmentation culture (SiREM's KB-1[®] or Shaw's SDC-9[™]) requires an electron donor amendment (food), VOCs, and anaerobic conditions to survive. Given these growth requirements, the bioaugmentation culture will not survive indefinitely after the residual

- carbon source has been consumed or the VOCs have been depleted following the last delivery of carbon source amendment. Groundwater conditions will be monitored prior to, during and post the operation to determine the efficiency of the injection.
9. The Discharger submitted a General WDR permit application for the use of ISCO as Modified Fenton's reagent as a field study. The permit and the associated monitoring and reporting program (CI-9358) were approved by the Executive Officer on December 21, 2007. Modified Fenton's reagent is approved for use under the General WDR. This Site-Specific WDR will cover the use of all of the amendments in the General WDR, including chemical oxidants (Modified Fenton's reagent) and electron donors/carbon sources; therefore, once this permit is adopted, a letter rescinding the General WDR will be issued.
 10. The Discharger shall monitor for the presence and concentration of injection solution and contaminants and evaluate flow conditions and any potential for migration of contaminants outside the treatment area. As specified in the Waste Discharge Requirements and Notice of Preparation of Mitigated Negative Declaration, the Discharger shall provide hydraulic control, if necessary, to prevent offsite migration. Monitoring of groundwater quality and flow conditions across the entire Site is required by a comprehensive separate Site-wide groundwater monitoring program.
 11. The application of modified Fenton's reagent with hydrogen peroxide, electron donor amendment, and bioaugmentation cultures to groundwater may result in temporary adverse impacts to groundwater quality, but impacts that may result will be localized, and of short-term duration, and will not impact any existing or prospective uses of groundwater.
 12. The Water Quality Control Plan (Basin Plan) for the Los Angeles Region designates the beneficial uses of groundwater in the Central Basin for municipal and domestic supply, industrial process supply, industrial service supply, and agricultural supply.
 13. The permitted discharge is consistent with the anti-degradation provisions of State Water Resources Control Board Resolution No. 68-16 (Anti-degradation Policy). The discharge may result in some localized exceedance of background concentrations of constituents such as total organic carbon, VOCs, and total dissolved solids, but this is not anticipated to result in any long-term groundwater degradation.
 14. This Regional Board has assumed lead agency role for this project under the California Environmental Quality Act (Public Resources Code section 21000 et seq.) and has conducted an Initial Study (in the format of an expanded Environmental Checklist) in accordance with Title 14, California Code of Regulations, section 15063, titled Guidelines for Implementation of the California Environmental Quality Act. Based on the Initial Study, Regional Board prepared a Mitigated Negative Declaration that the project will not have a significant adverse effect on the environment.
 15. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for this discharge and has provided them with an opportunity to submit their written comments and recommendations. The Regional Board, in a public meeting on June 5, 2008, heard and considered all comments pertaining to the discharge and to the tentative requirements.

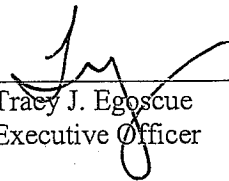
16. Copies of the Environmental Checklist and proposed Mitigated Negative Declaration were transmitted to the State Clearing House, all agencies and interested parties. All comments received have been addressed by Regional Board staff. The Regional Board considered all testimony and evidence at a public hearing held on June 5, 2008 at the City of Simi Valley, Council Chambers, 2929 Tapo Canyon Road, Simi Valley, California, and good cause was found to approve the Environmental Checklist and adopt a Mitigated Negative Declaration.
17. The Regional Board has reviewed the Initial Study and Mitigated Negative Declaration concerning this Resolution prepared by staff in compliance with the California Environmental Quality Act (Public Resources Code section 21000 et seq.). The Regional Board concurs with the staff findings that a Mitigated Negative Declaration should be adopted. The Initial Study and Mitigated Negative Declaration were circulated for public review and comment.

THEREFORE, BE IT RESOLVED that the Regional Board:

1. Adopts the Environmental Checklist, Initial Study and Mitigated Negative Declaration and directs the Executive Officer to file a Notice of Determination with the State Clearinghouse within 30 days as required by the California Code of Regulations.
2. Directs that a copy of this Resolution shall be forwarded to the State Water Resources Control Board and all interested parties.
3. Directs that the discharge of amendments and microorganisms into the soil and groundwater shall conform with all the requirements, conditions, and provisions set forth in A. "Discharge Limits" and B. "Discharge Specifications" of the ORDER NO. R4-2008-0033.

CERTIFICATION

I, Tracy J. Egoscue, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region on June 5, 2008.



Tracy J. Egoscue
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. R4-2008-0033

WASTE DISCHARGE REQUIREMENTS
FOR
BOEING CORPORATE REAL ESTATE
GROUNDWATER REMEDIATION AT THE BUILDING 10 AREA USING IN SITU CHEMICAL
OXIDATION (ISCO) AND ENHANCED IN SITU BIOREMEDIATION (EISB) OF
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
FORMER C-1 FACILITY

(FILE NO. 95-034)

The California Regional Water Quality Control Board, Los Angeles Region, (hereafter Regional Board) herein finds that:

1. Boeing Corporate Real Estate (hereafter Discharger) has filed a Report of Waste Discharge and applied for Waste Discharge Requirements (WDR) to inject modified Fenton's reagent with hydrogen peroxide and water to reduce methylene chloride concentrations to levels where EISB can subsequently be applied to treat the residual mass (both subject of this individual WDR) to remediate chlorinated volatile organic compounds (VOCs) in shallow groundwater at a portion of the Former C-1 Facility, known as former Building 10 area (the Site) identified below.
2. The Discharger administers the Former C-1 Facility located at 3855 Lakewood Boulevard in Long Beach, Los Angeles County, California (Latitude 33° 49' 44"N, Longitude -118 ° 9' 5"W; see Figure 1). The Former C-1 Facility is an inactive commercial and military airplane manufacturing and assembly plant. The portion of the Facility, the Site, where the proposed remediation is going to be implemented is currently owned by McDonnell Douglas Corporation and administered by the Discharger. The Former C-1 Facility comprised approximately 343 acres and is located approximately 1.5 miles north of the San Diego Freeway (Interstate 405), 3 miles west of the San Gabriel River, and 3.5 miles east of the Los Angeles River. The Former C-1 Facility is bordered by Carson Street and Lakewood Country Club (LCC) on the north; Long Beach City College, Faculty Avenue, and Clark Avenue on the east; Skylinks Golf Course and Long Beach Municipal Airport (Daugherty Field) on the south; and Cover Street and Long Beach Municipal Airport on the west. The Site consists of approximately 4.9 acres located within the parcel with the Assessor's Parcel Number 7149-001-041 (see Figure 2). The Former C-1 Facility is being redeveloped for new uses, and is known as the Douglas Park Redevelopment Area.
3. Shallow groundwater beneath the Site is first encountered at depths ranging from 30 to 40 feet below ground surface (bgs), within the middle Bellflower aquitard. The Bellflower aquitard comprises the upper portion of the Lakewood Formation and generally occurs at the Site area from ground surface to depths of about 90 to 95 feet bgs. The Bellflower aquitard is a heterogeneous mixture of interbedded sediments that consist primarily of low permeability silts and clays, with discontinuous lenses and layers of fine sand. The relatively coarse and fine zones within the Bellflower aquitard have been named for the purpose of groundwater assessment. The coarse zones of the Bellflower aquitard have been named the shallow, middle, and deep Bellflower aquitard. The shallow Bellflower aquitard is continuous across the Facility. Because the water table is currently at approximately 10 feet above mean sea level across the Facility, the Shallow Bellflower aquitard is unsaturated in the western most portion of the Facility (including much of the Site area), and approximately two-thirds of its thickness is unsaturated in the eastern portion of the Facility. The middle Bellflower aquitard underlies the shallow and intervening fine-grained portion of the

Bellflower aquitard. The middle Bellflower aquitard is saturated across the Facility, but is discontinuous, pinching out in various areas of the Facility. The deep Bellflower aquitard underlies the middle and the shallow Bellflower aquitard. The deep Bellflower aquitard is continuous across the Facility and becomes progressively more silty/clayey with depth. A uniform and laterally continuous layer of silt and clay underlies the Deep Bellflower aquitard. This lower unit provides a relatively high degree of hydraulic isolation between the Bellflower aquitard and underlying units. The water table (shallow groundwater) occurs in the middle Bellflower aquitard beneath the western side of the Facility. The shallow Bellflower aquitard is unsaturated in the western portion of the Site. Groundwater leakage from Bouton Lake (located north of the Site area) could be a possible source of local recharge to the Bellflower aquitard water table.

4. The Discharger conducted a comprehensive groundwater assessment in February 2002 to identify and delineate areas where groundwater has been impacted by chemicals used at the Facility. The investigation conducted as of 2002 consisted of drilling more than 2,000 soil borings, collecting and analyzing over 3,700 soil samples, collecting and analyzing 1,100 soil gas samples, installation of 237 groundwater monitoring wells (192 conventional monitor recovery wells and 45 direct-push monitor wells), collecting and analyzing over 900 groundwater samples, and conducting over 40 hydraulic tests across the entire Former C-1 Facility as part of the assessment activities. Results from the groundwater assessment indicate primary compounds of potential concern associated with groundwater source areas are: organic solvents, principally trichloroethylene (TCE), tetrachloroethylene (PCE), and methylene chloride (MeCl); metal processing solutions that contained hexavalent chromium; and jet fuel.
5. The primary VOCs in groundwater at the Site include TCE and MeCl. The maximum concentration of TCE detected in a 2007 sample from a water table monitor well was 350,000 micrograms per liter ($\mu\text{g}/\text{l}$) and the maximum concentration of MeCl was 12,000,000 $\mu\text{g}/\text{l}$. The maximum concentration of TCE detected in a 2007 sample from a middle Bellflower monitor well was 7,100 $\mu\text{g}/\text{l}$ and the maximum concentration of MeCl was 17,000 $\mu\text{g}/\text{l}$. Based on data collected in 2002, approximately 95% and 99% of the TCE and MeCl mass, respectively, is believed to be contained within the Shallow and Middle Bellflower aquitards. The MeCl plume is largely encompassed by the TCE plume. The approximate extent of the TCE plumes for the water table and middle Bellflower aquitards are shown on Figures 3 and 4, respectively. The approximate extent of the MeCl plumes for the water table and middle Bellflower aquitards are shown on Figures 5 and 6, respectively.
6. The Discharger submitted "Remediation Plan, Former C-1 Facility, Building 10 Area, Long Beach, California" dated August 25, 2006, prepared by Haley & Aldrich. This plan was approved by the Executive Officer on November 13, 2006. The plan identified five candidate technologies for use in active remediation of source area groundwater where TCE concentrations exceed the active treatment goal (ATG) of 1,000 micrograms per liter ($\mu\text{g}/\text{L}$).
7. The Discharger submitted "Remediation Plan Addendum 2 (RPA 2), Source Area Groundwater, Building 10 Area, Former C-1 Facility, Long Beach, California" dated November 2, 2007, prepared by Geosyntec Consultant Incorporated. The RPA 2 was approved by the Executive Officer on November 30, 2007. From the five candidate technologies approved in the Remediation Plan, the Discharger has selected a combined remedy approach consisting of ISCO, EISB, and monitored natural attenuation (MNA) to achieve the active treatment goals developed for the Facility. The RPA 2 presented the technology selection for source area groundwater active remediation at the Site. In areas where TCE biodegradation is being impacted by elevated MeCl concentrations, ISCO using

modified Fenton's reagent will first be used to reduce MeCl concentrations so that biodegradation using EISB can be established. For the remaining source area groundwater, an EISB-only approach will be implemented, transitioning naturally to MNA once the ATG is achieved. EISB will involve the application of a slow release electron donor coupled with bioaugmentation to promote complete dechlorination of TCE to non-toxic end products.

8. The Discharger submitted the "Remediation Plan Addendum No. 1, Soil Remediation Program, Soil Vapor Extraction Treatment, Former C-1 Facility, Building 10 Area, 3855 Lakewood Boulevard, Long Beach, California", (RPA 1) dated November 2, 2007, prepared by Haley & Aldrich. The RPA 1 was approved by the Executive Officer on December 4, 2007. The Discharger has implemented interim soil remediation measures using soil vapor extraction systems (SVE) with both refrigeration and condensation vapor treatment for on-site source area soil and phase granular activated carbon (GAC) vapor treatment for off-site soil on the Lakewood Country Club (LCC) property. The existing interim SVE systems are implemented pursuant to the "Building 10 Interim Soil Remediation Final Work Plan" dated February 22, 2006, approved by this Regional Board on March 1, 2006, and the "Addendum to the Building 10 Interim Soil Remediation Work Plan", dated March 5, 2007, approved by this Regional Board on April 2, 2007. The RPA 1 presented the detailed descriptions for two SVE systems with separate treatment trains for full-scale soil remediation at the Site. The proposed two SVE systems include an SVE system using GAC to treat extracted vapors with relatively low concentrations of VOCs from the adjacent LCC and an SVE system using thermal oxidation to treat extracted vapors with relatively high concentrations of VOCs from on-site. Both of these SVE systems are scheduled to be operational in 2009.
9. The Discharger submitted a workplan for the application of chemical oxidants, prepared by Geosyntec, entitled "In Situ Chemical Oxidation Workplan, Building 10 Groundwater, Former C-1 Facility, Long Beach, California", (Workplan) dated November 15, 2007. The Workplan was approved by the Executive Officer on December 12, 2007. The Workplan subdivided the B-10 active groundwater remediation area into four possible treatment areas based on Site features and the likely distribution of VOC contaminants. Treatment Area 1, which is shown in Figure 7, has an area of about 107,000 square feet, is the only area where ISCO will be applied. ISCO implemented using modified Fenton's reagent should result in favorable conditions for subsequent EISB treatment. Reaction byproducts are expected to include oxygen and sulfate, which will be consumed by indigenous microbial activity once electron donor is provided. Modified Fenton's reagent, consisting of hydrogen peroxide and a stabilized ferrous iron catalyst, is listed as an approved treatment compound under the General Waste Discharge Requirements (Order No. R4-2007-0019).
10. The Discharger submitted a General WDR permit application for the use of ISCO as Modified Fenton's reagent as a field study. The permit and the associated monitoring and reporting program (CI-9358) were approved by the Executive Officer on December 21, 2007. This Site-Specific WDR will cover the use of all of the above-mentioned amendments, including chemical oxidants (Modified Fenton's reagent) and electron donors/carbon sources; therefore, once this permit is adopted, a letter rescinding the General WDR will be issued.
11. For EISB remediation a solution containing carbon source and bioaugmentation culture will be added to groundwater to create a reducing environment (i.e., anaerobic) in which specific microorganisms, notably bacteria of the genus *Dehalococcoides*, can grow and biodegrade the chlorinated VOCs. The

activity of these microorganisms will be used in an effort to remediate the source areas impacted by chlorinated ethenes, namely TCE. The Discharger proposes to use a bioaugmentation culture (SiREM's KB-1[®] or Shaw's SDC-9[™]) that requires an electron donor amendment (food). The Discharger proposes to use emulsified oil which contains soybean oil, sodium lactate and food grade emulsifiers for the electron donor. Potable water will be used for the amendment solution to dilute and deliver the emulsified oil solution to achieve up to 1% oil concentration of the soil's estimated pore volume. The addition of the amendment solution (electron donor and bioaugmentation culture) to the subsurface soil and/or Bellflower aquitard groundwater will be performed in a manner to target the source areas designated for remediation. The electron donors are readily consumed by a wide variety of microorganisms and their persistence in the subsurface will be related to the initial concentration delivered. The bioaugmentation culture is an anaerobic consortium that requires a constant food source (electron donor) and chlorinated ethenes (e.g., TCE) to survive; therefore, it is not expected to persist where there is no electron donor or chlorinated ethenes. Once the electron donor or chlorinated ethenes are consumed, the population of the bioaugmentation culture will diminish substantially. Neither the electron donor nor the bioaugmentation culture is able to move faster than the ambient groundwater velocity. The nature of the subsurface materials at the Site, mostly silty sands and clays, are representative of slow to very slow natural groundwater velocities and this low groundwater flow rate will also help to limit the distribution of the amendments in the subsurface. The periodic/pulsed injection of electron donor is expected to minimize the potential for biofouling. However, if necessary, low concentrations of biofouling control chemicals which are routinely used for rehabilitation of drinking water wells (chlorine dioxide [CAS 10049-04-4] and/or hypochlorite [CAS 7778-54-3] or a weak organic acid [i.e., LBA cleaner]) may be added, as part of non-routine maintenance.

12. The bioaugmentation culture (SiREM's KB-1[®] or Shaw's SDC-9[™]) requires an electron donor amendment (food), VOCs, and anaerobic conditions to survive. Given these growth requirements, the bioaugmentation culture will not survive indefinitely after the residual carbon source has been consumed or the VOCs have been depleted. Groundwater conditions will be monitored to determine the efficiency of the process.
13. The majority of municipal groundwater supply in the Site area is from the deep aquifer system. Thirteen water supply wells were identified within a 1-mile radius of the site (see Figure 8). The depth to the top of screen intervals ranges from 260 to 716 feet bgs, which indicate that these wells are screened below the shallow aquifer system and below the bottom of the Gage aquifer. The first groundwater encountered is within the Bellflower aquitard. No wells are currently producing water from this unit, nor are they expected to in the future due to the relatively low yield of the Bellflower aquitard.
14. The Discharger may elect to use recirculation in some areas of the Site, by using a combination of existing injection well network and new infrastructure. Prior to doing this, the Discharger will submit another Addendum to Remediation Plan for the Regional Board approval.
15. The Discharger proposes to include control measures for addition of amendments. The control measures would be implemented if modified Fenton's reagents, electron donor/carbon source amendment or *Dehalococcoides ethenogenes* (DHE) associated with the bioaugmentation culture are detected in monitoring points outside the treatment zone. The control measure would involve stopping further addition of amendments to the groundwater. After this control measure has been implemented the remaining amendments in the groundwater will naturally break down, effectively removing food source and allowing the groundwater system to return to more aerobic conditions. The bioaugmentation culture (SiREM's KB-1[®] or Shaw's SDC-9[™]) requires an electron

WASTE DISCHARGE REQUIREMENTS NO. R4-2008-0033

FILE NO. 95-034

Boeing Corporate Real Estate

Former C-1 Facility

donor/carbon source amendment (food), VOCs, and anaerobic conditions to survive. Given these growth requirements, the bioaugmentation culture will not survive due to the loss of the food source and anaerobic conditions.

16. If the above mentioned control measure does not prevent the offsite migration of the amendments (modified Fenton's reagents, electron donors/carbon sources and/or the bioaugmentation cultures), a contingency plan, involving the installation of a hydraulic containment system, will be implemented. The slow rate of groundwater flow within and down gradient of the active treatment areas allows for sufficient time to complete design, installation, and implementation of a hydraulic containment system if necessary.
17. Any injection of a solution into the groundwater is a discharge of waste as defined by the California Water Code. However, the discharge of the Modified Fenton's reagents and electron donor/carbon source solution with bioaugmentation culture is intended to provide more effective remediation of chlorinated VOC-impacted groundwater and is expected to significantly reduce the anticipated Site cleanup time as compared to pump-and-treat technology or enhanced in-situ bioremediation without addition of a bioaugmentation culture.
18. The application of Modified Fentons' reagents, electron donor/carbon source amendments and bioaugmentation cultures to groundwater may result in temporary adverse impacts to groundwater quality, but impacts that may result will be localized, and of short-term duration, and will not impact any existing or prospective uses of groundwater.
19. The Regional Board adopted a revised Water Quality Control Plan (Plan) for the Los Angeles Region on June 13, 1994. The Plan contains beneficial uses and water quality objectives for the Central Groundwater Basin. The requirements contained in this Order, as they are met, will be in conformance with the goals of the Plan.
20. The beneficial uses for the Central Groundwater Basin are municipal and domestic water supply, industrial service and process supply, and agricultural supply.
21. The permitted discharge is consistent with the anti-degradation provisions of State Water Resources Control Board Resolution No. 68-16 (Anti-degradation Policy). The discharge may result in some localized temporary exceedances of background concentrations of total organic carbon, iron, manganese, arsenic, TDS, and certain microorganisms. However, after the injection of amendments, these parameters are not anticipated to exceed the primary or secondary standards to the extent that these parameters do not already exceed the respective standard. Moreover, any parameter change resulting from the discharge:
 - a. Will be consistent with maximum benefit to the people of the State.
 - b. Will not unreasonably affect present and anticipated beneficial uses of such water, and
 - c. Will not result in water quality less than that prescribed in the Water Quality Control Plan for Central Groundwater Basin.
22. The Regional Board has assumed lead agency role for this project under the California Environmental Quality Act (Public Resources Code section 21000 et seq.) and has conducted an Initial Study in accordance with section 15063 of the "State CEQA Guidelines" at California Code of Regulations, title 14, section 15000 et seq. Based upon the Initial Study, the Regional Board prepared a Mitigated Negative Declaration that the project, as mitigated, will not have a significant adverse effect on the environment.

23. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written comments and recommendations. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge and to the tentative requirements.

IT IS HEREBY ORDERED that Boeing Corporate Real Estate, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted there under, shall comply with the following:

A. Discharge Limits

1. The Discharger shall not cause the groundwater outside of the treatment area (as defined by the upgradient and downgradient wells in Figure 7) to exceed background concentrations of chloride and TDS established prior to start of remediation.
2. The discharge of the Modified Fenton's reagent and elected bioaugmentation culture, electron donor amendment solution, into the groundwater shall be only performed while this Order is in force.
3. During this remediation, the injection volume for the application of ISCO, consisting of potable water and Modified Fenton's reagent (hydrogen peroxide and catalyst), shall not exceed 7.2 million gallons, unless approved by the Executive Officer. During this remediation, the injection volume for the application of EISB, consisting of potable water and electron donor (from the approved list) shall not exceed 5.3 million gallons unless approved by the Executive Officer. The selected bioaugmentation culture would be applied at a volume sufficient to result in target VOC reduction. Not more than 5,000 liters (L) of Dehalococcoides based culture would be applied unless approved by the Executive Officer. Actual volumes of all amendments will be monitored and recorded for each injection location, as well as summed for the entire program. In some areas it may be more suitable to extract groundwater, amend it with electron donor and re-inject for in-situ treatment. Prior to doing this, the Discharger will submit another Addendum to Remediation Plan for the Regional Board approval.
4. The amendment solution shall be limited to potable water, extracted groundwater, and amendments specified in work plans and addendums as approved. The amendments will consist of a mixture of water with one or more of the following: Modified Fenton's reagents (up to 12% hydrogen peroxide and catalyst), lactate (either as sodium lactate or lactic acid), or emulsified oil which contains soybean oil, sodium lactate and food grade emulsifiers (maximum concentration of up to 1% of the pore volume). In addition, bioaugmentation cultures (SiREM's KB-1[®] or Shaw's SDC-9[™]) will be introduced into the groundwater during or shortly after the addition of electron donor (typical injection volume up to 5 L per injection point or 25 L per injection well to not more than 5,000 L for the treatment area).
5. Discharge duration shall not exceed five years, unless approved in writing by the Executive Officer.

B. Discharge Specifications

1. The Discharger shall stop further addition of amendments to the groundwater if amendment solution is observed to be migrating beyond the treatment area. After this control measure has been implemented the remaining amendments in the groundwater will naturally break down, effectively removing the oxidant or food source and allowing the groundwater system to return to more aerobic conditions.
2. The Discharger shall not cause the amendment solution and the by-products of the remediation process to migrate outside of the treatment area established by the Discharger and approved by the Executive Officer.
3. The discharge of the amendment solution or any by-products into any surface water or surface water drainage course is prohibited.
4. The Discharger shall not cause the groundwater to contain taste or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses outside the treatment area.
5. The Discharger shall not cause the groundwater to contain concentrations of chemical substances or its by-products, including Modified Fenton's reagents, the electron donor amendments and bioaugmentation culture solution in amounts that adversely affect any designated beneficial use as a result of the injection of solution.
6. The Discharger shall implement hydraulic control to prevent off-site migration if necessary.

C. Provisions:

1. This Order includes the attached "Standard Provisions Applicable to Waste Discharge Requirements," which are incorporated herein by reference. If there is any conflict between provisions stated herein before and the attached "Standard Provisions," those provisions stated herein shall prevail.
2. Discharge of wastes to any point other than specifically described in this Order is prohibited and constitutes a violation thereof.
3. In the event of any change in name, ownership, or control of the Site, the Discharger shall notify this Regional Board in writing and shall notify any succeeding owner or operator of the existence of this Order by a letter, a copy of which shall be forwarded to this Regional Board.
4. A copy of these requirements shall be maintained at an on-site office and be available at all times to operating personnel.
5. In accordance with section 13260 of the California Water Code, the Discharger shall file a report of any material change or proposed change in the character, location or volume of discharge.

WASTE DISCHARGE REQUIREMENTS NO. R4-2008-0033

FILE NO. 95-034

Boeing Corporate Real Estate

Former C-1 Facility

6. The Discharger shall notify Regional Board immediately by telephone of any adverse condition resulting from this discharge or from operations producing this waste discharge, such notifications to be affirmed in writing within one week from the date of such occurrence.
7. This Regional Board considers the property operator and owner to have continuing responsibility of correcting any problem that may arise in the future as a result of this discharge.
8. All work must be performed by or under the direction of a California registered civil engineer, Professional geologist, or certified engineering geologist. A statement is required in all technical reports that the registered professional in direct responsible charge actually supervised or personally conducted all the work associated with the project.
9. The use of an electron donor amendment shall not cause a condition of pollution or nuisance as defined by California Water Code, section 13050.
10. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as specified in the attached Monitoring and Reporting Program No. CI-9423. Violations of any conditions may result in enforcement action, including Regional Board or Court Order requiring corrective action or imposition of civil monetary liability, or revision, or rescission of the Order.
11. This Order does not exempt the Discharger from compliance with any other laws, regulations, or ordinances, which may be applicable. This Order does not legalize the waste treatment Site, and leaves unaffected any further restraints on the Site that may be contained in other statutes or required by other agencies.
12. The Discharger shall cleanup and abate the effects of injecting amendment solution as specified in this Order, including extraction of any by-products which adversely affect beneficial uses, and shall provide an alternate water supply source for municipal, domestic or other water use wells that become contaminated in exceedance of water quality objectives as a result of using the solution.
13. In accordance with section 13263 of the California Water Code, these requirements are subject to periodic review and revision by this Regional Board.
14. After notice and opportunity for a hearing, this Order may be terminated or modified for cause including, but not limited to:
 - a. Violation of any term or condition contained in this Order.
 - b. Obtaining this Order by misrepresentation, or failure to disclose all relevant facts.
 - c. A change in any condition that requires either a temporary or permanent reduction or elimination of authorized discharge.
15. The Regional Board, through its Executive Officer, will modify the Monitoring and Reporting Program, as necessary. The California Environmental Quality Act (CEQA) Initial Study and associated public comment were conducted once as part of the Waste Discharge Requirement (WDR) permit application process and will not be required for the expansion or modification of this remediation program.

WASTE DISCHARGE REQUIREMENTS NO. R4-2008-0033

FILE NO. 95-034

Boeing Corporate Real Estate

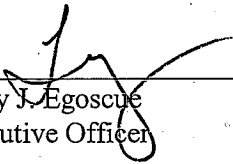
Former C-1 Facility

D. Expiration Date

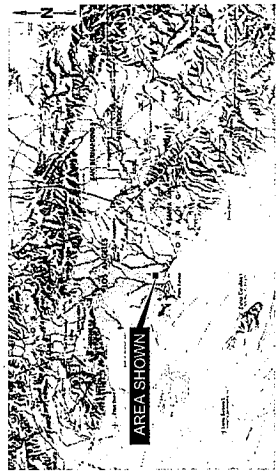
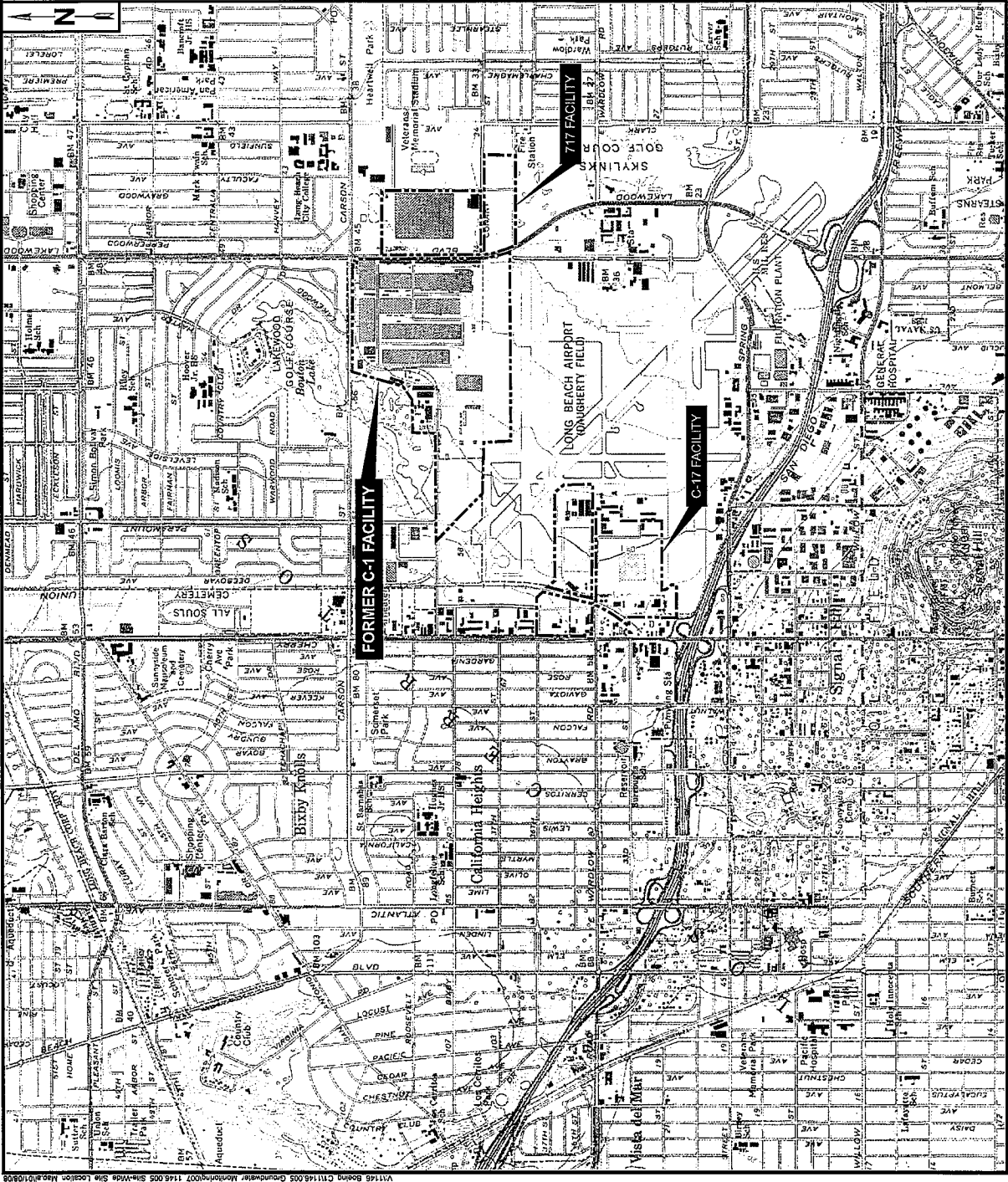
This Order expires on June 5, 2013.

The Discharger must file a Report of Waste Discharge in accordance with title 27, California Code of Regulations, not later than 180 days in advance of such date as application for issuance of new waste discharge requirements.

I, Tracy J. Egoscue, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on June 5, 2008.



Tracy J. Egoscue
Executive Officer



VICINITY MAP
NOT TO SCALE

REFERENCE:
7.5 MINUTE U.S.G.S. TOPOGRAPHIC MAPS
OF LOS ALAMITOS AND LONG BEACH, CALIFORNIA
PHOTOREPRODUCED, 1981

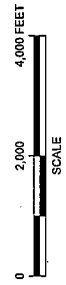
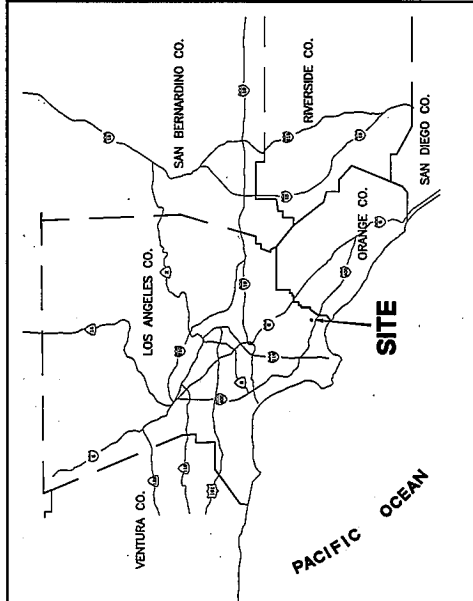
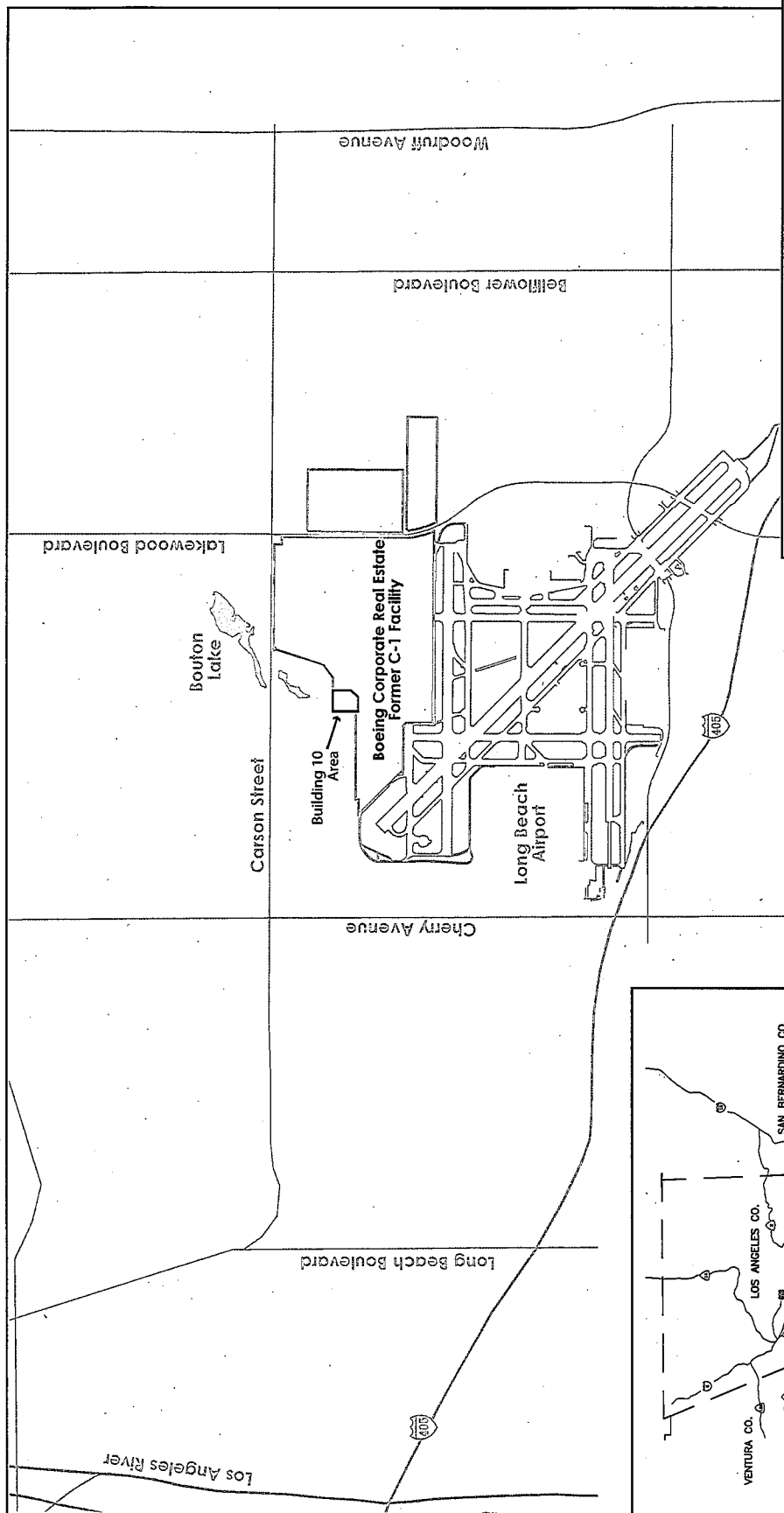
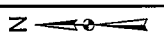


FIGURE 1
SITE LOCATION MAP

BOEING FORMER C-1 FACILITY,
LONG BEACH, CALIFORNIA





0 1,500 3,000
scale (feet)

Facility Map Showing Building 10 Area
Building 10, Former C-1 Facility, Boeing Corporate Real Estate,
Long Beach, California

Geosyntec
consultants

Figure
2

Guelph 21-Nov-2007

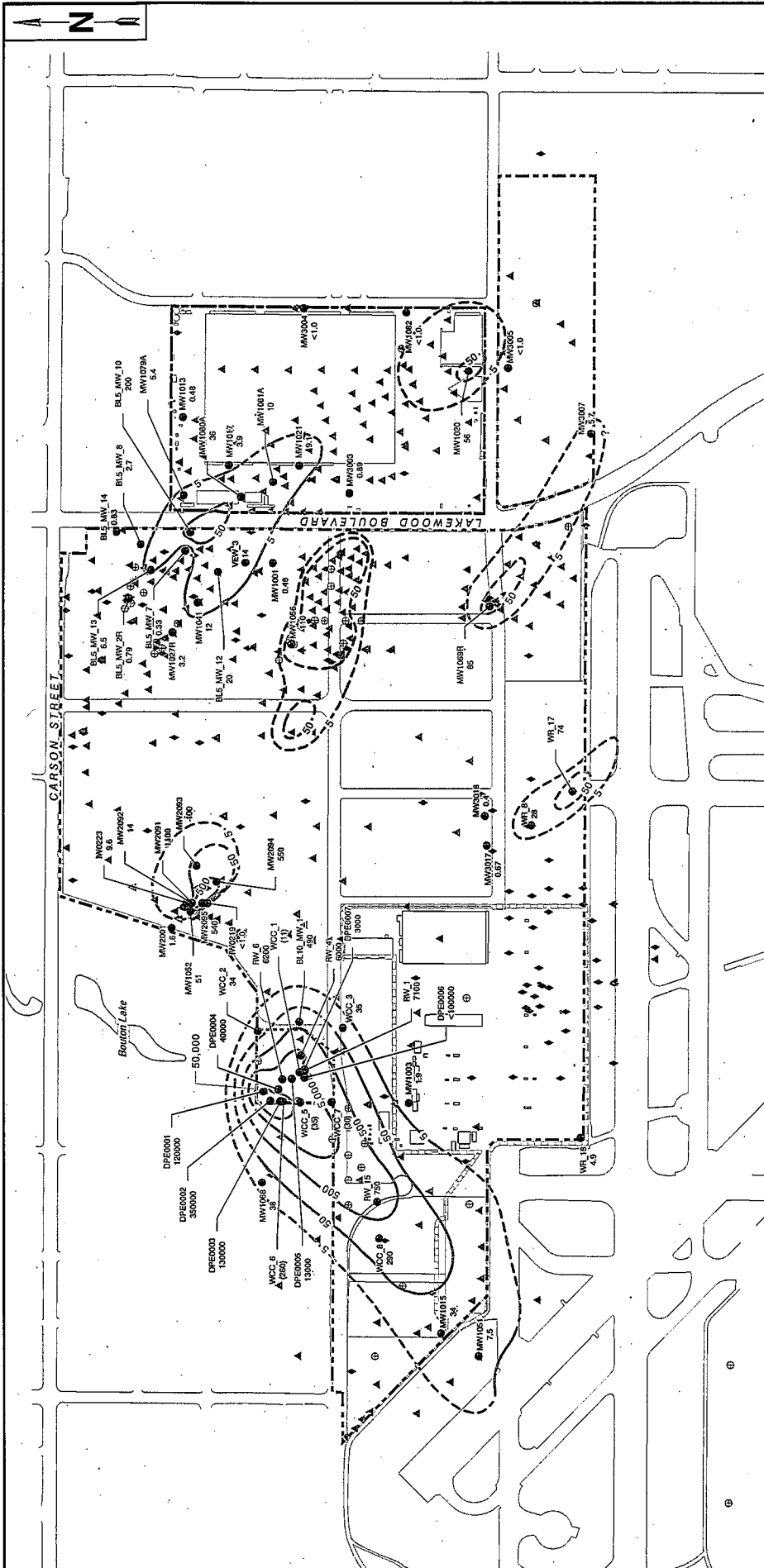


FIGURE 3
TRICHLOROETHENE
WATER TABLE
OCTOBER/NOVEMBER 2007
 BOEING FORMER C-1 FACILITY
 LONG BEACH, CALIFORNIA

AVOCET
 ENVIRONMENTAL, INC.

Legend

- Water Table Monitor Well
- ▲ Former Hydroponic Sample Location
- ⊕ Monitor Well Not Sampled in 2007
- ◆ Abandoned Well Location

25 Concentration of Trichloroethene in ug/l, < Indicates That Analyte Was Not Detected at The Indicated Value.
 (250) Not Used in Contouring
 5 Approximate Contour of Trichloroethene Concentration in ug/l, October/November 2007, Dashed where Approximate.
 5 Approximate Contour of Trichloroethene Concentration in ug/l, Based on Historical Analytical Results (ranging, 2006).
 --- Approximate Site Boundary

0 300 600 1,200 Feet

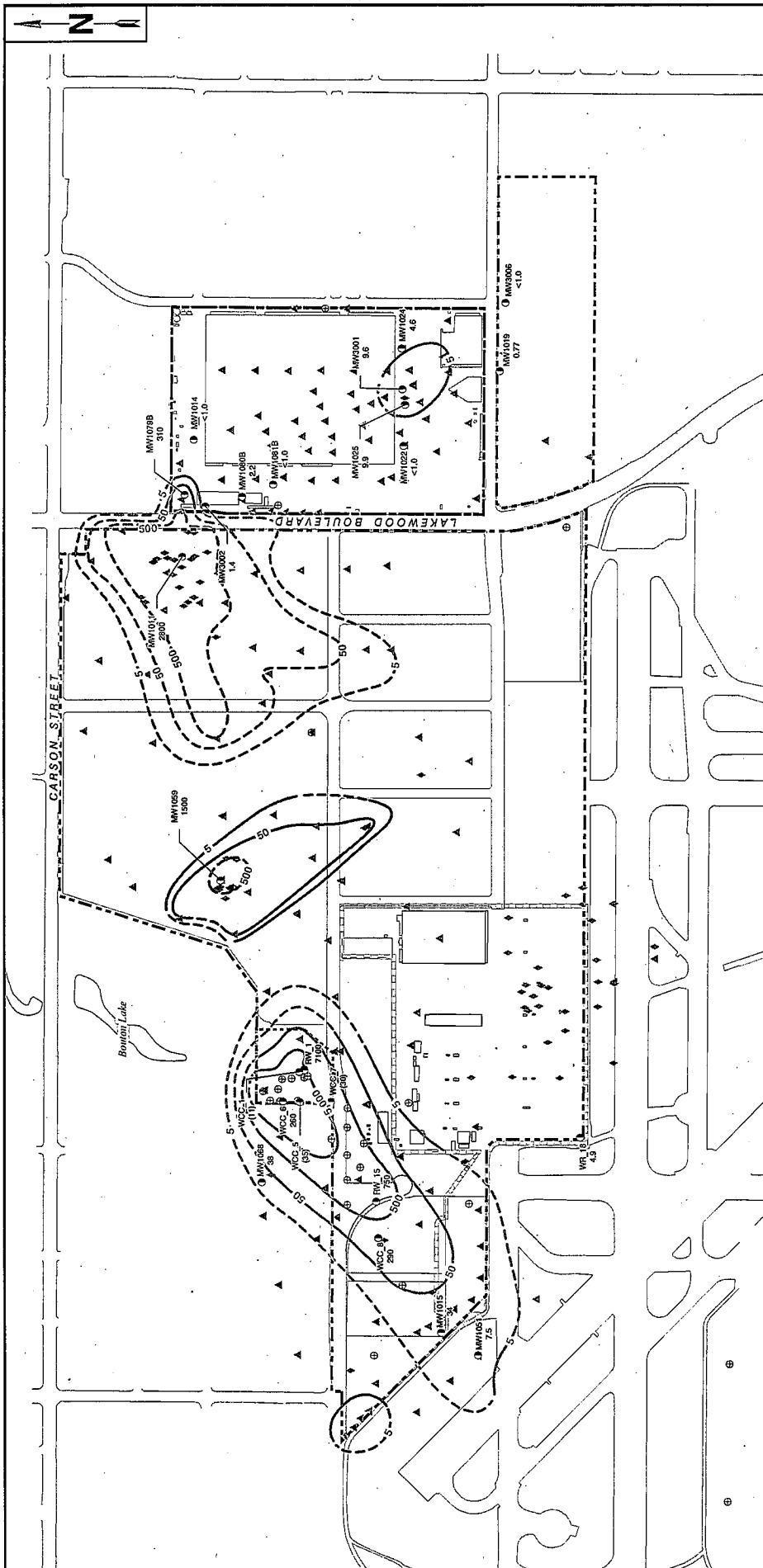
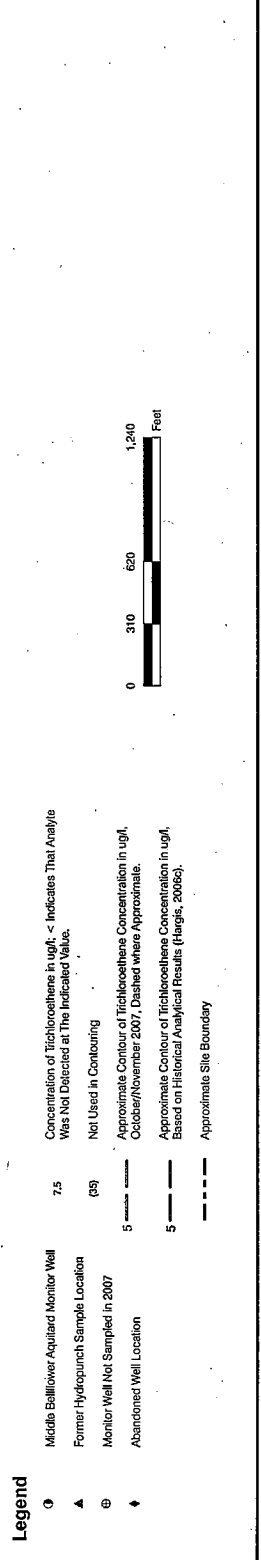


FIGURE 4
TRICHLOROETHENE
MIDDLE BELFLOWER AQUITARD
OCTOBER/NOVEMBER 2007
 BOEING FORMER C-1 FACILITY
 LONG BEACH, CALIFORNIA



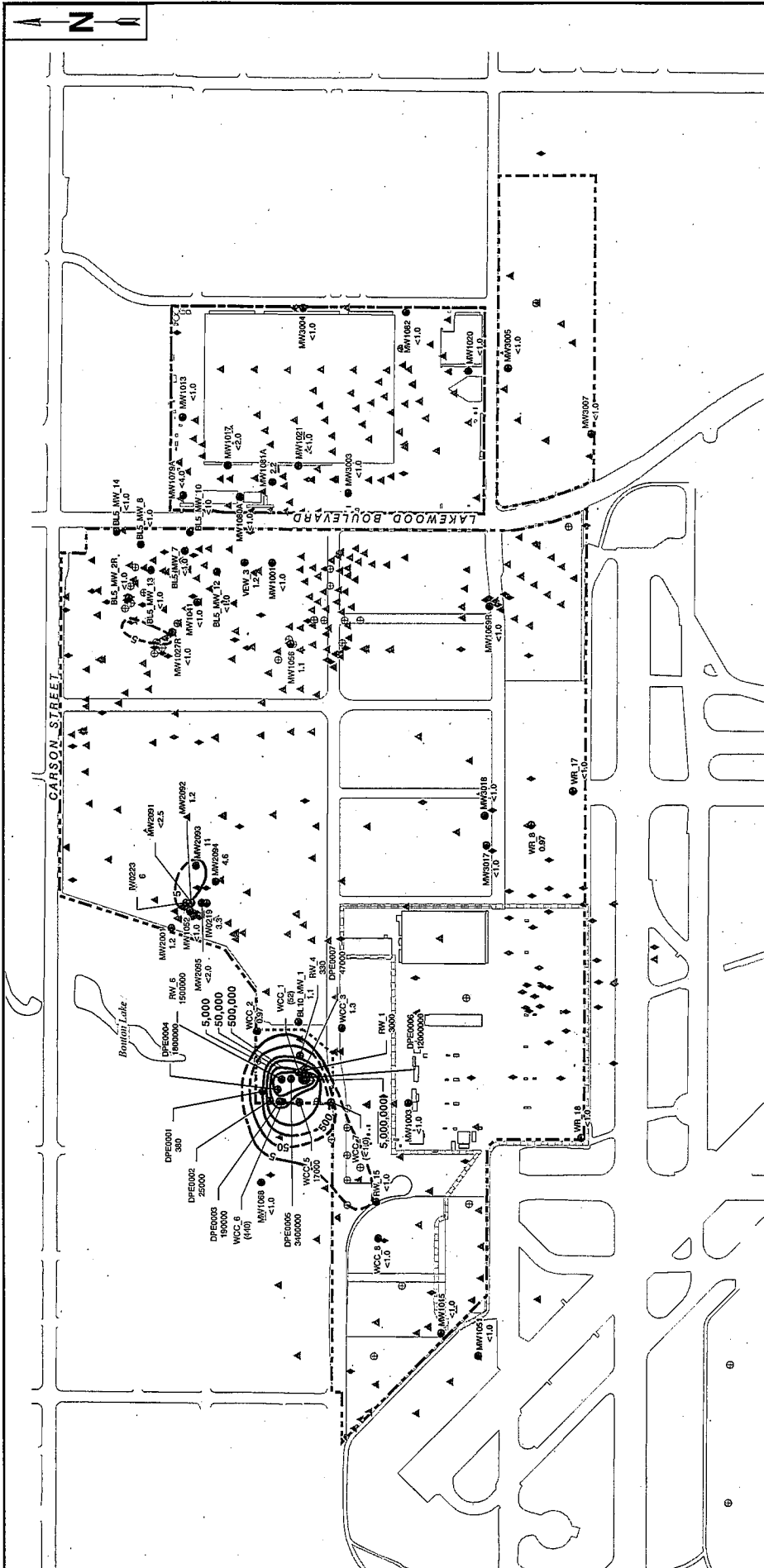
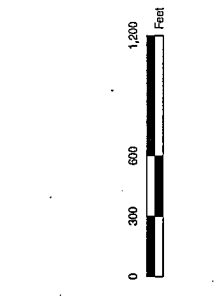


FIGURE 5
METHYLENE CHLORIDE
WATER TABLE
OCTOBER/NOVEMBER 2007
 BOEING FORMER C-1 FACILITY
 LONG BEACH, CALIFORNIA



- Legend**
- Water Table Monitor Well
 - ▲ Former Hydroponch Sample Location
 - ⊕ Monitor Well Not Sampled in 2007
 - ⬇ Abandoned Well Location
 - 1.3 Concentration of Methylene Chloride in ug/l. < indicates That Analyte Was Not Detected at The Indicated Value.
 - (440) Not Used in Contouring
 - 5 - - - - - Approximate Contour of Methylene Chloride Concentration in ug/l. October/November 2007, Dashed where Approximate.
 - 5 - - - - - Approximate Contour of Methylene Chloride Concentration in ug/l. Based on Historical Analytical Records (Plugs, 2006).
 - - - - - Approximate Site Boundary

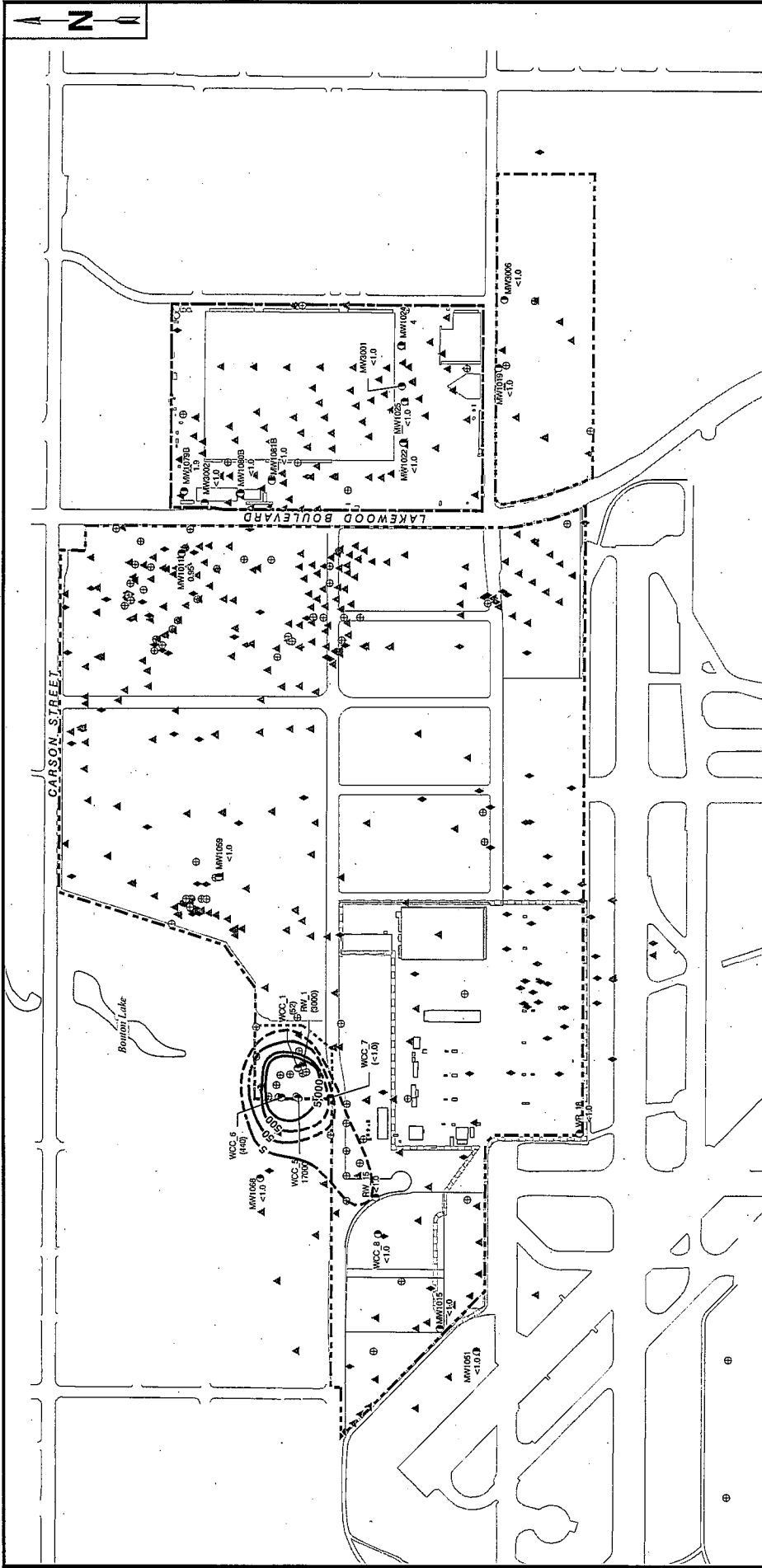


FIGURE 6
METHYLENE CHLORIDE
MIDDLE BELLFLOWER AQUITARD
OCTOBER/NOVEMBER 2007
 BOEING FORMER C-1 FACILITY
 LONG BEACH, CALIFORNIA



Legend

- Middle Bellflower Aquitard Monitor Well
- ▲ Former Hydroponic Sample Location
- ⊕ Monitor Well Not Sampled in 2007
- ◆ Abandoned Well Location

○ <1.0 Concentration of Methylene Chloride in ug/l, < Indicates That Analyte Was Not Detected at The Indicated Value.

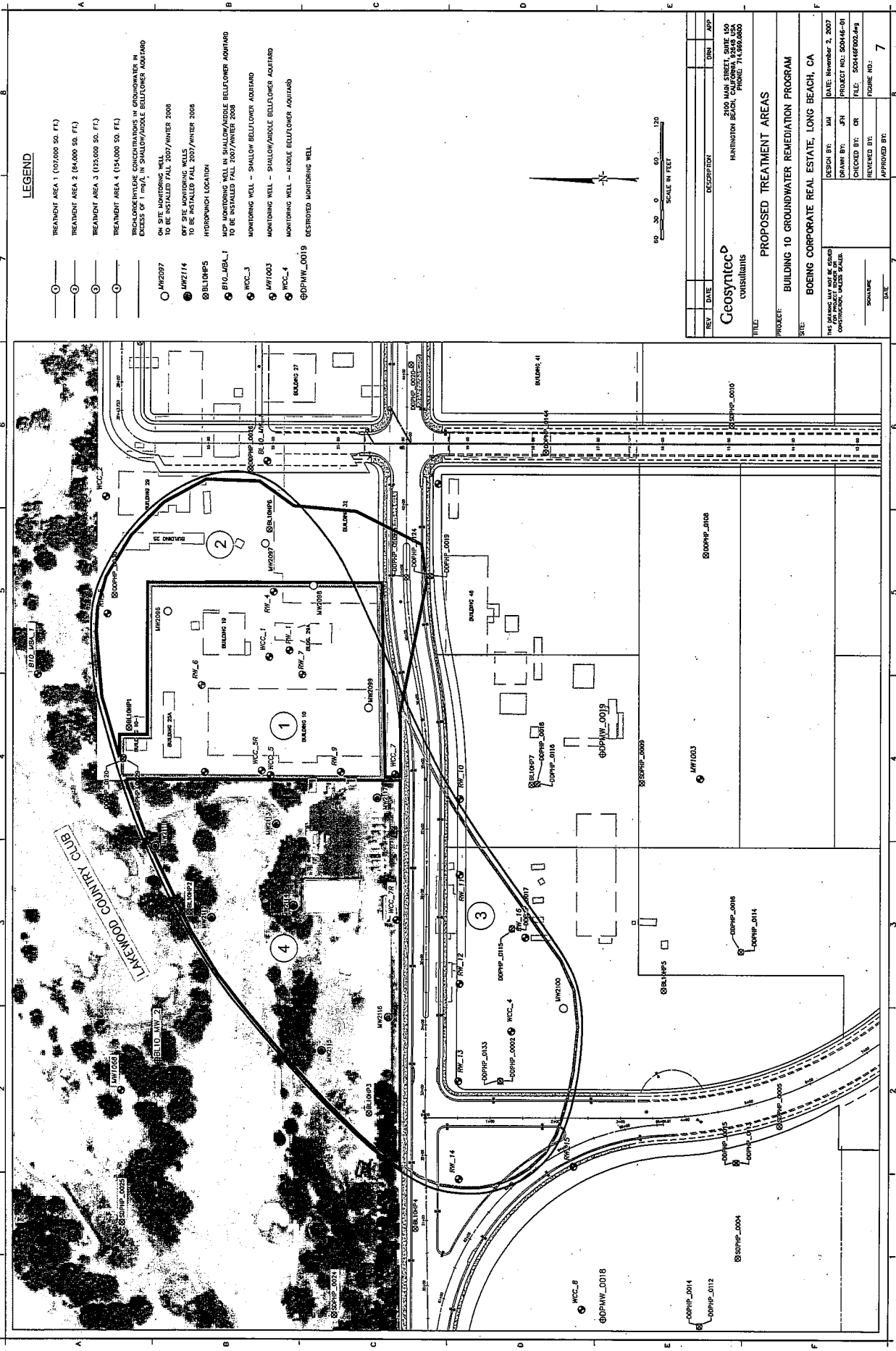
(440) Not Used in Contouring

5 --- Approximate Contour of Methylene Chloride Concentration in ug/l, October/November 2007. Dashed where Approximate.

5 --- Approximate Contour of Methylene Chloride Concentration in ug/l, Based on Historical Analytical Results (Parags, 2006c).

--- Approximate Site Boundary

0 300 600 1,200 Feet



LEGEND

- TREATMENT AREA 1 (107,000 SQ. FT.)
- TREATMENT AREA 2 (84,000 SQ. FT.)
- TREATMENT AREA 3 (135,000 SQ. FT.)
- TREATMENT AREA 4 (134,000 SQ. FT.)

TRICHLOROETHYLENE CONCENTRATIONS IN GROUNDWATER IN EXCESS OF 1 mg/L IN SHALLOW/MIDDLE BELLOFLOWER AQUIFARD TO BE INSTALLED FALL 2007/WINTER 2008

OFF SITE MONITORING WELLS TO BE INSTALLED FALL 2007/WINTER 2008

HYDROPANEL LOCATION

NEW MONITORING WELLS IN SHALLOW/MIDDLE BELLOFLOWER AQUIFARD TO BE INSTALLED FALL 2007/WINTER 2008

MONITORING WELL - SHALLOW/MIDDLE BELLOFLOWER AQUIFARD

MONITORING WELL - SHALLOW/MIDDLE BELLOFLOWER AQUIFARD

MONITORING WELL - MIDDLE BELLOFLOWER AQUIFARD

DESTROYED MONITORING WELL

- MW2097
- MW2114
- BLO10P5
- BLO10B1
- WCC_3
- MW1003
- WCC_4
- SPP10W_0019



REV.	DATE	DESCRIPTION	DRN.	ZPP

Geosyntec
consultants

2100 MAIN STREET, SUITE 150
HUNTINGTON BEACH, CALIFORNIA 92648-3000
PHONE: 714.962.0800

PROPOSED TREATMENT AREAS

PROJECT: BUILDING 10 GROUNDWATER REMEDIATION PROGRAM

SITE: BOEING CORPORATE REAL ESTATE, LONG BEACH, CA

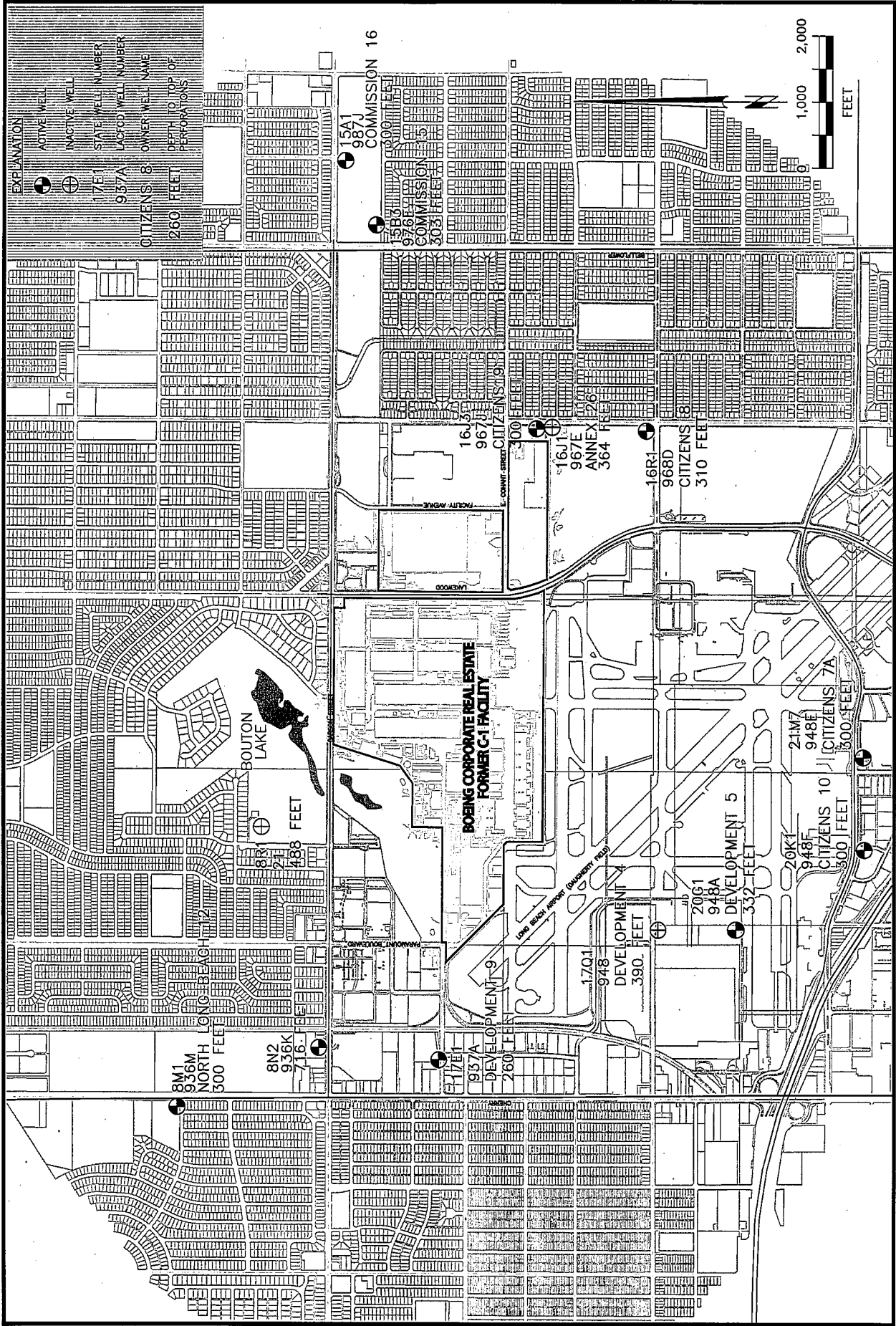
DESIGN BY: JMH DATE: November 2, 2007

DRAWN BY: JPH PROJECT NO.: 500416-01

CHECKED BY: CR FILE: 500416/002.dwg

REVIEWED BY: DATE: 11/02/07

APPROVED BY: FIGURE NO.: 7



05/02 RPT NO. 766.53 410-3657 D

FIGURE 8. WATER SUPPLY WELLS WITHIN APPROXIMATELY 1 MILE OF THE FORMER C-1 FACILITY

HARGIS + ASSOCIATES, INC.
Hydrogeology/Engineering



STANDARD PROVISIONS
APPLICABLE TO WASTE DISCHARGE REQUIREMENTS

1. DUTY TO COMPLY

The discharger must comply with all conditions of these waste discharge requirements. A responsible party has been designated in the Order for this project, and is legally bound to maintain the monitoring program and permit. Violations may result in enforcement actions, including Regional Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Regional Board. [CWC Section 13261, 13263, 13265, 13268, 13300, 13301, 13304, 13340, 13350]

2. GENERAL PROHIBITION

Neither the treatment nor the discharge of waste shall create a pollution, contamination or nuisance, as defined by Section 13050 of the California Water Code (CWC). [H&SC Section 5411, CWC Section 13263]

3. AVAILABILITY

A copy of these waste discharge requirements shall be maintained at the discharge facility and be available at all times to operating personnel. [CWC Section 13263]

4. CHANGE IN OWNERSHIP

The discharger must notify the Executive Officer, in writing at least 30 days in advance of any proposed transfer of this Order's responsibility and coverage to a new discharger containing a specific date for the transfer of this Order's responsibility and coverage between the current discharger and the new discharger. This agreement shall include an acknowledgement that the existing discharger is liable for violations up to the transfer date and that the new discharger is liable from the transfer date on. [CWC Sections 13267 and 13263]

5. CHANGE IN DISCHARGE

In the event of a material change in the character, location, or volume of a discharge, the discharger shall file with this Regional Board a new Report of Waste Discharge. [CWC Section 13260(c)]. A material change includes, but is not limited to, the following:

- (a) Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the Waste.

November 7, 1990
WDR

Standard Provisions Applicable to
Waste Discharge Requirements

- (b) Significant change in disposal method, e.g., change from a land disposal to a direct discharge to water, or change in the method of treatment which would significantly alter the characteristics of the waste.
- (c) Significant change in the disposal area, e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area potentially causing different water quality or nuisance problems.
- (d) Increase in flow beyond that specified in the waste discharge requirements.
- (e) Increase in the area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements. [CCR Title 23 Section 2210]

6. REVISION

These waste discharge requirements are subject to review and revision by the Regional Board. [CCR Section 13263]

7. TERMINATION

Where the discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge or submitted incorrect information in a Report of Waste Discharge or in any report to the Regional Board, it shall promptly submit such facts or information. [CWC Sections 13260 and 13267]

8. VESTED RIGHTS

This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, do not protect the discharger from his liability under Federal, State or local laws, nor do they create a vested right for the discharger to continue the waste discharge. [CWC Section 13263(g)]

9. SEVERABILITY

Provisions of these waste discharge requirements are severable. If any provision of these requirements are found invalid, the remainder of the requirements shall not be affected. [CWC Section 921]

Standard Provisions Applicable to
Waste Discharge Requirements

10. OPERATION AND MAINTENANCE

The discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Order. [CWC Section 13263(f)]

11. HAZARDOUS RELEASES

Except for a discharge which is in compliance with these waste discharge requirements, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (a) that person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to Article 3.7 (commencing with Section 8574.7) of Chapter 7 of Division 1 of Title 2 of the Government Code, and immediately notify the State Board or the appropriate Regional Board of the discharge. This provision does not require reporting of any discharge of less than a reportable quantity as provided for under subdivisions (f) and (g) of Section 13271 of the Water Code unless the discharger is in violation of a prohibition in the applicable Water Quality Control plan. [CWC Section 1327(a)]

12. PETROLEUM RELEASES

Except for a discharge which is in compliance with these waste discharge requirements, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (a) such person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State oil spill contingency plan adopted pursuant to Article 3.5 (commencing with Section 8574.1) of Chapter 7 of Division 1 of Title 2 of the Government Code. This provision does not require reporting of any discharge of less than 42 gallons unless the discharge is also required to be reported pursuant to Section 311 of the Clean Water Act or the discharge is in violation of a prohibition in the applicable Water Quality Control Plan. [CWC Section 13272]

Standard Provisions Applicable to
Waste Discharge Requirements

13. ENTRY AND INSPECTION

The discharger shall allow the Regional Board, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:

- (a) Enter upon the discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order;
- (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;
- (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- (d) Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order, or as otherwise authorized by the California Water Code, any substances or parameters at any location. [CWC Section 13267]

14. MONITORING PROGRAM AND DEVICES

The discharger shall furnish, under penalty of perjury, technical monitoring program reports; such reports shall be submitted in accordance with specifications prepared by the Executive Officer, which specifications are subject to periodic revisions as may be warranted. [CWC Section 13267]

All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices. Annually, the discharger shall submit to the Executive Office a written statement, signed by a registered professional engineer, certifying that all flow measurement devices have been calibrated and will reliably achieve the accuracy required.

Unless otherwise permitted by the Regional Board Executive officer, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. The Regional Board Executive Officer may allow use of an uncertified laboratory under exceptional circumstances, such as when the closest laboratory to the monitoring location is outside the State boundaries and therefore not subject to certification. All analyses shall be required to be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants" [40CFR Part 136] promulgated by the U.S. Environmental Protection Agency. [CCR Title 23, Section 2230]

Standard Provisions Applicable to
Waste Discharge Requirements

15. TREATMENT FAILURE

In an enforcement action, it shall not be a defense for the discharger that it would have been necessary to halt or to reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the discharger shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of the treatment facility fails, is reduced, or is lost. [CWC Section 13263(f)]

16. DISCHARGE TO NAVIGABLE WATERS

Any person discharging or proposing to discharge to navigable waters from a point source (except for discharge of dredged or fill material subject to Section 404 of the Clean Water Act and discharge subject to a general NPDES permit) must file an NPDES permit application with the Regional Board. [CCR Title 2 Section 22357]

17. ENDANGERMENT TO HEALTH AND ENVIRONMENT

The discharger shall report any noncompliance which may endanger health or the environment. Any such information shall be provided verbally to the Executive Officer within 24 hours from the time the discharger becomes aware of the circumstances. A written submission shall also be provided within five days of the time the discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. The following occurrence(s) must be reported to the Executive Office within 24 hours:

- (a) Any bypass from any portion of the treatment facility.
- (b) Any discharge of treated or untreated wastewater resulting from sewer line breaks, obstruction, surcharge or any other circumstances.
- (c) Any treatment plan upset which causes the effluent limitation of this Order to be exceeded. [CWC Sections 13263 and 13267]

18. MAINTENANCE OF RECORDS

The discharger shall retain records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies off all reports required by this Order, and record of all data used

Standard Provisions Applicable to
Waste Discharge Requirements

to complete the application for this Order. Records shall be maintained for a minimum of three years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board Executive Officer.

Records of monitoring information shall include:

- (a) The date, exact place, and time of sampling or measurement;
 - (b) The individual(s) who performed the sampling or measurement;
 - (c) The date(s) analyses were performed;
 - (d) The individual(s) who performed the analyses;
 - (e) The analytical techniques or method used; and
 - (f) The results of such analyses.
19. (a) All application reports or information to be submitted to the Executive Office shall be signed and certified as follows:
- (1) For a corporation – by a principal executive officer or at least the level of vice president.
 - (2) For a partnership or sole proprietorship – by a general partner or the proprietor, respectively.
 - (3) For a municipality, state, federal, or other public agency – by either a principal executive officer or ranking elected official.
- (b) A duly authorized representative of a person designated in paragraph (a) of this provision may sign documents if:
- (1) The authorization is made in writing by a person described in paragraph (a) of this provision.
 - (2) The authorization specifies either an individual or position having responsibility for the overall operation of the regulated facility or activity; and
 - (3) The written authorization is submitted to the Executive Officer.

Any person signing a document under this Section shall make the following certification:

Standard Provisions Applicable to
Waste Discharge Requirements

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. [CWC Sections 13263, 13267, and 13268]"

20. OPERATOR CERTIFICATION

Supervisors and operators of municipal wastewater treatment plants and privately owned facilities regulated by the PUC, used in the treatment or reclamation of sewage and industrial waste shall possess a certificate of appropriate grade in accordance with Title 23, California Code of Regulations Section 3680. State Boards may accept experience in lieu of qualification training. In lieu of a properly certified wastewater treatment plant operator, the State Board may approve use of a water treatment plan operator of appropriate grade certified by the State Department of Health Services where reclamation is involved.

Each plan shall be operated and maintained in accordance with the operation and maintenance manual prepared by the municipality through the Clean Water Grant Program [CWC Title 23, Section 2233(d)]

ADDITIONAL PROVISIONS APPLICABLE TO
PUBLICLY OWNED TREATMENT WORKS' ADEQUATE CAPACITY

21. Whenever a publicly owned wastewater treatment plant will reach capacity within four years the discharger shall notify the Regional Board. A copy of such notification shall be sent to appropriate local elected officials, local permitting agencies and the press. The discharger must demonstrate that adequate steps are being taken to address the capacity problem. The discharger shall submit a technical report to the Regional Board showing flow volumes will be prevented from exceeding capacity, or how capacity will be increased, within 120 days after providing notification to the Regional Board, or within 120 days after receipt of notification from the Regional Board, of a finding that the treatment plant will reach capacity within four years. The time for filing the required technical report may be extended by the Regional Board. An extension of 30 days may be granted by the Executive Officer, and longer extensions may be granted by the Regional Board itself. [CCR Title 23, Section 2232]

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

MONITORING AND REPORTING PROGRAM NO. CI-9423
FOR
BOEING CORPORATE REAL ESTATE
BUILDING 10 AREA, FORMER C-1 FACILITY
LONG BEACH, CALIFORNIA

(CLEANUP AND ABATEMENT ORDER 95-048, FILE NO. 95-034)

The Discharger shall implement this monitoring and reporting program (MPR) on the effective date of this Order.

1. GROUNDWATER MONITORING PROGRAM

It is anticipated that injection activities will be initiated in the third quarter (Q3) of 2008. The groundwater monitoring programs for full scale in situ chemical oxidation (ISCO) and enhanced in situ bioremediation (EISB) have been synchronized. Details related to each individual program are provided in the sections below.

A. In Situ Chemical Oxidation (ISCO)

The field test of ISCO using modified Fenton's reagent was started in the first quarter (Q1) of 2008. MRP No. CI-9358 will be integrated into this permit. The following sections contain the sampling programs for the field test program and the full scale application of ISCO, respectively.

i. Field Test Program

The following groundwater monitor wells and temporary groundwater sampling points were included in the sampling program:

Group A: RW_4, RW_7, TS03, TS04, TS05, TS06
Group B: DTS03, DTS04, DTS05, DTS06
Group C: MW2096, MW2099, WCC_5R

Figures 1 and 2 show the location of the Site. Groundwater monitoring wells located at the Site are shown in Figure 3. Figure 3 also shows the locations of the field test plots within the Site boundaries and relative to the target contaminant distribution. The field test is being conducted in Plots 2 and 3 based on the results from baseline characterization.

Group A monitoring locations are located within the field test plots and are screened within the Shallow and Middle Bellflower aquitards, spanning the target injection interval. There are six Group A monitoring locations, consisting of one existing well and two temporary sampling screens within each field test plot. Group A monitors will be used to evaluate the consumption and distribution of the modified Fenton's reagent and to assess the effects of ISCO application on

VOC concentrations. The temporary screens (TS03, TS04, TS05 and TS06) will be installed prior to baseline sampling and will remain in place throughout the field test injections and follow-up sampling events. Group B monitors are also located within the proposed field test plots; these will be temporary groundwater samples (i.e., grab samples) collected from the Deep Bellflower aquitard. Group B monitors will be one-time locations where groundwater samples will be collected using direct-push techniques. Group B wells will be used to assess the potential for vertical movement of the amended reagents or reaction byproducts. The three Group C locations are monitoring wells located outside of the field test plots that are screened across the Shallow and Middle Bellflower aquitards. Group C wells are not considered to be in the treatment area, and therefore, are not expected to see the effects of amendment addition. Group C wells will be used to assess background conditions.

Groundwater samples will be collected from the Group A monitoring locations prior to injection (Baseline), following each injection event (Months 1, 2 and 3), and approximately three months after the final injection event (Month 6). Thus, Group A samples will be collected on an approximately monthly basis (for a total of three months) during the ISCO treatment field test, and then in a follow-up event (the 'quarterly' or Month 6 event) roughly three months after the third injection event. Group B and Group C monitor locations will be sampled prior to injection (Baseline) and approximately three months after the final injection event (Month 6). Collected groundwater samples will be analyzed for field parameters (groundwater elevation, pH, dissolved oxygen, oxidation-reduction potential, specific conductance, temperature, and turbidity), chlorinated volatile organic compounds (VOCs), anions, metals and total dissolved solids (TDS). The required constituents to be analyzed and the monitoring schedule for each sample group for the field test are shown below.

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS
Total Daily Injections	Liters (L)	Measurement	Per injection
Groundwater Elevation	feet below ground surface (ft bgs)	In situ	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
pH	pH units	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Dissolved Oxygen	milligrams per liter (mg/L)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Oxidation-Reduction Potential	millivolts (mV)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Specific Conductance	microSiemens per centimeter ($\mu\text{S}/\text{cm}$)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Temperature	degrees Celsius ($^{\circ}\text{C}$)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Turbidity	Nephelometric turbidity units (NTU)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Anions (chloride, sulfate, nitrate and nitrite)	milligrams per liter (mg/L)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Metals (arsenic, total & hexavalent chromium, iron, lead and manganese)	micrograms per liter ($\mu\text{g}/\text{L}$)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Total Dissolved Solids	milligrams per liter (mg/L)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly
Volatile Organic Compounds	micrograms per liter ($\mu\text{g}/\text{L}$)	Grab	Group A: Baseline, 3 Monthly and 1 Quarterly Groups B & C: Baseline and 1 Quarterly

ii. Full Scale Program

The following groundwater wells will be included in the full scale ISCO sampling program:

Group A: MW2098, MW2099, RW_6, WCC_1, WCC_5R, WCC_6

Group B: MW2097, MW2114, MW2119, RW_10

Group C: D_1, D_2, MW1012, MW2102, MW2118

Figures 1 and 2 show the location of the Site. Groundwater monitoring wells located at the Site are shown in Figure 4. The proposed area for ISCO application is treatment area 1 is also shown on Figure 4. WDR monitoring of the target injection interval will be performed using existing wells within the treatment area; these are collectively referred to as Group A monitoring locations. Group A sampling points are monitoring wells located within the treatment area that are screened across the Shallow and Middle Bellflower aquitards. The Group A monitoring locations would be expected to reflect changes indicative of remedial activities and these locations will also be used for performance assessment of the ISCO application. Group B

monitoring locations are located upgradient and downgradient of the proposed treatment area; these wells are screened in the Shallow and/or Middle Bellflower aquitards, with screens that span the target injection interval. Group B wells are not considered to be in the treatment area, and therefore, are not expected to see the effects of amendment addition. The Group C monitoring locations are existing groundwater monitoring wells screened across the Deep Bellflower aquitard, the hydrogeologic unit below the target treatment interval. Group C wells will be used to assess vertical movement of the donor.

All of the wells that are listed for the ISCO full scale program are also included as part of the EISB monitoring program (see below). Upon completion of the ISCO program it is anticipated that EISB will be applied to treatment area 1 and therefore, the EISB monitoring program will capture both programs on a moving forward basis.

The required constituents to be analyzed and the monitoring schedule for each sample group are shown below.

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS
Total Daily Injections	Liters (L)	Measurement	Per injection
Groundwater Elevation	feet below ground surface (ft bgs)	In situ	Group A: Baseline, 1 Quarterly, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
pH	pH units	Grab	Group A: Baseline, 1 Quarterly, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
Dissolved Oxygen	milligrams per liter (mg/L)	Grab	Group A: Baseline, 1 Quarterly, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
Oxidation-Reduction Potential	millivolts (mV)	Grab	Group A: Baseline, 1 Quarterly, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
Specific Conductance	microSiemens per centimeter (μ S/cm)	Grab	Group A: Baseline, 1 Quarterly, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
Temperature	degrees Celsius ($^{\circ}$ C)	Grab	Group A: Baseline, 1 Quarterly, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
Turbidity	Nephelometric turbidity units (NTU)	Grab	Group A: Baseline, 1 Quarterly, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
VOC	micrograms per liter (μ g/L)	Grab	Group A: Baseline, 1 Quarterly, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
Anions (chloride, sulfate and nitrate)	milligrams per liter (mg/L)	Grab	Group A: Baseline, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
Metals (arsenic, total & hexavalent chromium, iron, lead and manganese)	micrograms per liter (μ g/L)	Grab	Group A: Baseline, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual
Total Dissolved Solids	micrograms per liter (μ g/L)	Grab	Group A: Baseline, 1 Semi-Annual, 1 Annual Group B: Baseline, 1 Semi-Annual, 1 Annual Group C: Baseline, 1 Annual

B. Enhanced In Situ Bioremediation (EISB)

The following groundwater wells will be included in the EISB sampling program:

- Group A: MW2096, MW2097, MW2098, MW2099, MW2100, MW2111, MW2112, MW2113, MW2114, MW2115, MW2116, MW2117, RW_5, RW_6, RW_12, RW_14, RW_16, WCC_1, WCC_5R, WCC_6, WCC_7R
- Group B: MW1068, MW2119, RW_10, RW_15, WCC_3
- Group C: D_1, D_2, MW1012, MW2102, MW2118, MW2122, MW2126

Figures 1 and 2 show the location of the Site. Groundwater monitoring wells located at the Site are shown in Figure 4. Group A sampling points are monitoring wells located within the treatment area that are screened across the Shallow and Middle Bellflower aquitards. Group A wells will be used to evaluate the consumption and distribution of the electron donor. The Group B sampling points are monitoring wells located outside of the treatment area that are screened across the Shallow and Middle Bellflower aquitards. Group B wells are not considered to be in the treatment area, and therefore, are not expected to see the effects of amendment addition. Group B wells will be used to assess background conditions. Group C sampling points are monitoring wells that are screened across the Deep Bellflower aquitard. Group C wells will be used to assess vertical movement of the donor.

Groundwater samples will be collected once from the Group A, B and C monitoring wells prior to injection (baseline). Upon completion of treatment, groundwater samples will be collected from the Group A monitor wells quarterly, semi-annually, annually and biannually. Collected groundwater samples will be analyzed for field parameters (groundwater elevation, pH, dissolved oxygen, oxidation-reduction potential, specific conductance, temperature, and turbidity), chlorinated VOCs, dissolved hydrocarbon gases (DHGs), total organic carbon (TOC) and TDS. The required constituents to be analyzed and the monitoring schedule for each sample group are shown below.

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS
Total Daily Injections	Liters (L)	Measurement	Per injection
Groundwater Elevation	feet below ground surface (ft bgs)	In situ	Group A: Baseline, 2 Quarterly, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline, 3 Annual & 2 Bi-Annual
pH	pH units	Grab	Group A: Baseline, 2 Quarterly, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline, 3 Annual & 2 Bi-Annual
Dissolved Oxygen	milligrams per liter (mg/L)	Grab	Group A: Baseline, 2 Quarterly, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline, 3 Annual & 2 Bi-Annual
Oxidation-Reduction Potential	millivolts (mV)	Grab	Group A: Baseline, 2 Quarterly, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline, 3 Annual & 2 Bi-Annual
Specific Conductance	microSiemens per centimeter (μ S/cm)	Grab	Group A: Baseline, 2 Quarterly, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline, 3 Annual & 2 Bi-Annual
Temperature	degrees Celsius ($^{\circ}$ C)	Grab	Group A: Baseline, 2 Quarterly, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline, 3 Annual & 2 Bi-Annual
Turbidity	Nephelometric turbidity units (NTU)	Grab	Group A: Baseline, 2 Quarterly, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline, 3 Annual & 2 Bi-Annual
VOC	micrograms per liter (μ g/L)	Grab	Group A: Baseline, 2 Quarterly, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline, 3 Annual & 2 Bi-Annual
DHGs	milligrams per liter (mg/L)	Grab	Group A: Baseline, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline & 2 Bi-Annual
TOC	milligrams per liter (mg/L)	Grab	Group A: Baseline, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline & 2 Bi-Annual
Anions (chloride, sulfate and nitrate)	milligrams per liter (mg/L)	Grab	Group A: Baseline & 2 Bi-Annual Group B: Baseline & 2 Bi-Annual Group C: Baseline & 2 Bi-Annual
Metals (arsenic, chromium, iron, lead and manganese)	micrograms per liter (μ g/L)	Grab	Group A: Baseline & 2 Bi-Annual Group B: Baseline & 2 Bi-Annual Group C: Baseline & 2 Bi-Annual
Total Sulfide	micrograms per liter (μ g/L)	Grab	Group A: Baseline & 2 Bi-Annual
TDS	micrograms per liter (μ g/L)	Grab	Group A: Baseline, 3 Semi-Annual, 3 Annual & 2 Bi-Annual Group B: Baseline, 3 Annual & 2 Bi-Annual Group C: Baseline & 2 Bi-Annual
<i>Dehalococcoides</i> or Vinyl Chloride Reductase (VCR)	presence or absence	Grab	Group A: Baseline, 3 Annual* & 2 Bi-Annual*

Notes:

* Only half of the Group A wells will be analyzed for DHC/VCR; wells to be determined

2. AMENDMENT INJECTION REPORTING REQUIREMENTS

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

- a. Depth of injection points;
- b. Quantity of amendment injected and dates injected; and
- c. Total amount of amendment injected.

3. GROUNDWATER MONITORING REPORTING REQUIREMENTS

Groundwater monitoring reports must include, at a minimum, the following:

- a. Well identification, date and time of sampling;
- b. Sampler identification and laboratory identification; and
- c. Routine observation of groundwater elevation levels, recorded to 0.01 feet above mean sea level (ft amsl) and groundwater flow direction.

The Discharger is required to submit an installation report following the end of injections, which will include baseline laboratory data, as well as the ISCO and EISB injection data. Subsequent MRP reports will include data collected during the semi-annual and annual sampling events. The groundwater monitoring wells will be gauged and sampled as outlined in Section 1, and results will be reported to the California Regional Water Quality Control Board, Los Angeles Region (RWQCBLA) under the MRP for the Individual Waste Discharge Requirements according to the following schedule:

Reporting Period	Sampling Month(s)	Report Due Date
January – April 2008*	Baseline: After wells installed prior to amendment injection. Post-Injection: 10-to-15 days after each injection event (approximately monthly from start of field test)	May 30, 2008
May – June 2008*	June 2008 (Field test follow-up sampling)	August 29, 2008
June – October 2008 (Baseline – ISCO and EISB)	June – October 2008**	December 1, 2008
January – March 2009	February 2009**	May 29, 2009
April – June 2009	May 2009	August 31, 2009
July – September 2009	August 2009**	November 30, 2009
October – December 2009	November 2009	March 31, 2010
January – June 2010	May 2010	August 31, 2010
July – December 2010	November 2010	March 31, 2011
January – December 2011	November 2011	March 30, 2012
January – December 2012	November 2012	March 29, 2013

Notes:

* Part of ISCO Field Test program

** Sample event for Full Scale ISCO as well as EISB, all others EISB

The Discharger shall submit reports detailing the results of the remediation. The reports should include a discussion of the use of emulsified vegetable oil and KB-1[®] to treat VOC-contaminated groundwater at the Site. The Discharger is required to submit the following reports pursuant to their respective due dates:

Report	Due Dates
Preliminary ISCO Field Test Report (Baseline, Monthly Post-Injection Monitoring of ISCO Field Test)	May 30, 2008
Final Status Report (ISCO Field Test Injection Activities)	August 29, 2008
Installation Report (ISCO Full Scale Injection Activities)	March 30, 2009
Installation Report (Baseline sampling event and injections EISB)	June 30, 2009
Annual Report (Four from 2009 to 2012)	May 1
Final Report	May 1, 2013

If there is no discharge or injection during the reporting period, the report shall so state. Groundwater monitoring reports must be addressed to the RWQCBLA, 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.

4. 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)

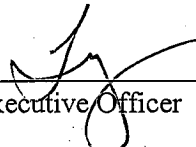
(Title)"

5. 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.

These records and reports are public documents and shall be made available for inspection during normal business hours at the office of the California Regional Water Quality Control Board, Los Angeles Region.

Ordered by:



Executive Officer

Date: June 5, 2008

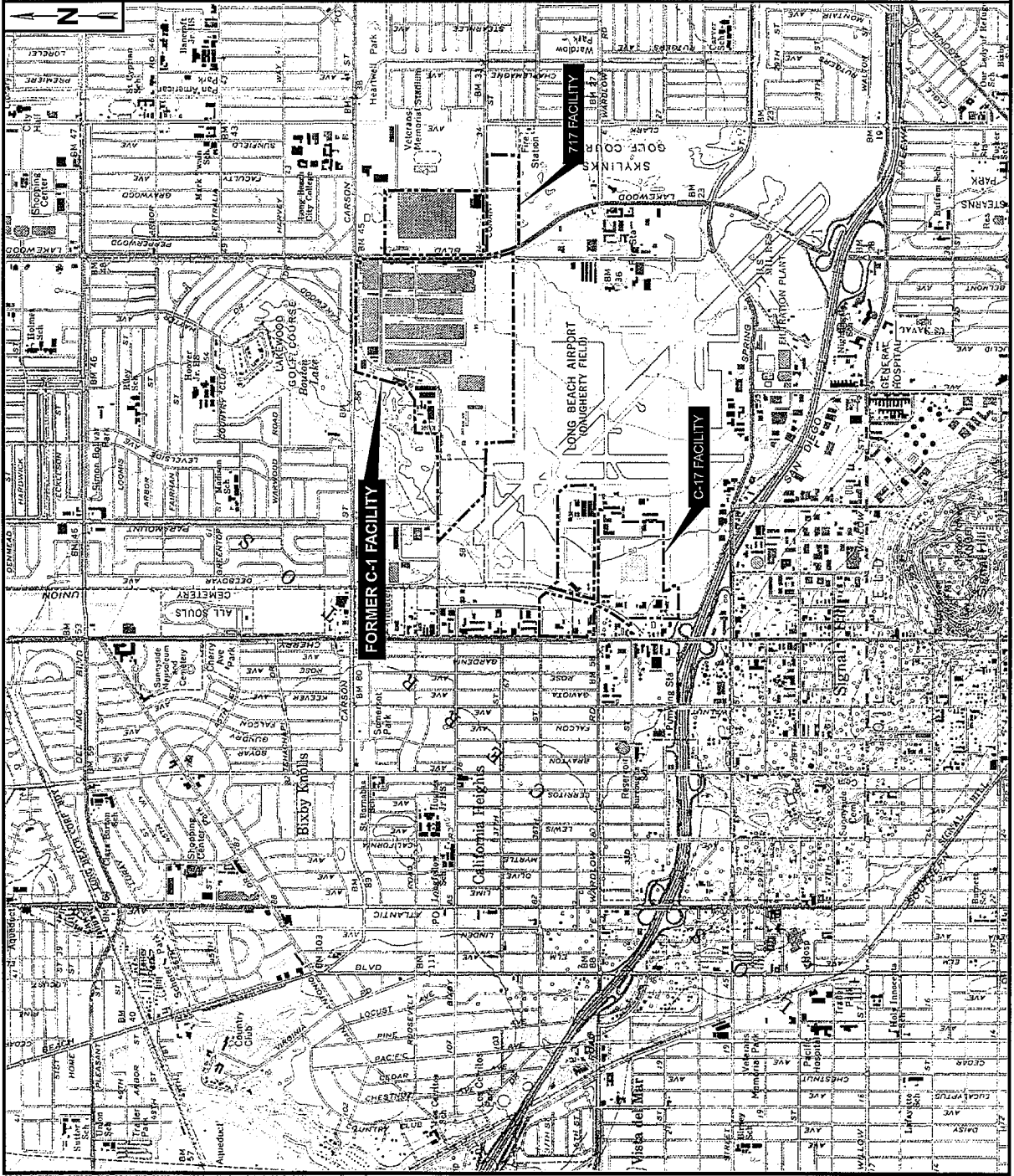


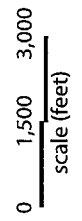
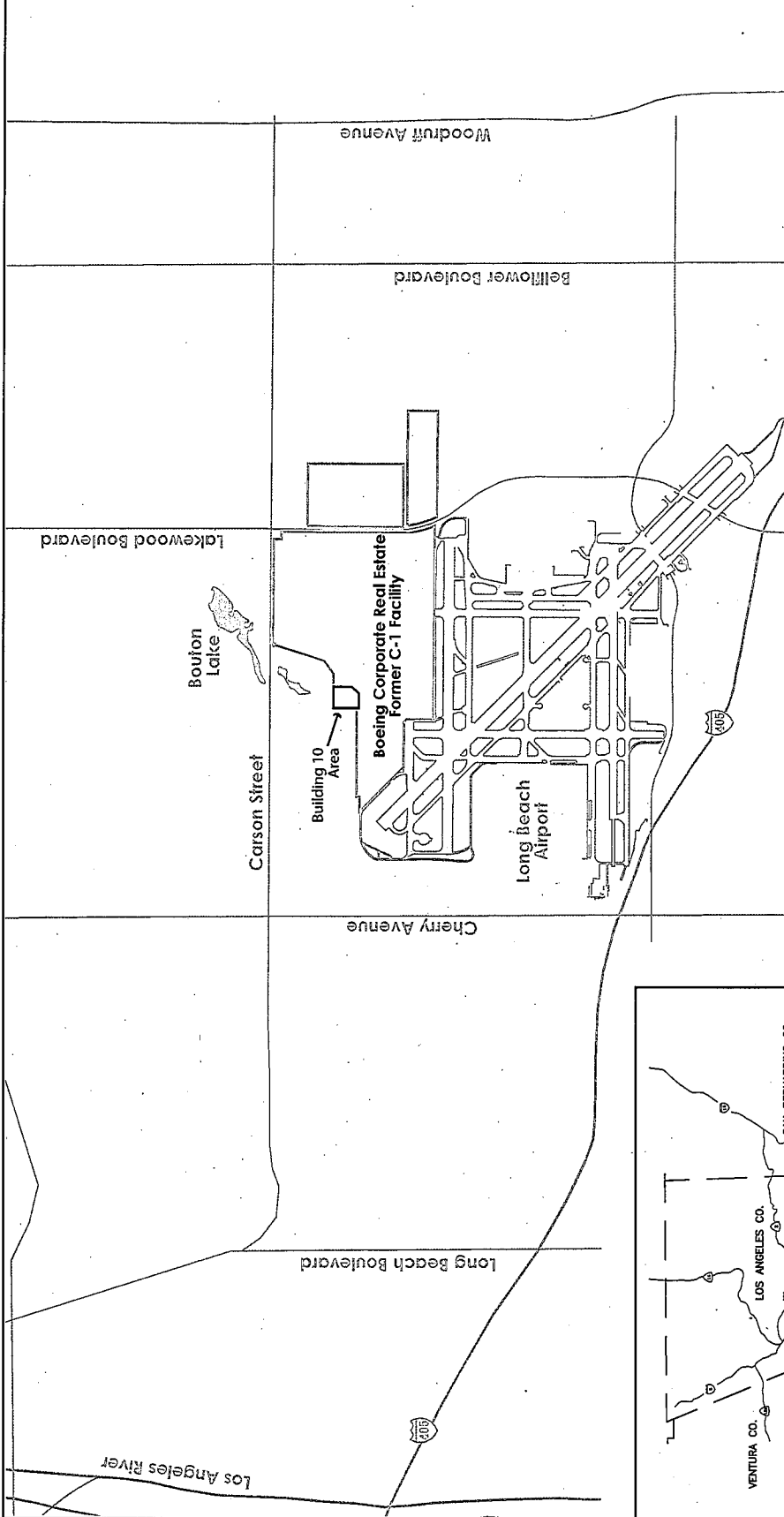
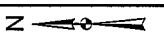
FIGURE 1

SITE LOCATION MAP

BOEING FORMER C-1 FACILITY
LONG BEACH, CALIFORNIA

AVOCET
ENVIRONMENTAL, INC.

Y1145 Boeing C11145.005 Groundwater Monitoring 007 1145.005 Site-Wide Site Location Map.dwg/10/80

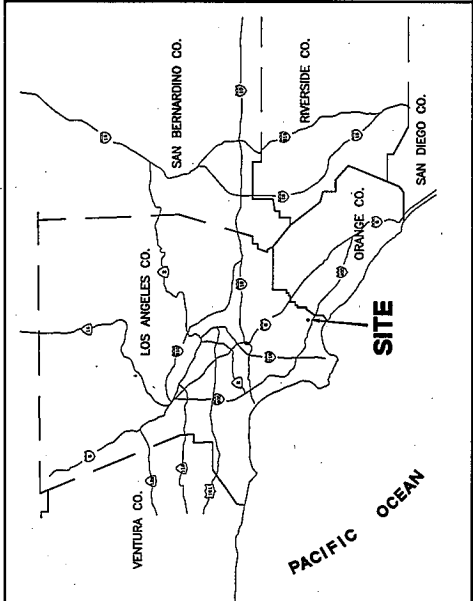


Facility Map Showing Building 10 Area
 Building 10, Former C-1 Facility, Boeing Corporate Real Estate,
 Long Beach, California

Geosyntec
 consultants

Figure
2

Guelph 21-Nov-2007



LEGEND

TREATMENT AREA 1 (107,000 SQ. FT.)

METHYLENE CHLORIDE CONCENTRATIONS (u/v) IN SHALLOW BELTLOWER AQUIFARD GROUNDWATER (OCTOBER 2008)

METHYLENE CHLORIDE CONCENTRATIONS (u/v) IN MIDDLE BELTLOWER AQUIFARD GROUNDWATER (OCTOBER 2008)

TETRACHLOROETHYLENE CONCENTRATIONS IN GROUNDWATER IN EXCESS OF 1 mg/L IN SHALLOW/MIDDLE BELTLOWER AQUIFARD

HYDROFRANCH LOCATION

EXISTING OR PLANNED MONITORING WELL

1500 FIELD TEST PLOT 2

1500 FIELD TEST PLOT 3

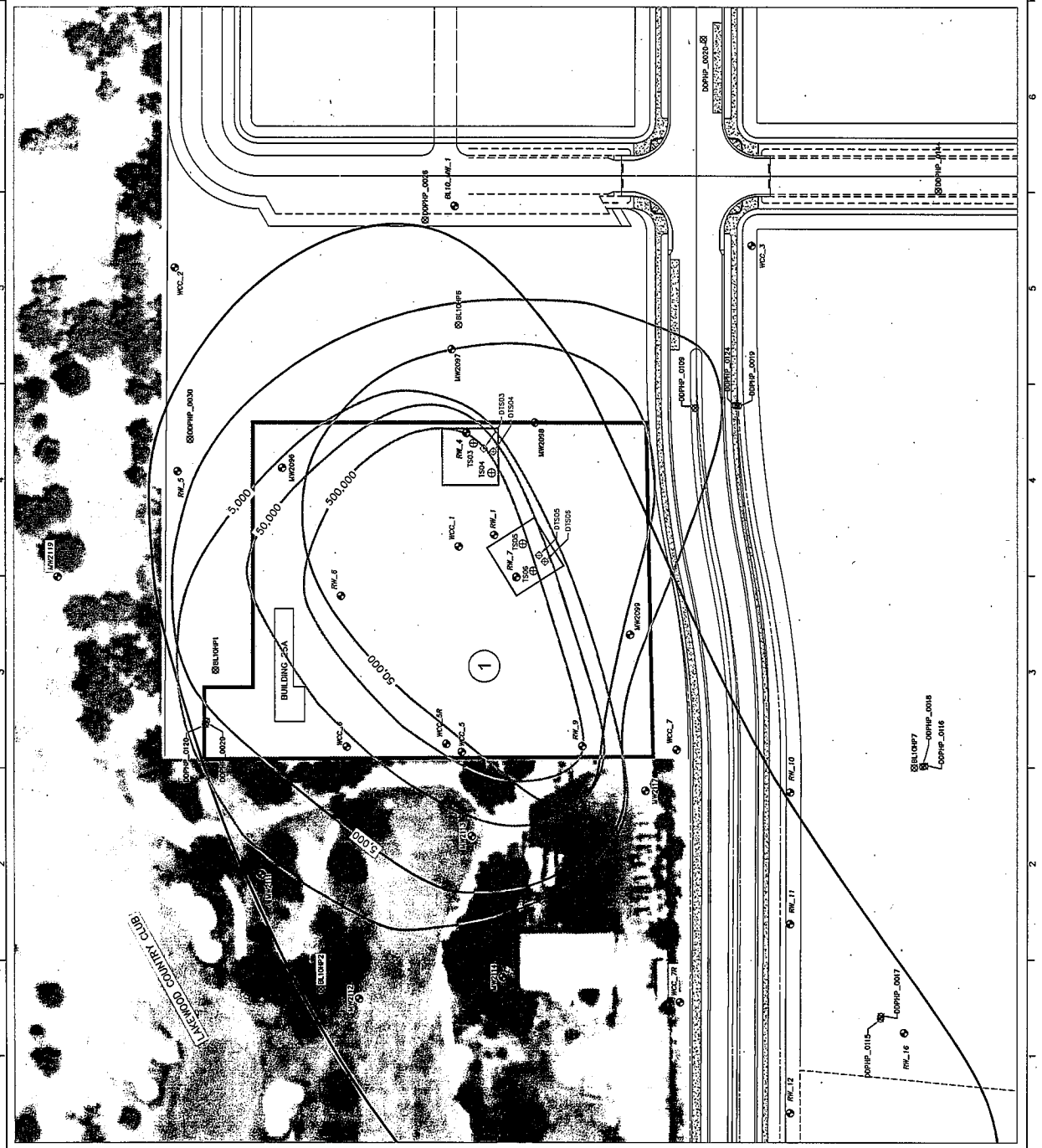
TEMPORARY GROUNDWATER SAMPLING SCREEN (LOCATION APPROXIMATE)

HYDROFRANCH GAS SAMPLE (GSA) (LOCATION APPROXIMATE)

WELL MONITORING LOCATIONS FOR FIELD TESTS:

GROUP A
GROUP B
GROUP C

SCALE IN FEET
0 20 40 80



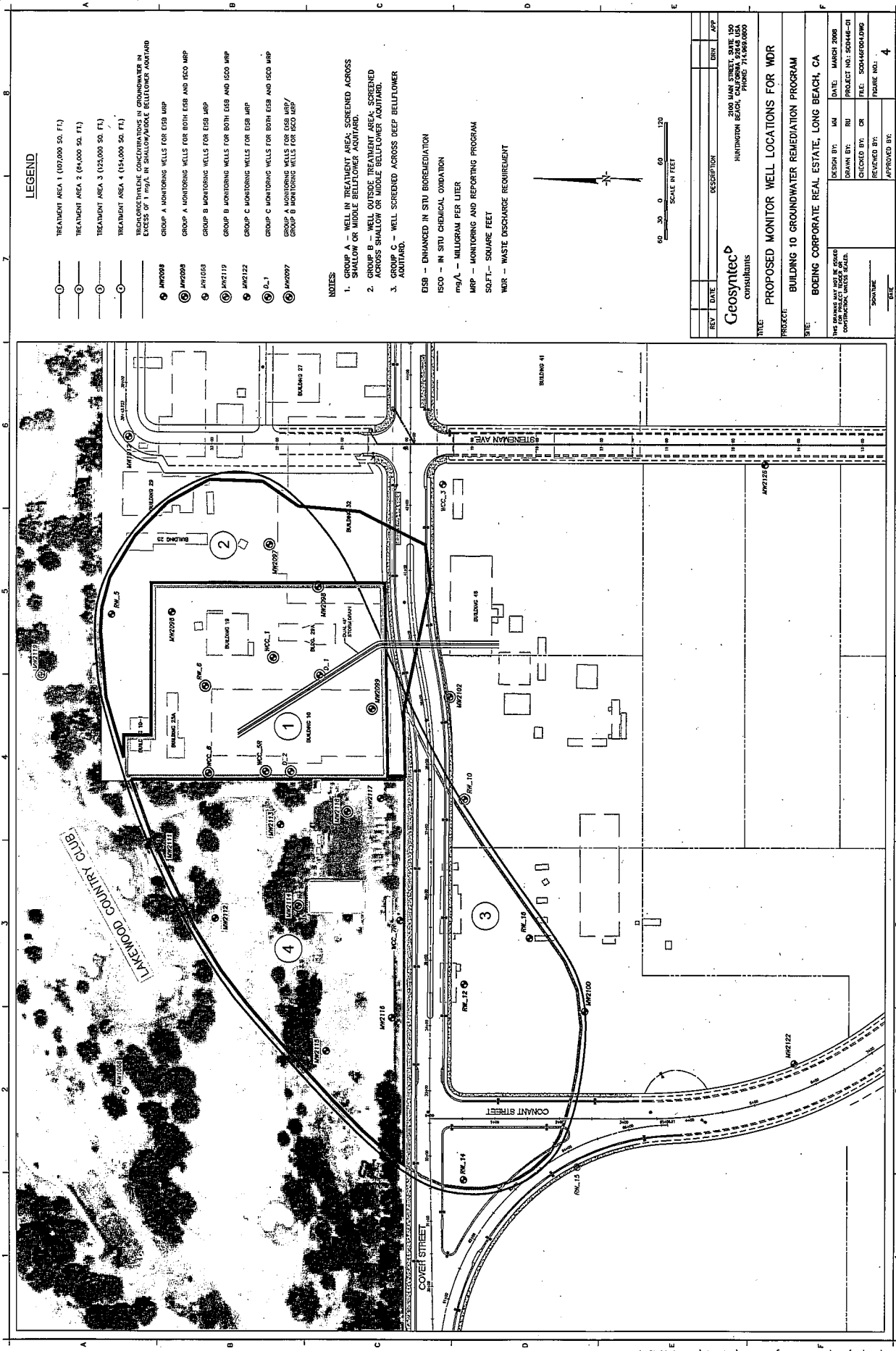
REV.	DATE	DESCRIPTION	DRN	APP.

Geosyntec
 consultants
 2100 MAIN STREET, SUITE 150
 HUNTINGTON BEACH, CALIFORNIA 92648 USA
 PHONE: 714.960.0800

TITLE: TREATMENT AREA 1 AND ISCO FIELD TEST PLOTS
 PROJECT: BUILDING 10 GROUNDWATER REMEDIATION PROGRAM
 SITE: BOEING CORPORATE REAL ESTATE, LONG BEACH, CA

THIS DRAWING MAY NOT BE USED FOR PROJECTS OTHER THAN THE PROJECT AND SITE IDENTIFIED HEREON.

DESIGN BY: MAH	DATE: March 2008
DRAWN BY: JPH	PROJECT NO.: 505346-01
CHECKED BY: CR	FILE: 505346.F003.dwg
REVIEWED BY:	FIGURE NO.: 3
APPROVED BY:	DATE:



LEGEND

- TREATMENT AREA 1 (107,000 SQ. FT.)
- TREATMENT AREA 2 (84,000 SQ. FT.)
- TREATMENT AREA 3 (123,000 SQ. FT.)
- TREATMENT AREA 4 (154,000 SQ. FT.)

- ① MW2098
- ② MW2098
- ③ MW1658
- ④ MW2119
- ⑤ MW2122
- ⑥ MW1
- ⑦ MW2097

NOTES

1. GROUP A - WELL IN TREATMENT AREA, SCREENED ACROSS SHALLOW OR MIDDLE BELLEFLOWER AQUIFARD.
2. GROUP B - WELL OUTSIDE TREATMENT AREA, SCREENED ACROSS SHALLOW OR MIDDLE BELLEFLOWER AQUIFARD.
3. GROUP C - WELL SCREENED ACROSS DEEP BELLEFLOWER AQUIFARD.

- ESB - ENHANCED IN SITU BIOREMEDIATION
- ISCO - IN SITU CHEMICAL OXIDATION
- mg/L - MILLIGRAM PER LITER
- MRP - MONITORING AND REPORTING PROGRAM
- SOFT - SQUARE FEET
- WDR - WASTE DISCHARGE REQUIREMENT



REV	DATE	DESCRIPTION	DRN	APP

Geosyntec
consultants

2100 MAR STREET, SUITE 100
HUNTINGTON BEACH, CALIFORNIA 92648 USA
PHONE 714.960.0800

TITLE PROPOSED MONITOR WELL LOCATIONS FOR WDR

PROJECT BUILDING 10 GROUNDWATER REMEDIATION PROGRAM

SITE BOEING CORPORATE REAL ESTATE, LONG BEACH, CA

THIS DRAWING MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.

DESIGN BY: MSA DATE: MARCH 2008
 DRAWN BY: RU PROJECT NO.: 500446-01
 CHECKED BY: CR FILE: 500446/00/01.DWG
 REVIEWED BY: APPROVED BY: FIGURE NO.: 4