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4 May 2016

Ms. Melanie Morash
Remedial Project Manager
U. S. Environmental Protection Agency
Region 9
75 Hawthorne Street, SFD-7-1
San Francisco, CA 94105

RE: Background Water Quality Evaluation Work Plan
Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California

Dear Ms. Morash:

Northrop Grumman Systems Corporation is submitting the enclosed Background Water Quality Evaluation Work Plan for the former TRW Microwave site for your review and approval. The work plan presents our proposed scope and procedures to further evaluate potential contaminant transport pathways and gain a better understanding of contaminants migrating onto the site from upgradient sources (i.e., background concentrations). These background concentrations are intended to serve as the basis for proposing alternative cleanup goals for the final site remedy.

If you have any questions regarding the proposed evaluation or would like additional information to facilitate your review of the work plan, please do not hesitate to contact me at 310-332-5915, or our project manager, Linda Niemeyer, at 760-944-9490.

Sincerely,

Michael D. Shannon
Manager, Corporate Environmental Remediation
on behalf of Northrop Grumman Systems Corporation

Enclosure: Background Water Quality Evaluation Work Plan

cc: Rebecca Mora - AECOM
Linda Niemeyer - Watermark

AECOM

BACKGROUND WATER QUALITY EVALUATION WORK PLAN

FORMER TRW MICROWAVE SITE
825 STEWART DRIVE
SUNNYVALE, CALIFORNIA

MAY 2016

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FORMER TRW MICROWAVE SITE
825 STEWART DRIVE
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May 4, 2016

Prepared by:

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Prepared on behalf of Northrop Grumman Systems Corporation

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Project Director
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No. 4337
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1.0 INTRODUCTION

This Background Water Quality Evaluation Work Plan (work plan) has been prepared on behalf of Northrop Grumman Systems Corporation (Northrop Grumman) by AECOM, Inc. (AECOM). The purpose of the scope described in this work plan is to evaluate potential contaminant migration pathways at the former TRW Microwave Site (Site) in Sunnyvale, California (Figure 1). This will allow a better understanding of contaminants migrating onto the Site from upgradient contaminant sources. The results of this investigation will be used to design a groundwater monitoring program, including possible installation of new monitoring wells, to demonstrate background contaminant concentrations that are migrating onto the Site.

The interpretation and understanding of the hydrostratigraphy underlying the Site was recently updated, as documented in the Conceptual Site Model (CSM; AECOM, 2016a), based on an evaluation of existing lithology data using a technique called Environmental Sequence Stratigraphy (ESS). Historically, the upper aquifer zone was divided into two water yielding-zones, designated as Zone A and Zone B and defined as follows:

- Zone A occurs within the interval from the water table to a depth of about 25 feet below ground surface (bgs).

- Zone B consists of five sub-zones (Zones B1 through B5) extending from approximately 30 feet bgs to the base of the zone at approximately 100 feet bgs.

As shown on Figure 2, Site groundwater has been monitored using a network of 42 monitoring wells and the Eductor (a groundwater extraction pipe installed within the former UST gravel backfill pit) completed in five depth intervals, designated as Zones A, B1, B2, B3, and B4 (Table 1). While the subsurface consists of discrete fluvial channel deposits encased in floodplain silt and clay deposits, the wells were designed based on the designated depth zones to create groundwater elevation maps and contaminant isoconcentration maps.

Table 1 provides well construction information. Historically, the zone classifications for the wells were as follows: 24 wells and the Eductor within Zone A, 11 wells in Zone B1, six wells within Zone B2, and one well within Zone B4. As stated in the 1991 Record of Decision (United States Environmental Protection Agency [USEPA]), Zone B3 at the Site is relatively thin and was only encountered in a few borings at the Site. Historically, no wells at the Site were designated as Zone B3 monitoring wells; however, recent re-evaluation of boring logs for the Site indicates that well T-9C, previously thought to be screened in Zone B2, is screened within Zone B3 (AECOM, 2015). As noted in Table 1, six wells and the Eductor have been removed: T-1A and T-1B were abandoned in 2004 with permission from the Regional Water Quality Control Board, and T-2A, T-2B, T-2C, T-3A, and the Eductor (all located inside the building) were destroyed in 2014 with permission from USEPA.

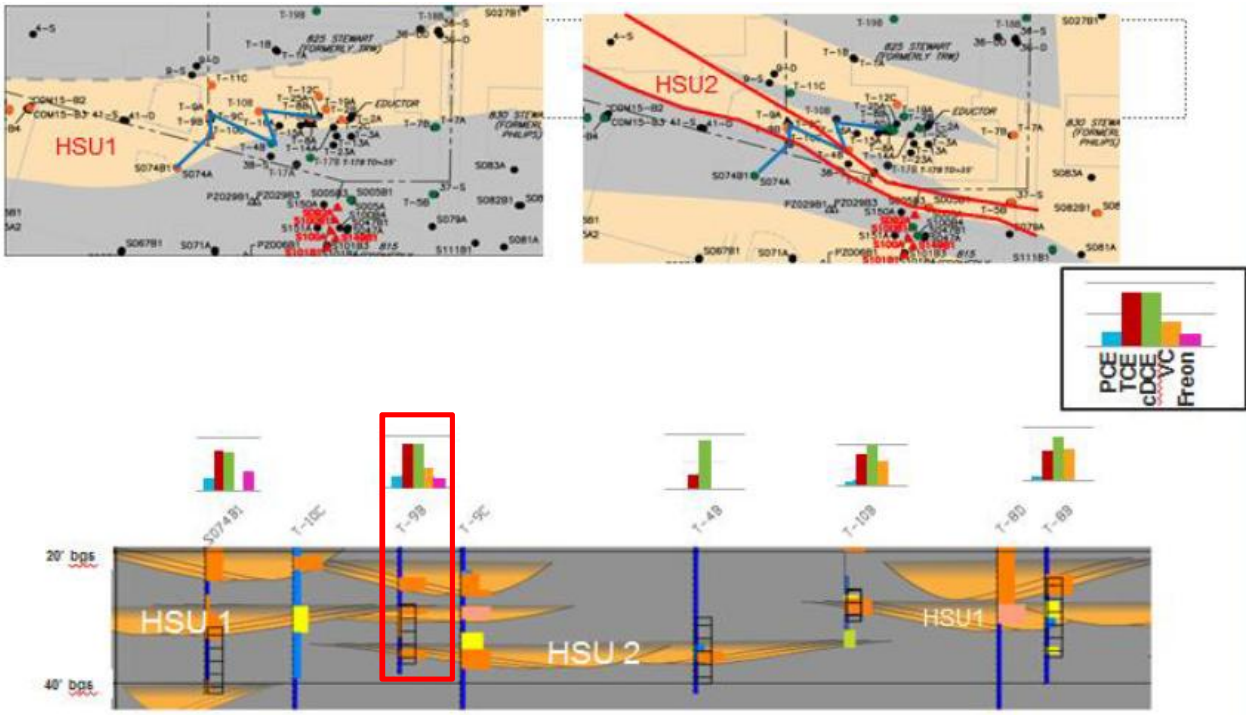
This historic representation of depth-dependent zones presumes that the hydrostratigraphy is sheet-like. However, a more current evaluation developed using ESS is based on the fluvial depositional environment of the sediments encountered. Each zone consists of multiple hydrostratigraphic units (HSUs) defined by channel sands which may not be hydraulically connected. These HSUs have implications when interpreting groundwater elevation data and contaminant chemistry data based on the zonation terminology.

1.1 Updated CSM

The ESS evaluation mapped out HSUs defined by subsurface stream channel deposits underlying the Site that serve as primary groundwater flow and contaminant migration pathways. A detailed summary of the ESS methodology and conclusions of the geologic evaluation are included in the Addendum to the Technical Memorandum in Response to the 2014 Five-Year Review Report (AECOM, 2016b).

The two cross sections shown on Figure 3 show the contrast between the previous and current approach to interpreting groundwater flow and contaminant transport within the various zones beneath the Site. The previous stratigraphic framework depicted the sand units as relatively continuous (upper cross section), versus the current ESS stratigraphic framework that maps out the distinct channel occurrences (lower cross section). This has implications for the interpretation of groundwater monitoring data based solely on depth of well screen intervals (i.e., a depth-based aquifer zonation approach). For example, groundwater flow directions were previously generalized based on groundwater elevation contours that were generated without consideration of channel versus floodplain lithology. The stratigraphic framework is now represented on the groundwater contour maps by plotting the HSUs that control groundwater flow, and groundwater flow directions are interpreted by considering both hydraulic head and stratigraphic data.

The stratigraphic pathways identified during the ESS evaluation are shown on Figures 4, 5, and 6 for Zones A, B1, and B2, respectively. Two HSUs were mapped in Zone B1, one shallower HSU that traces from the downgradient northern Site property boundary back to the onsite source area (referred to as HSU1, occurring within the 10 to 20 feet above mean sea level. [MSL] interval), and another deeper HSU which is oriented oblique to the general groundwater gradient (referred to as HSU2, occurring within the 0 to 10 feet MSL interval) and is interpreted as a contaminant pathway from offsite sources (Figure 5). The identification of these multiple HSUs within Zone B1 provides a basis to assess migration from offsite sources (i.e., background). For example, well T-9B, located at the northwesterly site boundary, is screened across both of the HSUs identified in Zone B1, as shown below. Therefore, contaminant of concern (COC) concentrations detected in that well are reflective of a combination of onsite (HSU1) and offsite (HSU2) sources and are not representative of material originating only from the former TRW Site source area. COC concentrations from October 2015 are shown on Figures 7, 8, and 9 for Zones A, B1, and B2, respectively.



1.2 Identified Data Gaps

As described in the CSM, the ESS evaluation identified data gaps. Currently, only three well clusters are located along the southern site boundary. Therefore, additional lithologic information is needed to refine the understanding of contaminant migration pathways along the southern border between the existing well clusters. Along the western site boundary, additional information is needed to further refine the definition of the HSUs.

Collection of additional hydrostratigraphic and chemistry data along the southern and western Site boundaries are needed to fill data gaps and increase understanding of contaminant migration pathways at the Site.

1.3 Objective and Work Plan Organization

The objective of the field activities proposed in this work plan is to fill the data gaps identified in the ESS evaluation and increase understanding of migration pathways onto the Site. This information will be used to refine the groundwater monitoring program at the Site, with the concurrence of USEPA, and to serve as the basis for proposing alternative cleanup goals for the final Site remedy. The results of this investigation will be presented in a background water quality investigation report.

This work plan is organized as follows:

2.0 Description of Technology

3.0 Proposed Background Investigation

4.0 Data Evaluation and Report

5.0 References

2.0 DESCRIPTION OF TECHNOLOGY

The proposed investigation will be performed using a combined Membrane Interface Probe/Hydraulic Profiling Tool (MiHPT) followed by HydroPunch™ depth-discrete groundwater sampling. The sections below describe in detail each of the investigation components.

2.1 Membrane Interface Probe

Membrane Interface Probe (MIP) technology is used to assess relative concentrations of volatile organic compounds (VOCs) in the subsurface. A MIP is a two-part system consisting of a subsurface sensor system and an aboveground detector system. The sensor system will be advanced into subsurface soils and groundwater using a direct-push rig. The sensor system is equipped with a semi-permeable polymer membrane that allows VOCs to pass through while excluding particulates and fluids. A heating element mobilizes VOCs in the surrounding matrix as the tool is advanced through it and transports them to the detector system aboveground using a nitrogen carrier gas. There, the gas stream is fed into a gas chromatograph and subsequently split and routed to four detectors: a Photoionization Detector (PID) with a 10.2 electron volt bulb, a Flame Ionization Detector (FID), an Electron Capture Detector (ECD), and a halogen specific detector (XSD). The PID detects double-bonded compounds (e.g., benzene, toluene, ethylbenzene, and xylenes [BTEX], gasoline, tetrachlororoethene [PCE] and trichloroethene [TCE]) at concentrations between 1 and 20,000 parts per million (ppm). The FID detects combustible hydrocarbons (e.g., BTEX, gasoline, methane, etc.) at concentrations between 1 and 100,000 ppm. The ECD detects lower-level concentrations (between 0.25 and 10 ppm) of PCE and TCE. The XSD responds specifically to the chlorine molecule in halogenated compounds (PCE, TCE, dichloroethene, and vinyl chloride at higher concentrations (0.25 to more than 200 ppm) than the ECD. Based on concentrations and compounds previously detected in the Eductor, the XSD will likely be the most useful detector to evaluate the relative concentration of total halogenated VOCs in groundwater.

The MIP sensors offer a range of sensitivities and a means of discriminating different classes of compounds, including chlorinated VOCs. The detectors measure VOCs in the carrier gas and provide this information in real-time as an instrument response. The detectors do not provide a quantitative concentration of VOCs in the groundwater or soil. However, the response level from each different detector corresponds to the amount of VOCs present in the carrier gas, which is proportional to the amount of VOCs in the soil or groundwater at the borehole location. A greater response from the detector indicates greater VOC concentrations in the subsurface.

2.2 Hydraulic Profiling Tool

The combined MiHPT system also includes the Hydraulic Profiling Tool (HPT). This tool measures the injection pressure required to inject water into the subsurface as the probe is advanced (also referred to as pore pressure). The information generated by this probe is used to evaluate formation permeability and provide subsurface characterization information. This information will be incorporated into the existing ESS evaluation of the Site and will aid in determining target locations for depth-discrete HydroPunch groundwater samples.

2.3 Electrical Conductivity

In addition to the MIP and HPT sensors, the MiHPT system is equipped with an electrical conductivity (EC) sensor for generic characterization of the lithology. Lower EC values are generally characteristic of coarser-grained particles, such as sands, and higher EC values are characteristic of finer-grained particles, such as silts and clays. This serves as an effective proxy for vertical grain size distribution that can be used for stratigraphic correlations. This information will be used along with existing Site data to map out the hydrostratigraphic units (contaminant transport pathways) underlying the site and, along with the HPT and MIP data, determine the target location for depth-discrete HydroPunch groundwater samples.

2.4 HydroPunch Groundwater Sampling

HydroPunch is a depth-discrete groundwater sampling method. The sampling device is advanced to the target depth using a direct-push drill rig. At the targeted depth, the outer casing is retracted, the sample screen is exposed, and groundwater is collected in the sample chamber.

3.0 PROPOSED BACKGROUND INVESTIGATION

As stated in Section 1.3, the objective of this investigation is to fill data gaps along the southern and western Site boundaries to better define contaminant migration pathways (i.e., HSUs) and identify target depths for potential future groundwater monitoring wells. Proposed MiHPT locations are shown on Figure 10.

MiHPT data will be collected from eight proposed locations near the southern and western property boundaries, targeting Zones A, B1, and B2. Based on previous experience with these subsurface characterization tools, data collected from MiHPT are representative of the lithology/grain size underlying the Site. At each location, the MiHPT will be advanced to a total depth of 60 feet bgs (considered to be the bottom of Zone B2). A real-time log showing relative contaminant concentrations, EC, and hydraulic profiling information will be reviewed and may be used to refine the location of subsequent points. The grain size data will be used to correlate the hydrostratigraphy, the pore pressure will be used to identify high permeability zones, and the MIP data will be used to estimate the VOC concentration of the targeted intervals.

In addition to the eight MiHPT locations, up to four depth-discrete HydroPunch groundwater samples will be collected adjacent to each MiHPT location and analyzed for VOCs using USEPA Method 8260B. These samples will be collected to quantify VOC concentrations in discrete HSUs. The specific groundwater sampling depths will target areas of high permeability (representative of HSUs), identified based on evaluation of real-time grain size data (inferred

from electrical conductivity) and pore pressure (from the HPT), and/or areas with high VOC concentrations, identified based on evaluation of MIP data collected from the MiHPT.

4.0 DATA EVALUATION AND REPORT

The data collected from the field investigation will be evaluated, along with existing site data, to further define the underlying stratigraphy and HSUs. The groundwater chemistry data will be evaluated within the stratigraphic framework to assess the migration of VOC contamination in groundwater from the southern and western upgradient property boundaries to the downgradient property boundary. The results of this assessment will be used to determine where current well screens occur relative to the HSUs and to determine the location and screen intervals of additional groundwater monitoring wells, if needed. Finally, these data and the updated CSM will be used to propose monitoring well locations (existing or new) that best represent background concentrations migrating onto the Site from upgradient sources, as these background levels are intended to provide the basis for proposing alternative cleanup goals for the final Site remedy. The data evaluation and conclusions will be documented in a technical report for submittal to USEPA.

5.0 REFERENCES

AECOM, 2015. Technical Memorandum in Response to the 2014 Five-Year Review Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California. March 31, 2015.

AECOM, 2016a. Conceptual Site Model, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California. April 19, 2016.

AECOM, 2016b. Addendum to the Technical Memorandum in Response to the 2014 Five-Year Review Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California. January 25, 2016.

United States Environmental Protection Agency (USEPA). 1991. Record of Decision, Advanced Micro Devices #901/902, Signetics, TRW Microwave, Combined Superfund Sites, Sunnyvale, California. September 11.

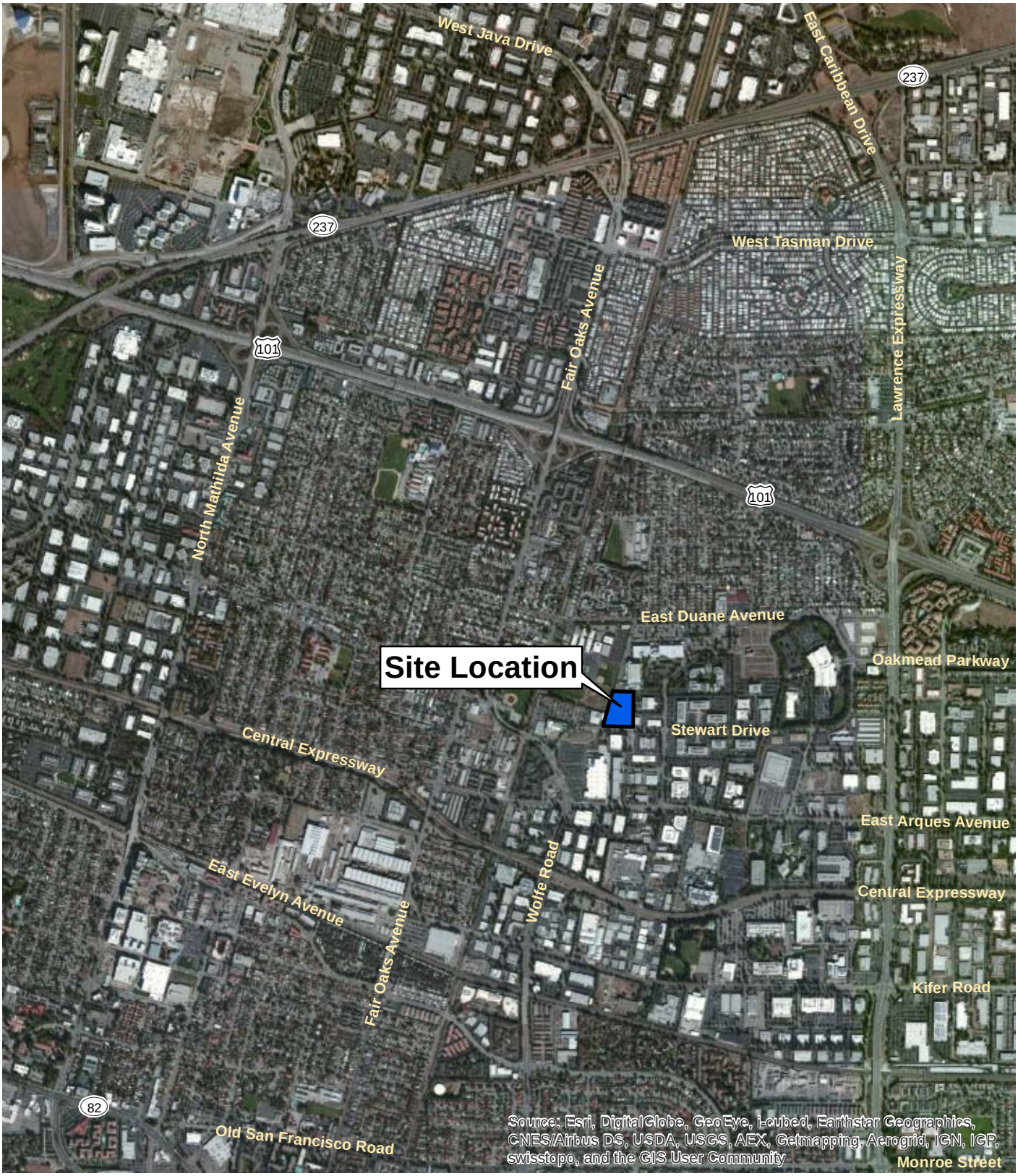
TABLE

Table 1
Well Completion Information
Former TRW Microwave Site
825 Stewart Drive, Sunnyvale, California

Well Number	Zone	Screen Interval (feet bgs)	Total Depth (feet bgs)	Top of Casing Elevation (feet, MSL)	Notes
EDUCTOR	A	8-16	16.5	42.24	Well Abandoned in 2014
T-1A	A	10-20	20	41.16	Well Abandoned in 2004
T-1B	B1	28-38	38	41.72	Well Abandoned in 2004
T-2A	A	10-20	20	42.16	Well Abandoned in 2014
T-2B	B1	23-33	33	42.23	Well Abandoned in 2014
T-2C	B2	51-59	59	41.38	Well Abandoned in 2014
T-3A	A	10-20	20	41.74	Well Abandoned in 2014
T-4B	B1	31.5-41.5	42	40.93	-
T-5B	B1	34.5-44.5	45	42.45	-
T-6A	A	10-20	20	39.92	-
T-7A	A	8-20	20	42.09	-
T-7B	B1	34-41	41	42.01	-
T-8A	A	8-19	19	40.38	-
T-8B	B1	24-36	36	40.33	-
T-8D	B4	90-102	102	40.35	Sampling Suspended in 2002
T-9A	A	7-19	19	39.22	-
T-9B	B1	28-37	37	38.89	-
T-9C	B3	55-65	65	38.81	-
T-10B	B1	23-32	32	40.09	-
T-10C	B2	49-59	60	39.05	-
T-11C	B2	46-56	56	38.65	-
T-12C	B2	45.5-55.5	56	40.74	-
T-13A	A	10-20	20	40.76	-
T-14A	A	10-20	20	40.62	-
T-15A	A	10-20	20	40.11	-
T-16A	A	10-20	20	40.02	-
T-17A	A	10-20	20	38.23	-
T-17B	B1	25-35	35	40.61	-
T-18A	A	12-22	22	NS	-
T-18B	B1	41-46	46	38.78	-
T-19A	A	10-20	22	NS	-
T-19B	B1	29-39	39	38.72	-
T-20A	A	7-17	20	NS	-
T-21A	A	10-20	20	NS	-
T-22A	A	10-20	20	NS	-
T-23A	A	10-20	20	NS	-
T-24A	A	10-20	20	NS	-
T-25A	A	10-20	20	NS	-
36S	A	10-16	16	41.46	-
36D	A	15-20	20	41.26	-
36DD	B2	51.5-61.5	61.5	41.58	-
37S	A	9-15	15	42.06	-
38S	A	9-15	15	41.05	-

Notes:
MSL = mean sea level
NS = Well casing elevations were not surveyed.
Top of casing elevations presented in NAVD88 (North American Vertical Datum 1988).
Eductor screen interval and total depth revised based on September 2010 well videolog.
Top of casing elevation for well T-10C resurveyed in 2015 after completion of well repairs.

FIGURES



N

0 1,000 2,000 Feet

1 " = 2,000 '

Former TRW Microwave Site

Site Location

Date 01-2015	NORTHROP GRUMMAN	Figure
Project No. 60446335		1

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LEGEND

- A-ZONE MONITORING WELL
- B1-ZONE MONITORING WELL
- B2-ZONE MONITORING WELL
- B3-ZONE MONITORING WELL
- B4-ZONE MONITORING WELL
- EDUCTOR - DESTROYED 2014
- MONITORING WELL - DESTROYED 2014
- MONITORING WELL - DESTROYED 2004
- PROPERTY BOUNDARY

N

0 25 50 Feet

1 " = 50 '

Former TRW Microwave Site

Site Layout

Date 01-2016	NORTHROP GRUMMAN	Figure
Project No. 60238860		2

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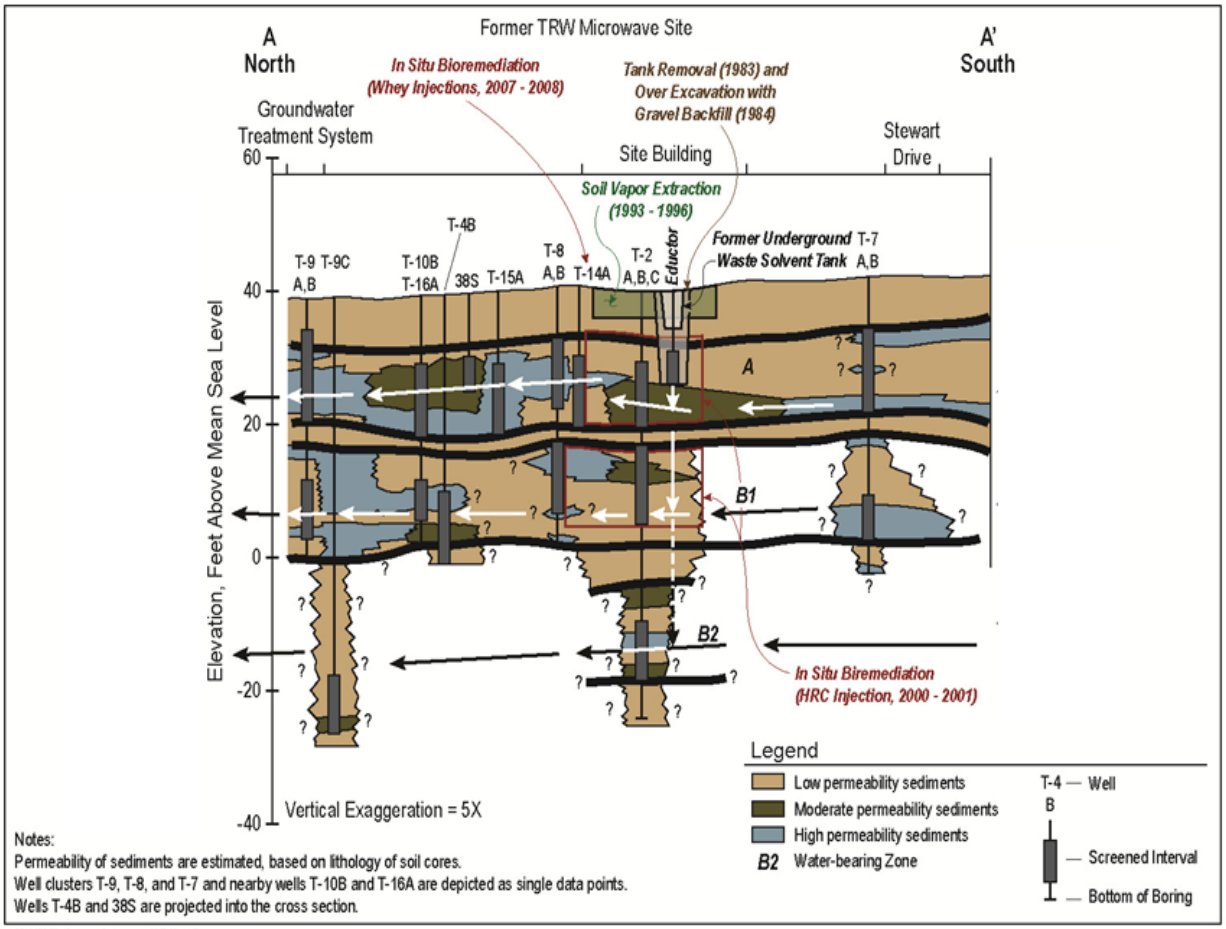
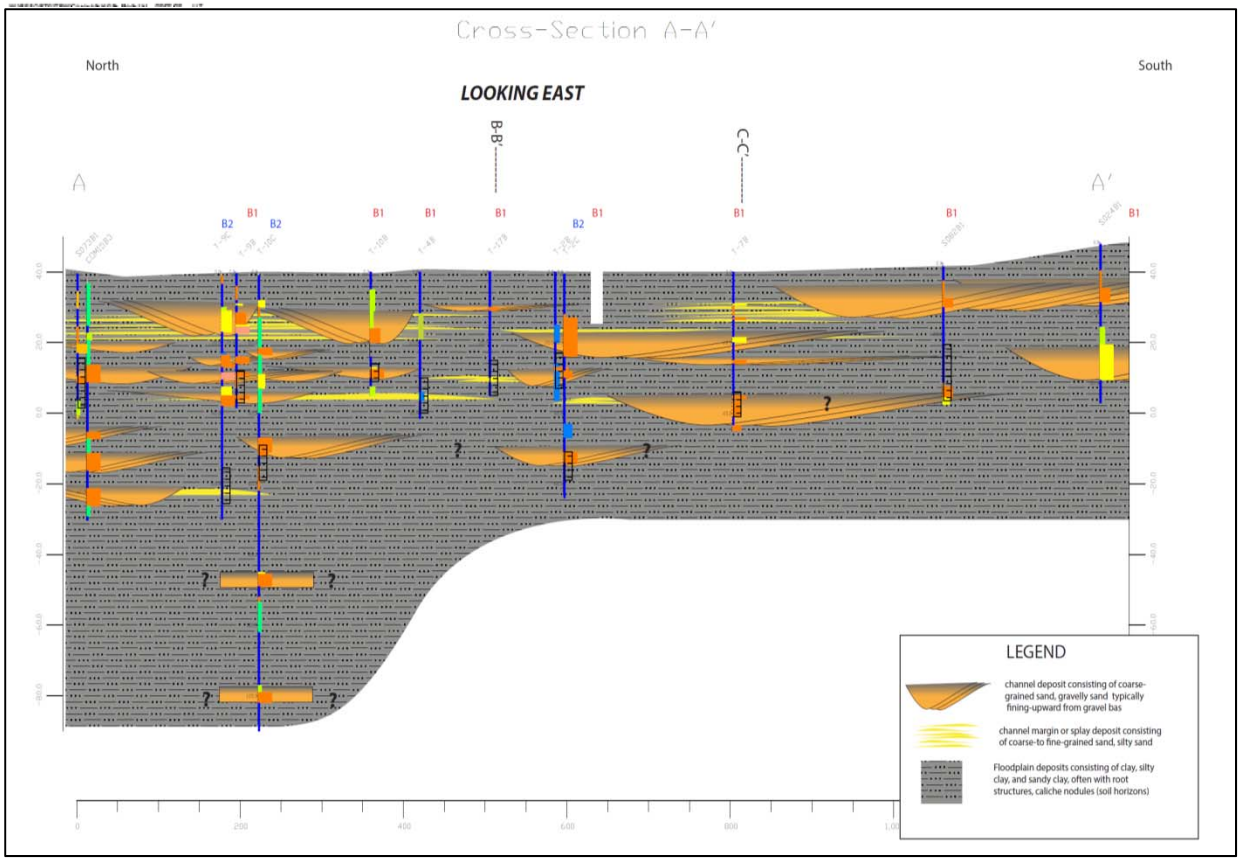
Previous Lithology Interpretation



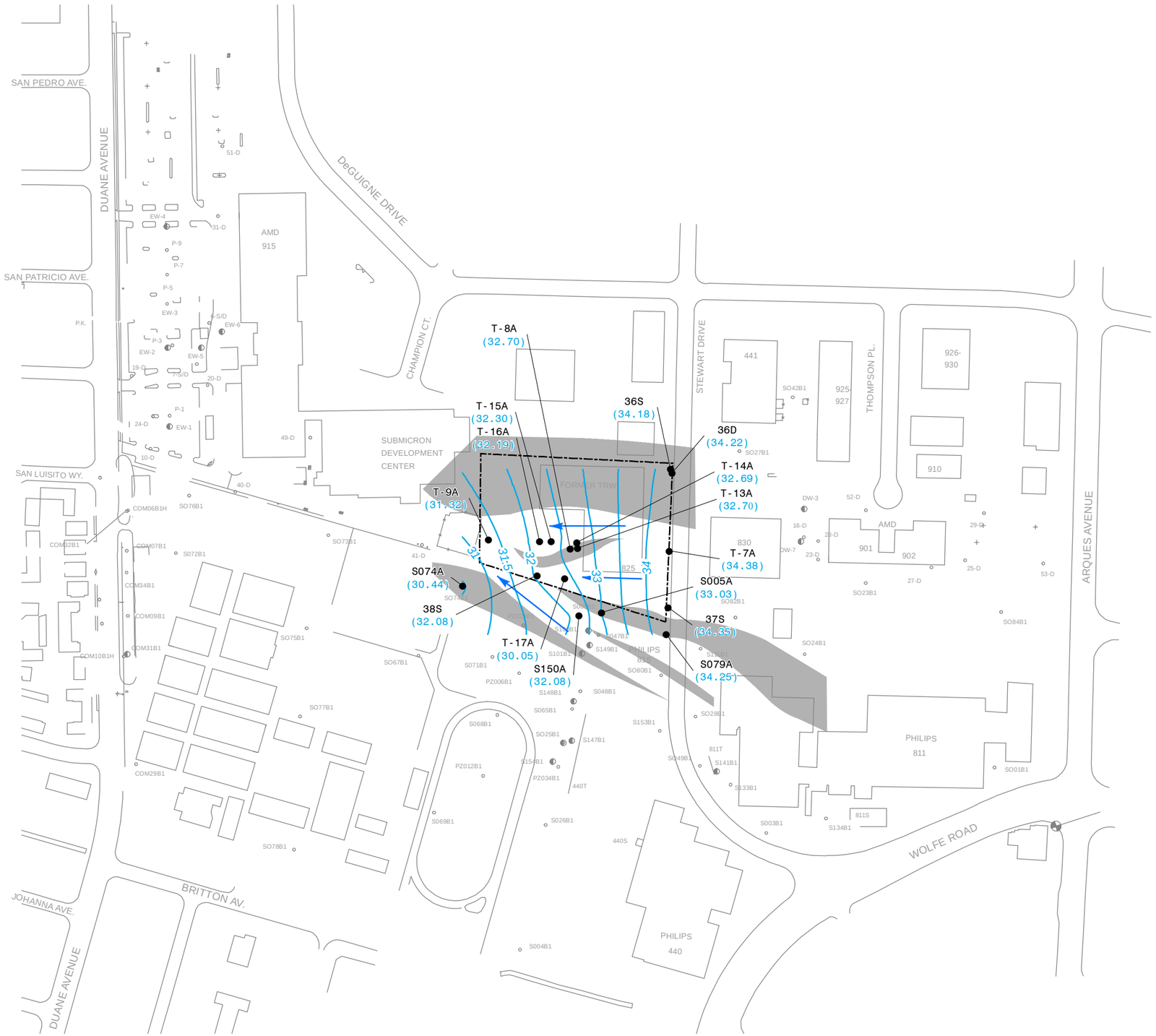
Current Lithology Interpretation



Former TRW Microwave Site

Comparison of Previous and Current Interpretation of Site Stratigraphy

Date 03-2016	NORTHROP GRUMMAN	Figure
Project No. 60224593		3



LEGEND

●	INDICATES APPROXIMATE LOCATION OF ZONE A MONITORING WELL
◐	INDICATES APPROXIMATE LOCATION OF ZONE A EXTRACTION WELL
(33.02)	INDICATES WATER-LEVEL ELEVATION IN ZONE A MONITORING WELL (FEET, MSL) IN OCTOBER 2015
———	INDICATES APPROXIMATE POTENTIOMETRIC SURFACE CONTOUR IN ZONE A IN OCTOBER 2015
←	APPROXIMATE GROUNDWATER FLOW DIRECTION
▒	LOW PERMEABILITY MATERIAL

ABBREVIATION

MSL	MEAN SEA LEVEL

Former TRW Microwave Site

POTENTIOMETRIC SURFACE CONTOURS ZONE A OCTOBER 2015

Date 01-2016	NORTHROP GRUMMAN	Figure
Project No. 60446335		4

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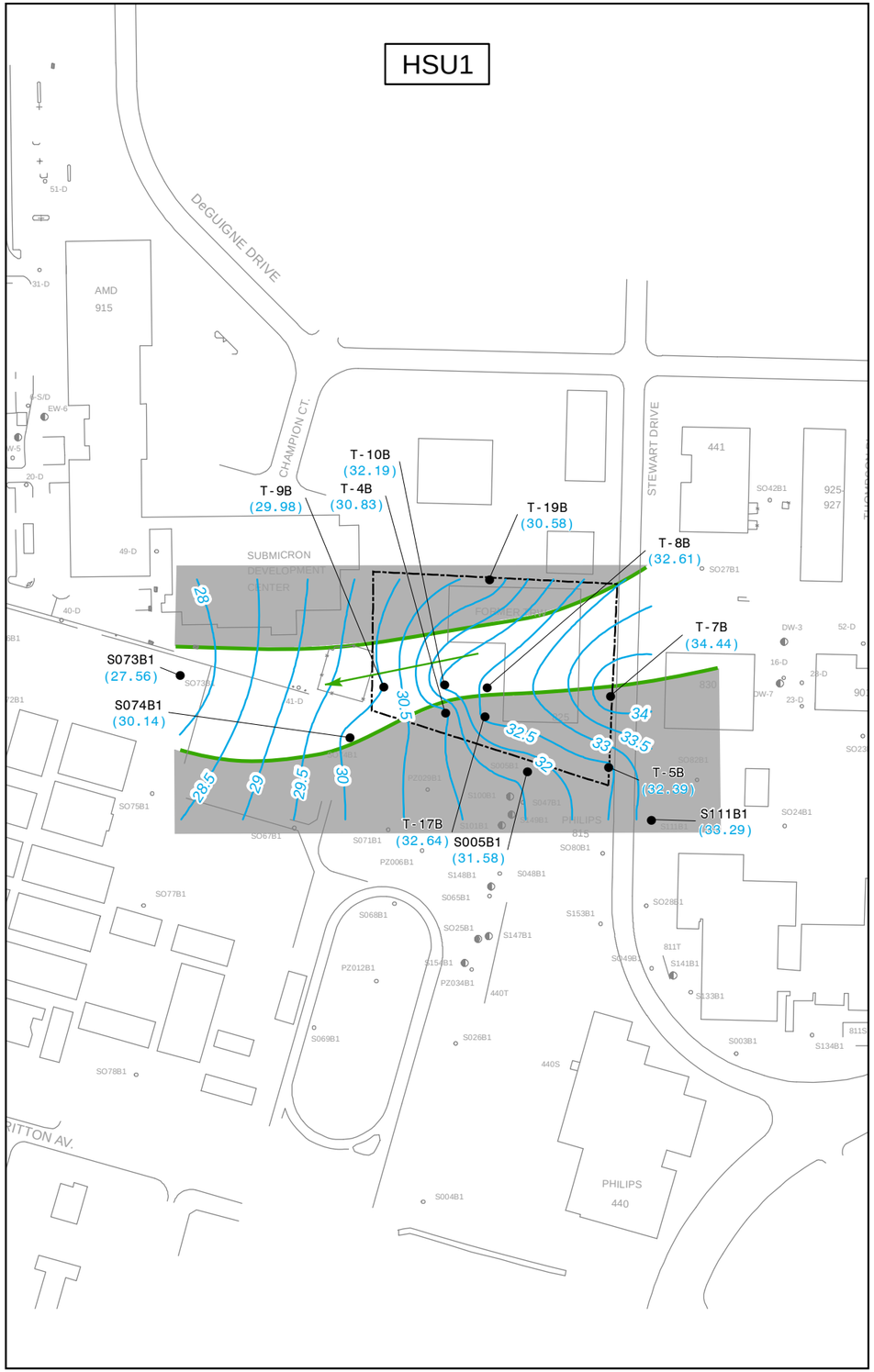

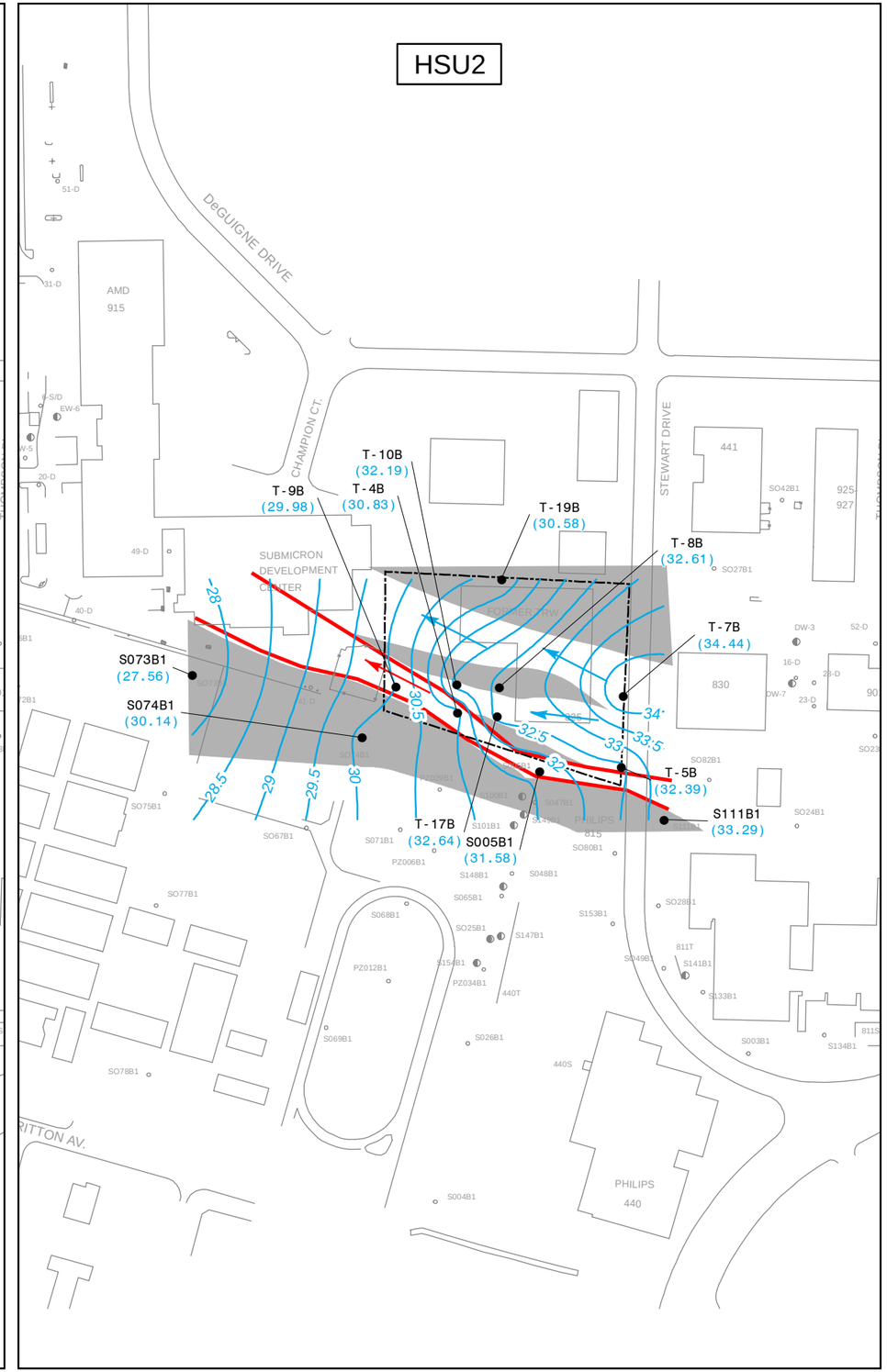

LEGEND

- ● INDICATES APPROXIMATE LOCATION OF ZONE B1 MONITORING WELL
- ◐ INDICATES APPROXIMATE LOCATION OF ZONE B1 EXTRACTION WELL
- (33.02) INDICATES WATER-LEVEL ELEVATION IN ZONE B2 MONITORING WELL (FEET, MSL) IN OCTOBER 2015
- INDICATES APPROXIMATE POTENTIOMETRIC SURFACE CONTOUR IN ZONE B2 IN OCTOBER 2015
- HSU1 (10-20 FEET, MSL)
- HSU2 (0-10 FEET, MSL)
- HSU1 APPROXIMATE GROUNDWATER FLOW DIRECTION
- HSU2 APPROXIMATE GROUNDWATER FLOW DIRECTION
- LOW PERMEABILITY MATERIAL

ABBREVIATION

HSU HYDROSTRATIGRAPHIC UNIT
MSL MEAN SEA LEVEL

N

0 150 300 Feet

1 " = 300 '

Former TRW Microwave Site

POTENTIOMETRIC SURFACE CONTOURS ZONE B1 OCTOBER 2015

Date 01-2016	NORTHROP GRUMMAN	Figure
Project No. 60446335		5

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LEGEND

●	INDICATES APPROXIMATE LOCATION OF ZONE B2 MONITORING WELL
◐	INDICATES APPROXIMATE LOCATION OF ZONE B2 EXTRACTION WELL
(33.02)	INDICATES WATER-LEVEL ELEVATION IN ZONE B1 MONITORING WELL (FEET, MSL) IN OCTOBER 2015
———	INDICATES APPROXIMATE POTENTIOMETRIC SURFACE CONTOUR IN ZONE B1 IN OCTOBER 2015
←	APPROXIMATE GROUNDWATER FLOW DIRECTION
▒	LOW PERMEABILITY MATERIAL

ABBREVIATION

MSL	MEAN SEA LEVEL

N

0 150 300 Feet

1 " = 300 '

Former TRW Microwave Site

POTENTIOMETRIC SURFACE CONTOURS
ZONE B2
OCTOBER 2015

Date 01-2016	NORTHROP GRUMMAN	Figure
Project No. 60446335		6

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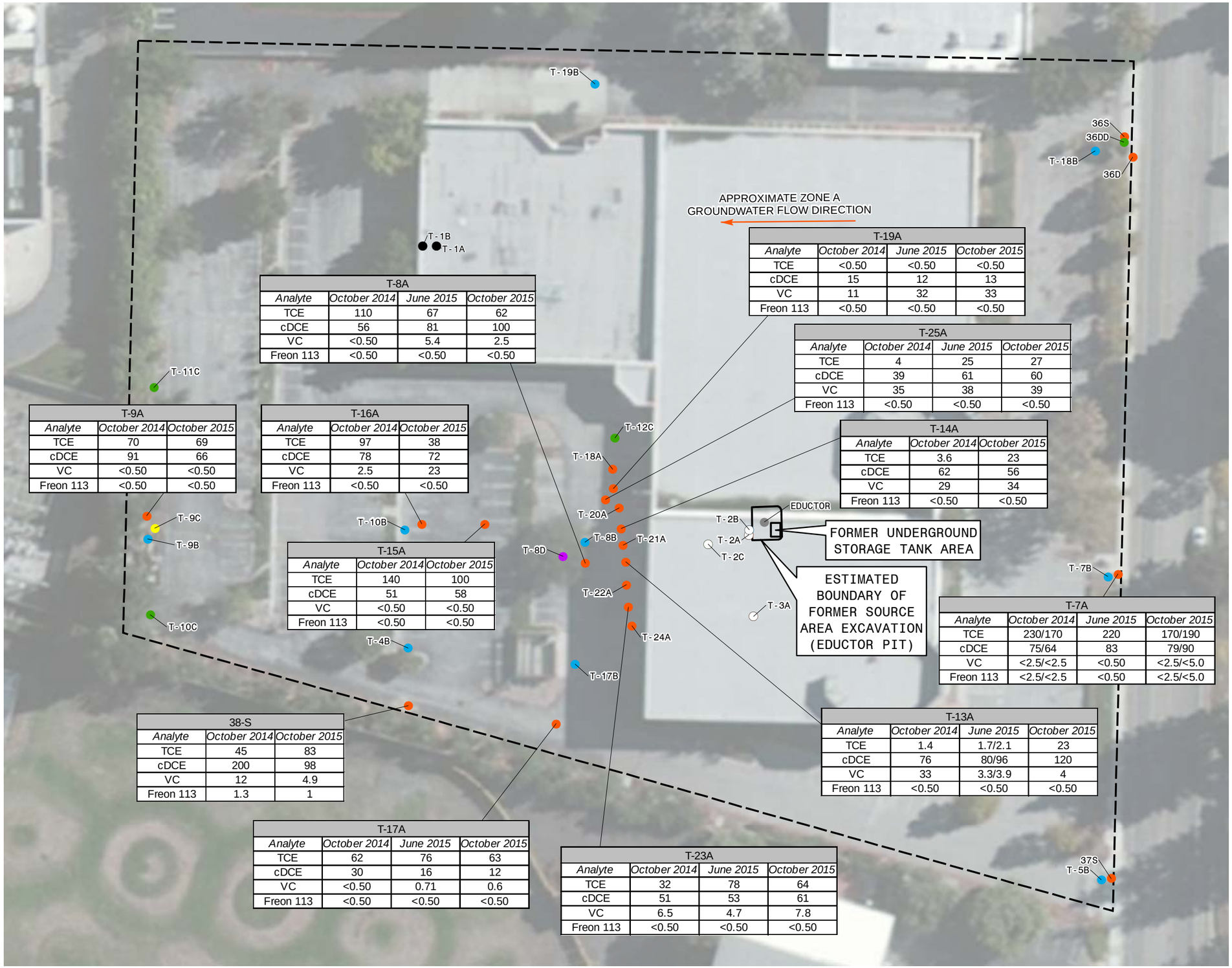

T-19A			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	<0.50	<0.50	<0.50
cDCE	15	12	13
VC	11	32	33
Freon 113	<0.50	<0.50	<0.50

T-8A			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	110	67	62
cDCE	56	81	100
VC	<0.50	5.4	2.5
Freon 113	<0.50	<0.50	<0.50

T-25A			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	4	25	27
cDCE	39	61	60
VC	35	38	39
Freon 113	<0.50	<0.50	<0.50

T-14A		
Analyte	*October 2014*	*October 2015*
TCE	3.6	23
cDCE	62	56
VC	29	34
Freon 113	<0.50	<0.50

T-9A		
Analyte	*October 2014*	*October 2015*
TCE	70	69
cDCE	91	66
VC	<0.50	<0.50
Freon 113	<0.50	<0.50

T-16A		
Analyte	*October 2014*	*October 2015*
TCE	97	38
cDCE	78	72
VC	2.5	23
Freon 113	<0.50	<0.50

T-15A		
Analyte	*October 2014*	*October 2015*
TCE	140	100
cDCE	51	58
VC	<0.50	<0.50
Freon 113	<0.50	<0.50

T-7A			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	230/170	220	170/190
cDCE	75/64	83	79/90
VC	<2.5/<2.5	<0.50	<2.5/<5.0
Freon 113	<2.5/<2.5	<0.50	<2.5/<5.0

38-S		
Analyte	*October 2014*	*October 2015*
TCE	45	83
cDCE	200	98
VC	12	4.9
Freon 113	1.3	1

T-13A			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	1.4	1.7/2.1	23
cDCE	76	80/96	120
VC	33	3.3/3.9	4
Freon 113	<0.50	<0.50	<0.50

T-17A			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	62	76	63
cDCE	30	16	12
VC	<0.50	0.71	0.6
Freon 113	<0.50	<0.50	<0.50

T-23A			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	32	78	64
cDCE	51	53	61
VC	6.5	4.7	7.8
Freon 113	<0.50	<0.50	<0.50

LEGEND

- A-ZONE MONITORING WELL
- B1-ZONE MONITORING WELL
- B2-ZONE MONITORING WELL
- B3-ZONE MONITORING WELL
- B4-ZONE MONITORING WELL
- EDUCTOR - DESTROYED 2014
- MONITORING WELL - DESTROYED 2014
- MONITORING WELL - DESTROYED 2004
- PROPERTY BOUNDARY

ABBREVIATIONS

/	DENOTES DUPLICATE SAMPLE
<	NOT DETECTED AT OR ABOVE THE DETECTION LIMIT SHOWN
cDCE	cis-1,2-DICHLOROETHENE
TCE	TRICHLOROETHENE
VC	VINYL CHLORIDE

WELL	
ANALYTE	CONCENTRATION IN MICROGRAMS PER LITER

N

0 25 50 Feet

1 " = 50 '

Former TRW Microwave Site

Zone A Groundwater Analytical Results October 2015

Date 03-2016

Project No. 60446335

NORTHROP GRUMMAN

Figure 7

File: W:\work\60238860_NG\GIS\Projects\Zone_A_Results_Oct2015_v1.mxd
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T-19B		
Analyte	*October 2014*	*October 2015*
TCE	52	49
cDCE	2.2	1.8
VC	<0.50	<0.50
Freon 113	1.2	1

T-18B		
Analyte	*October 2014*	*October 2015*
TCE	<0.50	<0.50
cDCE	<0.50	<0.50
VC	<0.50	<0.50
Freon 113	<0.50	<0.50

T-8B			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	10	<5.0	1.2
cDCE	270	150	29
VC	16	55	24
Freon 113	<0.50	<5.0	<0.50

T-10B		
Analyte	*October 2014*	*October 2015*
TCE	45	31
cDCE	180	97
VC	16	23
Freon 113	<0.50	<0.50

T-9B			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	390	310	150
cDCE	210	220	150
VC	<5.0	2.3	<2.5
Freon 113	<5.0	1	<2.5

T-7B			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	170/170	140/150	72/73
cDCE	11/12	10/9.8	4.8/4.8
VC	<0.50/<0.50	<0.50/<0.50	<0.50/<0.50
Freon 113	3.2/4.4	2.6/2.8	0.81/0.81

T-17B			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	75	230	280
cDCE	400	310	290
VC	<5.0	0.5	0.5
Freon 113	<5.0	11	9.9

T-4B			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	5.2	4.9	4.3
cDCE	500	130	120
VC	<5.0	<0.50	<0.50
Freon 113	<5.0	<0.50	<0.50

T-5B		
Analyte	*October 2014*	*October 2015*
TCE	1,500/1,600	1,700/1,800
cDCE	58/64	62/62
VC	<10/<25	<0.50/<0.50
Freon 113	140/160	120/130

LEGEND

- A-ZONE MONITORING WELL
- B1-ZONE MONITORING WELL
- B2-ZONE MONITORING WELL
- B3-ZONE MONITORING WELL
- B4-ZONE MONITORING WELL
- EDUCTOR - DESTROYED 2014
- MONITORING WELL - DESTROYED 2014
- MONITORING WELL - DESTROYED 2004
- PROPERTY BOUNDARY

ABBREVIATIONS

/ DENOTES DUPLICATE SAMPLE
< NOT DETECTED AT OR ABOVE THE DETECTION LIMIT SHOWN
cDCE cis-1,2-DICHLOROETHENE
TCE TRICHLOROETHENE
VC VINYL CHLORIDE

WELL	
ANALYTE	CONCENTRATION IN MICROGRAMS PER LITER

N

0 25 50 Feet

1 " = 50 '

Former TRW Microwave Site

Zone B1 Groundwater Analytical Results October 2015

Date 03-2016

Project No. 60446335

NORTHROP GRUMMAN

Figure 8

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36DD(1)		
Analyte	*October 2014*	*October 2015*
TCE	<0.5	<0.5
cDCE	7.1	5.7
VC	<0.5	1.7
Freon 113	<2.0	<2.0

T-11C		
Analyte	*October 2014*	*October 2015*
TCE	310	43
cDCE	23	3.3
VC	3.6	<0.50
Freon 113	15	1.1

T-12C		
Analyte	*October 2014*	*October 2015*
TCE	140	2.4
cDCE	5.1	13
VC	<1.0	<0.50
Freon 113	1.8	<0.50

T-10C			
Analyte	*October 2014*	*June 2015*	*October 2015*
TCE	1300	690	32
cDCE	76	1,500	1,600
VC	<10	7.2	<25
Freon 113	170	190	32

LEGEND

- A-ZONE MONITORING WELL
- B1-ZONE MONITORING WELL
- B2-ZONE MONITORING WELL
- B3-ZONE MONITORING WELL
- B4-ZONE MONITORING WELL
- EDUCTOR - DESTROYED 2014
- MONITORING WELL - DESTROYED 2014
- MONITORING WELL - DESTROYED 2004
- PROPERTY BOUNDARY

ABBREVIATIONS

/	DENOTES DUPLICATE SAMPLE
<	NOT DETECTED AT OR ABOVE THE DETECTION LIMIT SHOWN
cDCE	cis-1,2-DICHLOROETHENE
TCE	TRICHLOROETHENE
VC	VINYL CHLORIDE

NOTE

(1) GROUNDWATER ANALYTICAL DATA PROVIDED BY AMD.

WELL	
ANALYTE	CONCENTRATION IN MICROGRAMS PER LITER

N

0 25 50 Feet

1 " = 50 '

Former TRW Microwave Site

Zone B2 Groundwater Analytical Results October 2015

Date 03-2016

Project No. 60446335

NORTHROP GRUMMAN

Figure 9

File: W:\work\60238860_NG\GIS\Projects\Zone_B2_Results_Oct2015_v1.mxd
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LEGEND

- PROPOSED MEMBRANE INTERFACE PROBE/HYDRAULIC PROFILING TOOL LOCATION
- A-ZONE MONITORING WELL
- B1-ZONE MONITORING WELL
- B2-ZONE MONITORING WELL
- B3-ZONE MONITORING WELL
- B4-ZONE MONITORING WELL
- EDUCTOR - DESTROYED 2014
- MONITORING WELL - DESTROYED 2014
- MONITORING WELL - DESTROYED 2004
- PROPERTY BOUNDARY

N

0 25 50 Feet

1 " = 50 '

Former TRW Microwave Site

Proposed Membrane Interface Probe/Hydraulic Profiling Tool Locations

Date 04-2016	AECOM	Figure
Project No. 60493719		10

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