CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

November 29, 2017

Mr. David Curnock
United Technologies Corporation
EH&S 9FS – MS101
9 Farm Springs Road
Farmington, CT 06032

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. 7016 0750 0000 3359 6998

REVISED MONITORING AND REPORTING PROGRAM NO. 9535 – UNITED TECHNOLOGIES CORPORATION CANOGA AVENUE FACILITY (FORMERLY PRATT & WHITNEY – ROCKETDYNE FACILITY), 6633 CANOGA AVENUE, CANOGA PARK, CALIFORNIA 91303 (FILE NO. 83-008, CI-9535, ORDER NO. R4-2014-0187, SERIES NO. 041, GLOBAL ID WDR100024520)

Dear Mr. Curnock:

On September 10, 2015, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board), enrolled you under general Waste Discharge Requirements Order No. R4-2014-0187 (WDR Order No. R4-2014-0187) with Monitoring and Reporting Program (MRP) No. CI-9535, for the injection of emulsified vegetable oil and *Dehalococcoides* (DHC) mixture. Injection ended in December 2015.

On October 6, 2017, Haley & Aldrich, Inc., submitted the October 3, 2017, *Notification of Continued Enhanced In-Situ Bioremediation Under General Waste Discharge Requirements Order No. R4-2014-0187, (Series No. 041), File No. 83-008, and Modification of Existing Monitoring and Reporting Program (MRP) No. CI-9535* (Notification), on behalf of United Technologies Corporation (UTI). The Notification was submitted to the Regional Board following the Regional Board's Site Cleanup Program's October 5, 2017, approval of your September 15, 2017, *Supplemental Work Plan for Enhanced In-Situ Bioremediation of Groundwater* (Work Plan).

The Work Plan provides details of the planned resumption of in-situ groundwater bioremediation, using the amendments Hydrogen Release Compound Primer® (HRC Primer®), 3-D Microemulsion® (3DME®), and DHC culture. Similar amendments were previously used successfully at the site. HRC Primer® is a mobile, controlled release lactic acid source, 3DME® is a controlled release source of lactic acid and fatty acids, DHC is a mixture of microorganisms capable of dehalogenating halogenated volatile organic compounds (HVOC) in groundwater. The materials released by the amendments are approved for use under WDR No. R4-2014-0187.

The Work Plan indicates more than one amendment injection event may be required to meet remedial goals. The first event will occur in 2018. This cover letter and the attached revised monitoring and reporting program address this first planned amendment injection event only. The first planned injection event will use wells and direct-push tools, and target HVOC in three aquifer zones. The zones are identified as the Upper Sand Zone (30 to 45 feet below grade [bg]), the Intermediate Sand Zone (50 to 65 feet bg), and the Deep Sand Zone (70 to 95 feet bg). There will be six injection locations (2 wells & 4 direct pushes) in the Shallow Sand Zone, 112 (16 wells & 96 direct pushes) in the Intermediate Sand Zone, and 74 (15 wells & 59 direct pushes) in the Deep Sand Zone.

The Work Plan and associated documents and emails describe the first phase of plume-wide amendment injection, planned for 2018, as approximately 1,373 gallons (gals) of 60% HRC Primer 11,938 gals of 60% 3DME solution, and 19,330 gals of DHC in water mixture, mixed with sufficient make up water to produce approximately 170,000 gals of 5% 3DME solution. The Work Plan notes that if these initial estimated amendment volumes do not reduce HVOC concentrations to the remedial goals, there will be additional injection events. If the additional injection events are needed, the Regional Board will address them when specifics of those injections are known and provided to the Regional Board.

The injection rate for the wells and direct-push points will be no more than 25 gallons per minute. The maximum injection pressures will be no more than 60 pounds per square inch (psi) for the injection wells and 250 psi for the injection points. The injection will take approximately 12 weeks.

Regional Board staff have reviewed the Work Plan, information in our files, and related emails, and have determined that the proposed discharge modification meets the conditions specified in WDR Order No. R4-2014-0187. For the injection proposed for 2018, you shall implement revised MRP No. CI-9535 (attached), with a maximum discharge (injection volume) of 200,000 gals if 5% 3DME solution is used, or 600,000 gals if 2% solution is used. Should changes to the discharge be needed, revised engineering drawings showing the changes must be filed with the Regional Board a minimum of 30 days prior to the changes. The Discharger must receive approval from the Regional Board for such changes prior to implementation.

The Discharger shall comply with the Electronic Submittal of Information (ESI) requirements by submitting all reports required under the MRP, including groundwater monitoring data, discharge location data, and pdf monitoring reports to the State Water Resources Control Board GeoTracker database under Global ID WDR100024520.

Please see Electronic Submittal for GeoTracker Users, dated December 12, 2011 at:
http://www.waterboards.ca.gov/losangeles/resources/Paperless/Paperless%20Office%20for%20GT%20Users.pdf

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

If you have any questions, please contact the Project Manager, Mr. Peter Raftery at (213) 620-6156 (peter.raftery@waterboards.ca.gov) or the Groundwater Permitting Unit Chief, Dr. Eric Wu at (213) 576-6683 (eric.wu@waterboards.ca.gov).

Sincerely,

Samuel Unger, P.E.
Executive Officer

Enclosure:
1) Revised Monitoring and Reporting Program No. CI-9535

cc: Mr. Tom Tatnall, Haley & Aldrich, Inc.
Ms. Paula Panzino, Haley & Aldrich, Inc.

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

REVISED MONITORING AND REPORTING PROGRAM NO. CI-9535
FOR
ENHANCED IN-SITU BIOREMEDIATION OF GROUNDWATER

UNITED TECHNOLOGIES CORPORATION
CANOGA AVENUE FACILITY
6633 CANOGA AVENUE
CANOGA PARK, CALIFORNIA

ENROLLMENT UNDER REGIONAL BOARD
ORDER NO. R4-2014-0187 (SERIES NO. 041)
FILE NO. 83-008

I. REPORTING REQUIREMENTS

A. United Technologies Corporation (hereinafter Discharger) shall implement this revised Monitoring and Reporting Program (MRP) at the Canoga Avenue Facility located at 6633 Canoga Avenue, Canoga Park, California, the location of which is shown on Figures 1 and 2, on the effective date of this enrollment (November 29, 2017) under Regional Board Order No. R4-2014-0187. The first quarterly monitoring report under this monitoring program is due by January 30, 2018. The first annual summary report under this monitoring program is due by January 31, 2018.

Monitoring Period	Report Due
January – March	April 30
April – June	July 30
July – September	October 30
October – December	January 30

B. If there is no discharge of Hydrogen Release Compound Primer® (HRC Primer®), 3-D Microemulsion® (3DME®), or *Dehalococcoides* (DHC) mixture during any reporting period, the report shall so state.

C. By January 31st of each year, beginning January 31, 2018, the Discharger shall submit an annual summary report to the Regional Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. In addition, the Discharger shall discuss the compliance record and the corrective actions taken, or planned, which may be needed to bring the discharge into full compliance with the waste discharge requirements.

Revised November 29, 2017
Revised November 29, 2016
Revised September 10, 2015
Revised December 11, 2013
Revised September 30, 2011
August 31, 2009

D. Laboratory analyses – all chemical, bacteriological, and/or toxicity analyses shall be conducted at a laboratory certified for such analyses by the State Water Resources Control Board, Division of Drinking Water (SWRCB-DDW) Environmental Laboratory Accreditation Program (ELAP). A copy of the laboratory certifications shall be provided each time a new analysis is used and/or renewal is obtained from ELAP.

E. The method limits (MLs) employed for analyses shall be lower than the permit limits established for a given parameter, unless the Discharger can demonstrate that a particular ML is not attainable and obtains approval for a higher ML from the Executive Officer. At least once a year, the Discharger shall submit a list of the analytical methods employed for each test and the associated laboratory quality assurance/quality control (QA/QC) procedures.

F. All QA/QC samples must be run on the same dates when samples were actually analyzed. The Discharger shall make available for inspection and/or submit the QA/QC documentation upon request by Regional Board staff. Proper chain of custody procedures must be followed and a copy of the chain of custody documentation shall be submitted with the report.

G. Each monitoring report must affirm in writing that "All analyses were conducted at a laboratory certified for such analyses by the SWRCB-DDW ELAP, and in accordance with current United States Environmental Protection Agency (USEPA) guideline procedures or as specified in this Monitoring Program." Proper chain of custody procedures must be followed and a copy of the completed chain of custody form shall be submitted with the report.

H. For every item where the requirements are not met, the Discharger shall submit a statement of the cause(s), and actions undertaken or proposed which will bring the discharge into full compliance with waste discharge requirements at the earliest possible time, including a timetable for implementation of those actions.

I. The Discharger shall maintain all sampling and analytical results, including strip charts, date, exact place, and time of sampling, dates analyses were performed, analyst's name, analytical techniques used, and results of all analyses. Such records shall be retained for a minimum of 3 years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.

J. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized to demonstrate compliance with the requirements and, where applicable, shall include results of receiving water observations.

K. Any mitigation/remedial activity including any pre-discharge treatment conducted at the site must be reported in the quarterly monitoring report.

L. Each monitoring report shall contain a separate section titled "Summary of Non-Compliance" which discusses the compliance record and the corrective actions taken or planned that may be needed to bring the discharge into full compliance with Waste Discharge Requirements (WDRs). This section shall be located at the front of the report and shall clearly list all non-compliance with discharge requirements, as well as all excursions of effluent limitations.

M. The Discharger shall comply with requirements contained in Section G of Order No. R4-2014-0187 "*Monitoring and Reporting Requirements*" in addition to the aforementioned requirements.

II. INJECTION MONITORING REQUIREMENTS

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

- Location map showing injection wells/points.
- Written and tabular summary defining depth of injection wells/points, quantity and concentration of amendment solution injected at each injection location.
- Visual inspection at each injection point shall be conducted and recorded during injection.

III. GROUNDWATER MONITORING PROGRAM

The groundwater monitoring program shall be designed to detect and evaluate impacts associated with the amendment injection and in-situ groundwater remediation. The monitoring program shall assess the: (i) performance of the in-situ groundwater remediation by sampling monitoring wells located upgradient and within the anticipated in-situ groundwater remediation area and (ii) potential downgradient impacts associated with the in-situ groundwater remediation activities by sampling downgradient performance monitoring wells. Given these monitoring objectives, the following groundwater wells (Figures 3, 4 and 5) shall be included in the monitoring program:

- Upper Sand Zone wells: B-81U, B-83U (upgradient), and B-99U.
- Intermediate Sand Zone wells: B-83I (upgradient), B-99I, B-102I, B-104I, and B-107I (to be installed).
- Deep Sand Zone wells: B-83D (upgradient), B-84D1, B-99D, B-102D, and 107D (to be installed).

The quarterly reports shall contain the following information regarding the groundwater monitoring activities:

- Location map showing injection wells/points and monitoring wells.

- Visual inspection at each injection and monitoring well shall be conducted (during regularly scheduled monitoring) to evaluate the integrity of the well casing and street box. The progress reports shall include a summary of the visual inspection.

The following shall constitute the Monitoring and Reporting Program for groundwater monitoring wells identified above. Table 1, below, identifies the constituents that shall be analyzed during the baseline sampling event prior to injection and subsequent groundwater monitoring events for the purpose of evaluating the effectiveness of the injections. These sampling stations shall not be changed and any proposed change of monitoring locations shall be identified and approved by the Regional Board Executive Officer (Executive Officer) prior to their use.

TABLE 1 – GROUNDWATER MONITORING CONSTITUENTS

CONSTITUENT	UNITS [1]	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS
Water Temperature [2]	°C/°F	Grab	Baseline prior to injection and quarterly thereafter
Specific Conductance [2]	µS/cm	Grab	Baseline prior to injection and quarterly thereafter
pH [2]	pH units	Grab	Baseline prior to injection and quarterly thereafter
Oxidation-Reduction Potential [2]	mV	Grab	Baseline prior to injection and quarterly thereafter
Turbidity[2]	NTU	Grab	Baseline prior to injection and quarterly thereafter
Volatile Organic Compounds(VOCs) complete suite	µg/L	Grab	Baseline prior to injection and quarterly thereafter
Sulfate	mg/L	Grab	Baseline prior to injection and quarterly thereafter
Chloride	mg/L	Grab	Baseline prior to injection and quarterly thereafter
Total Dissolved Solids	mg/L	Grab	Baseline prior to injection and quarterly thereafter
Boron	mg/L	Grab	Baseline prior to injection and quarterly thereafter
Nitrate	mg/L	Grab	Baseline prior to injection and quarterly thereafter
Alkalinity	mg/L	Grab	Baseline prior to injection and quarterly thereafter
Total Organic Carbon	mg/L	Grab	Baseline prior to injection and quarterly thereafter
Dissolved Gases (ethene, ethane, methane)	µg/L	Grab	Baseline prior to injection and quarterly thereafter
Dehalococcoides species [3]	cells/mL	Grab	Baseline prior to injection and quarterly thereafter

[1] mg/L: milligrams per liter; µg/L: micrograms per liter; µS/cm: microsiemens per centimeter; mV: millivolts; °C: degrees Celsius; °F: degree Fahrenheit; mL: milliliter
[2] Field instrument can be used to test for this constituent.
[3] Upgradient wells (B-83U, B-83I, and B-83D) are exempt from *Dehalococcoides* analyses

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

- Well identification, date and time of sampling.
- Sampler identification and laboratory identification.
- Quarterly observation of groundwater levels, recorded to 0.01 feet mean sea level and groundwater flow direction.

II. 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.

III. CERTIFICATION STATEMENT

Each report shall contain the following 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)

IV. ELECTRONIC SUBMITTAL OF INFORMATION (ESI) TO GEOTRACKER

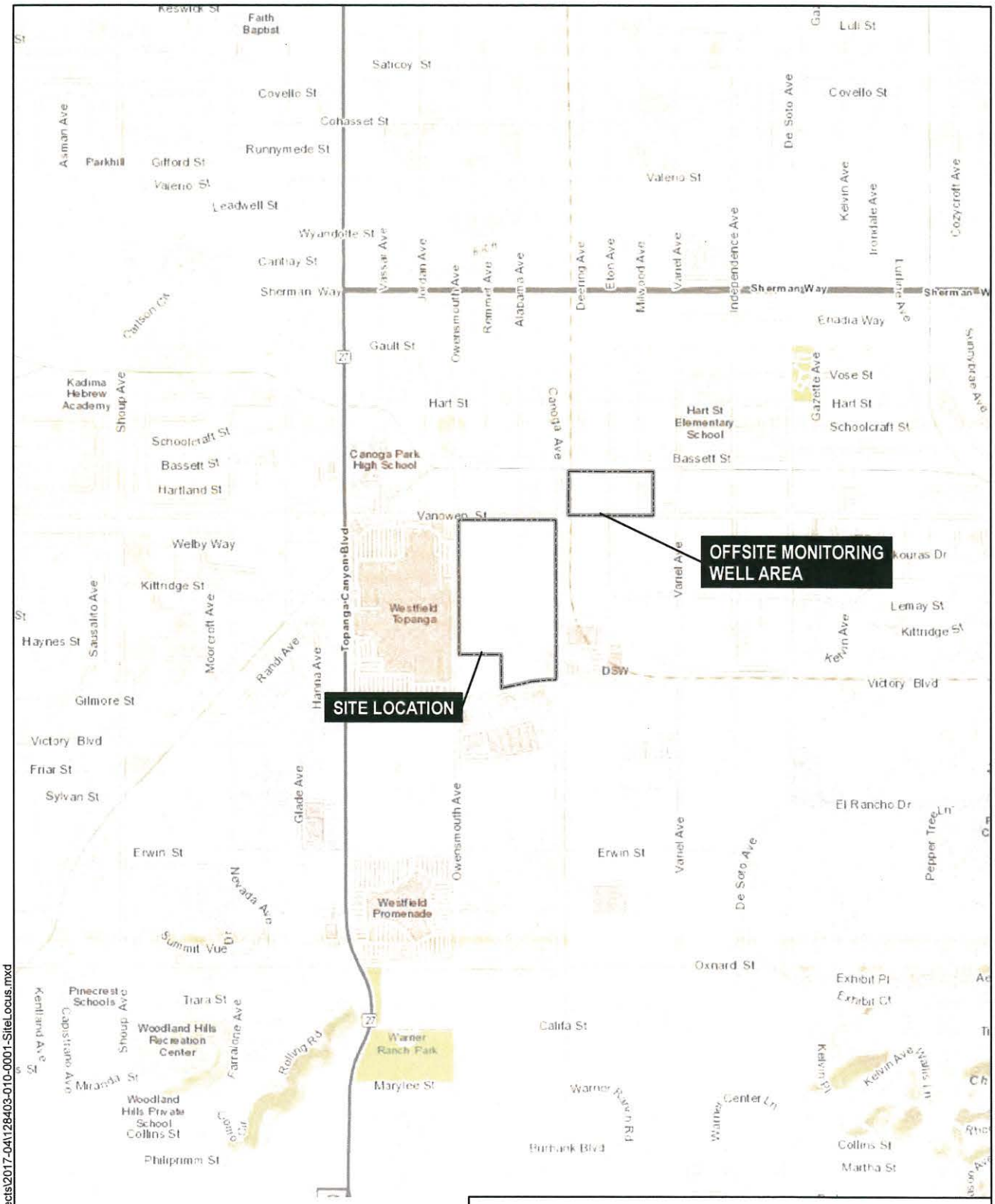
The Discharger shall comply with the Electronic Submittal of information (ESI) requirements by submitting all reports required under the MRP, including groundwater monitoring data, discharge location data, correspondence, and pdf monitoring reports to the State Water Resources Control Board GeoTracker database under Global ID WDR100024520.

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

Ordered by: Samuel Unger

Samuel Unger, P.E.
Executive Officer

Date: November 29, 2017



MAP SOURCE: ESRI SITE COORDINATES : 34°11'28.65"N,118°35'58.12"W

HALEY ALDRICH

UNITED TECHNOLOGIES CORPORATION
CANOGA AVENUE FACILITY
6633 CANOGA AVENUE
CANOGA PARK, CALIFORNIA

SITE LOCUS

APPROXIMATE SCALE: 1 IN = 2,000 FT
OCTOBER 2017

FIGURE 1

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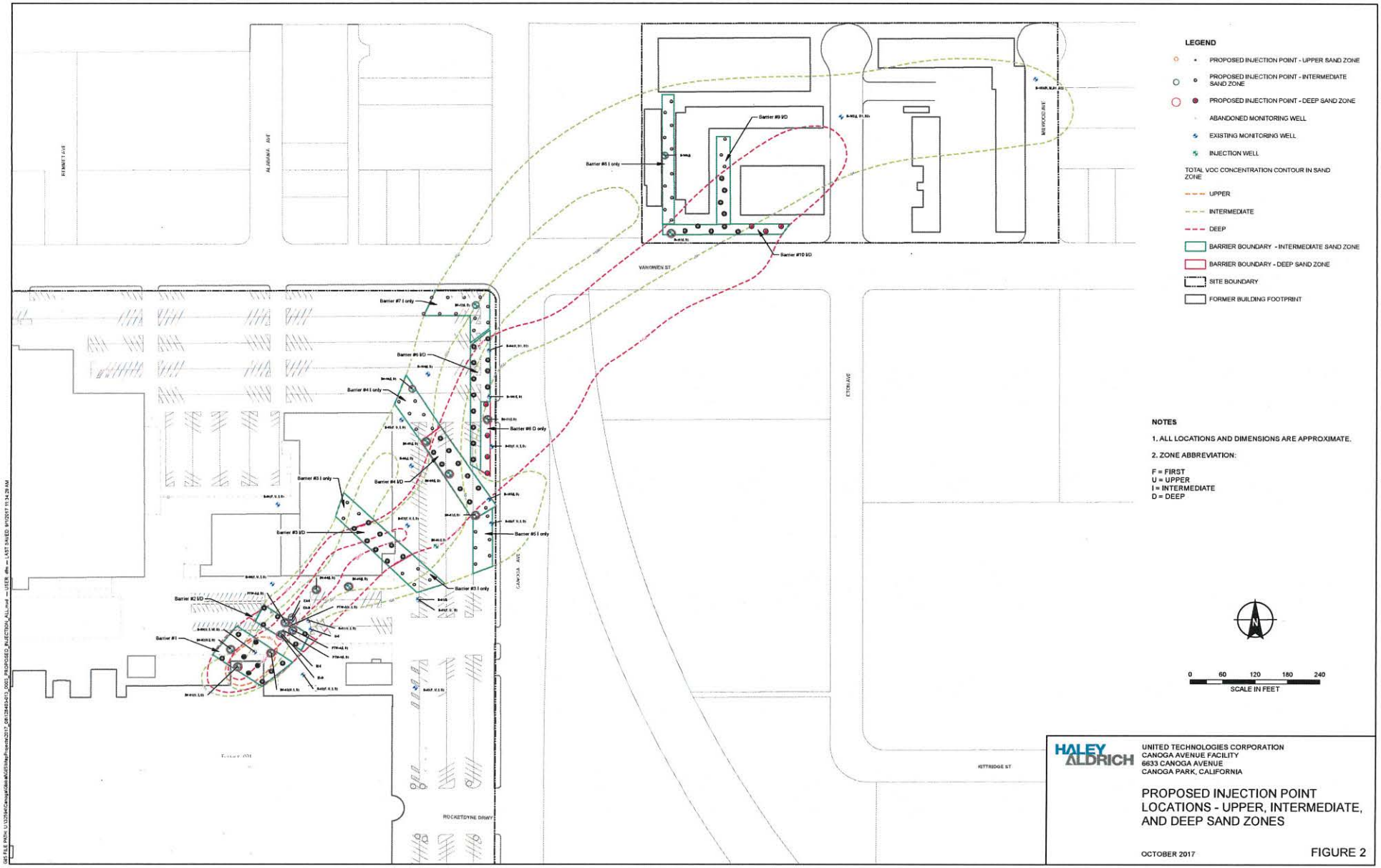


HALEY ALDRICH

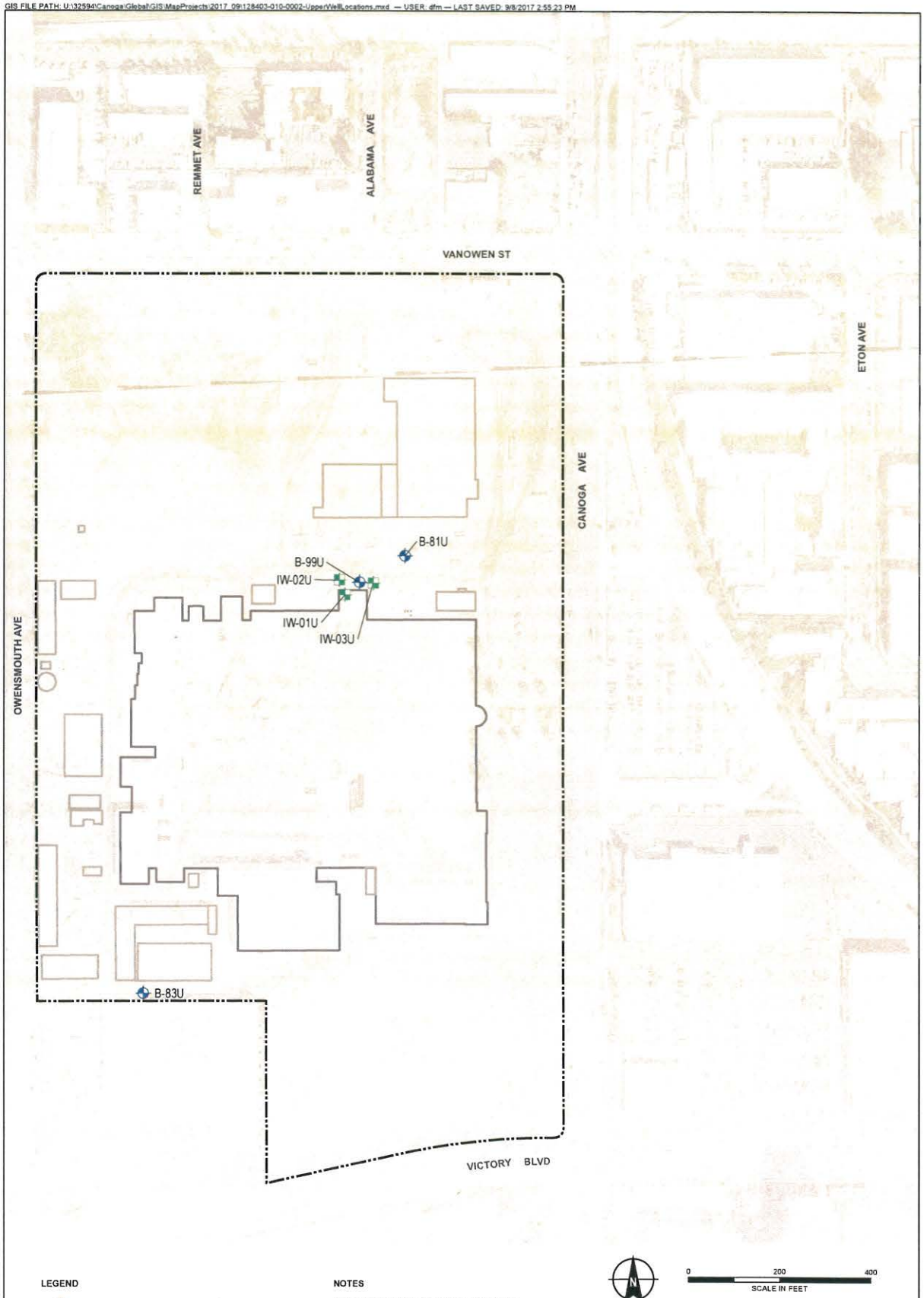
UNITED TECHNOLOGIES CORPORATION
CANOGA AVENUE FACILITY
6633 CANOGA AVENUE
CANOGA PARK, CALIFORNIA

PROPOSED INJECTION POINT LOCATIONS - UPPER, INTERMEDIATE, AND DEEP SAND ZONES

OCTOBER 2017

FIGURE 2

GIS FILE PATH: U:\32594\Canoga\Global\GIS\MapProjects\2017_09\128403-010-0002-UpperWellLocations.mxd — USER: dfm — LAST SAVED: 9/8/2017 2:55:23 PM



LEGEND

- WDR MONITORING WELL LOCATION
- INJECTION WELL LOCATION
- FORMER BUILDING FOOTPRINT
- SITE BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS AREA APPROXIMATE
2. AERIAL IMAGERY SOURCE: PICTOMETRY, MARCH 2017

0 200 400
SCALE IN FEET

HALEY ALDRICH

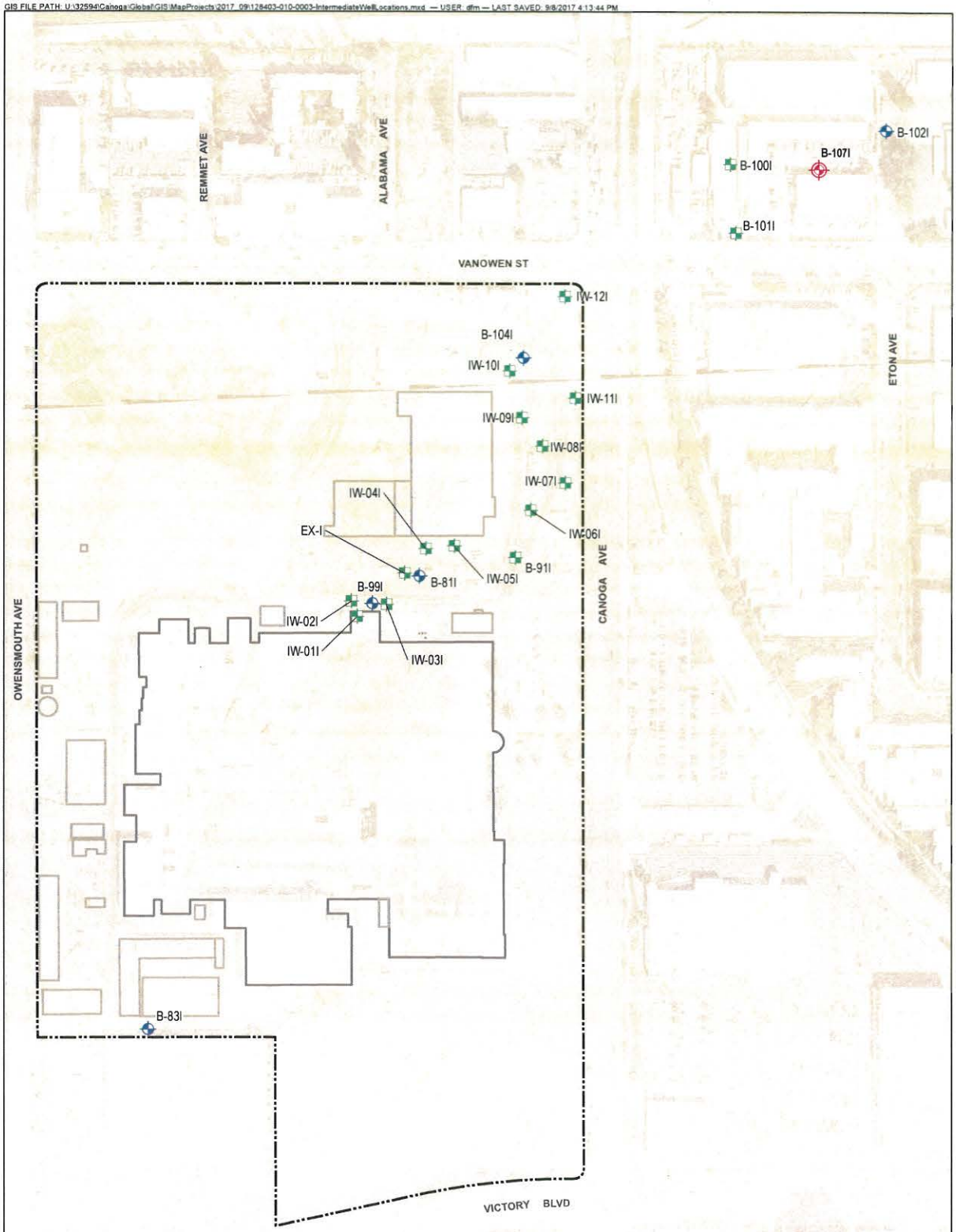
UNITED TECHNOLOGIES CORPORATION
CANOGA AVENUE FACILITY
6633 CANOGA AVENUE
CANOGA PARK, CALIFORNIA

UPPER SAND ZONE INJECTION WELL AND WDR MONITORING WELL LOCATIONS

OCTOBER 2017

FIGURE 3

GIS FILE PATH: U:\32594\Canoga\Global\GIS\MapProjects\2017_09\128403-010-0003-IntermediateWellLocations.mxd — USER: dfm — LAST SAVED: 9/8/2017 4:13:44 PM



LEGEND

- PROPOSED NEW MONITORING WELL
- WDR MONITORING WELL LOCATION
- INJECTION WELL LOCATION
- FORMER BUILDING FOOTPRINT
- SITE BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS AREA APPROXIMATE
2. AERIAL IMAGERY SOURCE: PICTOMETRY, MARCH 2017

0 200 400
SCALE IN FEET

HALEY ALDRICH

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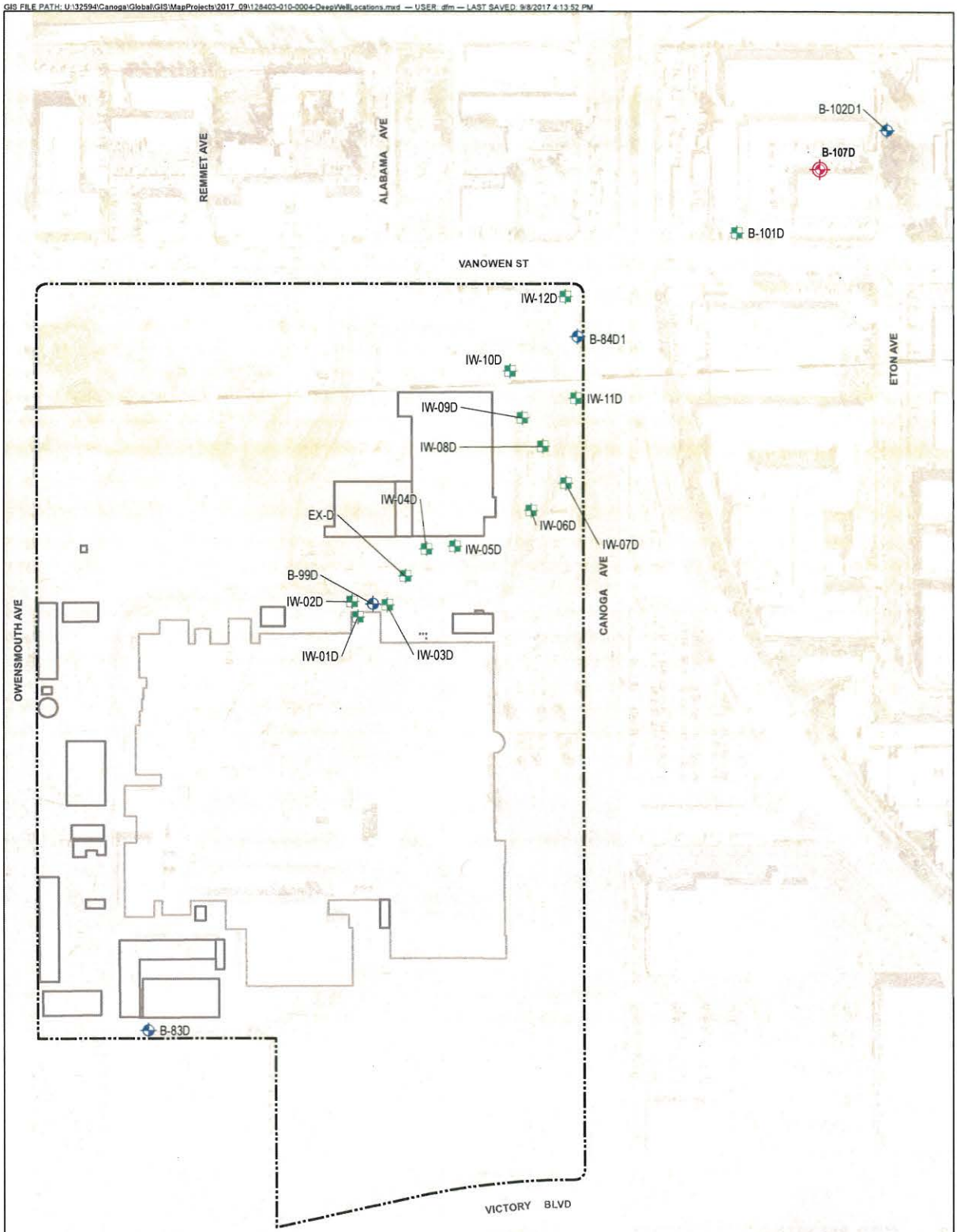
CANOGA PARK, CALIFORNIA

INTERMEDIATE SAND ZONE INJECTION WELL AND WDR MONITORING WELL LOCATIONS

OCTOBER 2017

FIGURE 4

GIS FILE PATH: U:\32594\Canoga\Global\GIS\MapProjects\2017_09\128403-010-0004-DeepWellLocations.mxd — USER: dfm — LAST SAVED: 9/8/2017 4:13:52 PM



LEGEND

- PROPOSED NEW MONITORING WELL
- WDR MONITORING WELL LOCATION
- INJECTION WELL LOCATION
- FORMER BUILDING FOOTPRINT
- SITE BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS AREA APPROXIMATE
2. AERIAL IMAGERY SOURCE: PICTOMETRY, MARCH 2017

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SCALE IN FEET

HALEY ALDRICH

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CANOGA PARK, CALIFORNIA

DEEP SAND ZONE INJECTION WELL AND WDR MONITORING WELL LOCATIONS

OCTOBER 2017

FIGURE 5