TECHNICAL MEMORANDUM

TO: ALANA LEE, EPA REGION 9

FROM: JOSH VAN BOGAERT, USACE

SUBJECT: FINAL AIR SAMPLING REPORT – FORMER ORION PARK HOUSING AREA BUILDINGS 546, 593, AND 685

DATE: JULY 2, 2013

CC: AMANDA SHERMAN, AEC
ANDY ANDERS, AEC
GAELLE GLICKFIELD, 63D RSC
KARI MEIER, USACE
JERRY SIMMS, USACE

This air sampling report has been prepared to document the results of indoor, outdoor, and sub-slab soil gas sampling conducted by the United States Army Corps of Engineers (USACE) at the Former Orion Park Housing Area (OPHA) (the site) February 26-27, 2013. The work was performed in accordance with the Final Sampling and Analysis Plan (SAP) (USACE 2013a) and SAP Addendum (USACE 2013b) dated February 13, 2013 and February 22, 2013, respectively.

Field Activities

USACE installed permanent sub-slab soil gas sample ports and collected indoor air, outdoor air, and sub-slab soil gas samples at Buildings 546 (MEPS), 593 (Navy Lodge), and 685. **Figure 1** shows the building locations. **Figures 2-4** show the sample locations. **Table 1** provides a summary of samples collected. Air sampling logs are included in **Attachment A**. Field logbook notes are included in **Attachment B**.

Field Changes

Three samples were collected from alternate locations because Navy Lodge guests were occupying the rooms where the samples were planned. The alternate locations are described below. These potential field changes were discussed during the pre-sampling site survey January 16, 2013 and presented in the SAP Addendum, which was accepted February 15, 2013 by U.S. Environmental Protection Agency (EPA) Region 9. EPA was also notified during field work that the alternate locations would be used (via phone call and email field report February 26, 2013).

- Sample B593-IA01 was planned to be collected in Room 101. This sample was moved to the west interior hallway, which was the location with the highest breathing zone photoionization detector (PID) reading observed in the building.

- Samples B593-SS03 and B593-IA03 were planned to be collected in Room 122. These samples were moved to the alternate locations in Room 123, directly across the hallway.

Data Validation

Tier 1A data validation was performed following EPA Region 9 Superfund Data Evaluation/Validation Guidance (R9QA/006.1) (EPA 2001). The Data Quality Evaluation (DQE) is included as **Attachment C**. Results of the DQE have been applied to the data presented in **Tables 2 and 3.** It was noted that high internal standard responses experienced by the lab would tend to bias affected data high, and several detections were flagged J^+ (estimated, biased high) as a result.

Results

Summaries of sample results are shown on **Table 2** (indoor/outdoor air) and **Table 3** (sub-slab soil gas).

Evaluation

In accordance with the approved SAP, the data were screened against the EPA Region 9 Regional Screening Levels (RSLs), and, and there were no exceedances. The more conservative State of California screening levels for PCE (0.4 µg/m^3 for residential use, 2 µg/m^3 for non-residential use) were also considered, and there were no exceedances. The evaluation is summarized below.

Indoor Air:

- Indoor air sample results from each of the three buildings were screened against the Non-Residential Long-Term Health-Based RSLs. There were no exceedances.

- Indoor air sample results were also compared to outdoor air sample results. The concentrations of COCs observed in indoor air are similar to those in outdoor air.

Sub-Slab Soil Gas:

- Sub-slab soil gas sample results for each of the three buildings were screened against the Non-Residential Sub-Slab RSLs, which are based on the indoor air RSLs with a sub-slab to indoor air attenuation factor of 0.03. There were no exceedances.

Outdoor Air:

- Directly applicable RSLs are not available for outdoor air. However, to provide a conservative evaluation, outdoor sample results were screened against the Residential Long-Term Health-Based RSLs. All three outdoor air samples exceeded the RSL for benzene, which is not a site-related chemical of concern (COC) because there is no sub-surface source. Benzene impacts have not been observed in groundwater during previous investigations, the most recent of which was conducted in 2011 (TetraTech 2012).

Because benzene exceeded the residential RSL in all outdoor air samples, additional background data was sought to aid interpretation of benzene results. The Bay Area Air Quality Monitoring District (BAAQMD) maintains air monitoring stations in Redwood City and San Jose. The Redwood City station is 9 miles northwest of the site, and BAAQMD typically collects a 24-hour composite sample every 12 days. The San Jose station is 10 miles southeast of the site, and BAAQMD typically collects a 24-hour composite sample every 6 days. Wind direction and speed at the site varies by season, time of day, and short-term weather patterns. Characteristic of the Santa Clara Valley, diurnal effects typically result in moderate winds from the northwest during the afternoon and early evening, and lighter winds from the southeast during the late evening through early morning period (see **Attachment D**). Thus, the Redwood City and San Jose air monitoring stations are both

upwind/downwind of the site, depending on the time of day. Results for all 2012 samples at these locations were obtained (see **Attachment E**). These data demonstrate that concentrations of benzene observed in outdoor air at the site are below regional levels.

Conclusions

There were no indoor air or sub-slab soil gas exceedances of RSLs. The concentrations of COCs observed in indoor air are similar to those in outdoor air. The results demonstrate that vapor intrusion is not occurring at the buildings sampled in the former OPHA; if vapor intrusion is occurring, it is not at levels of concern. No further investigation is recommended at this time.

References

EPA, 2001. Draft Region 9 Superfund Data Evaluation/Validation Guidance, R9QA/006.1. December.

TetraTech, 2012. Final Supplemental Site Investigation Report, Former Orion Park Housing Area. June.

USACE, 2013a. Final SAP for Indoor Air, Outdoor Air, and Sub-Slab Soil Gas Sampling at Naval Air Station Moffett Field, Former OPHA, Buildings 546-MEPS, 685, and 593-Navy Lodge. February 13.

USACE, 2013b. Technical Memorandum, Site-Specific SAP Addendum, Building 546, 593, ad 685, Former OPHA – Air Sampling. February 22.

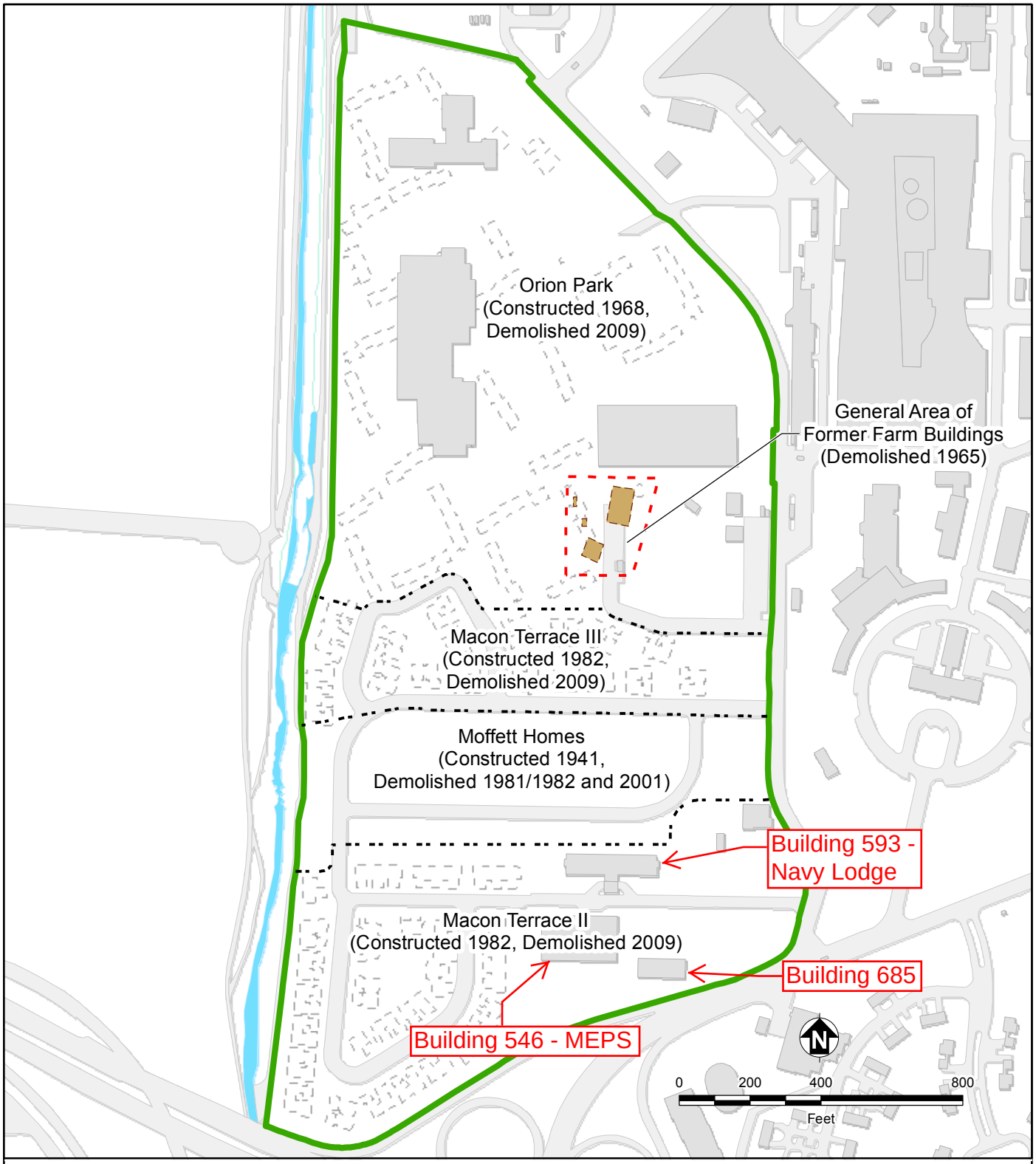
Figures, Tables, & Attachments

Figure 1 Former Orion Park Housing Area Developments
Figure 2 Building 546 (MEPS) Sample Locations
Figure 3 Building 593 (Navy Lodge) Sample Locations
Figure 4 Building 685 Sample Locations

Table 1 Sample Summary Table
Table 2 Data Summary Table – Indoor/Outdoor Air
Table 3 Data Summary Table – Sub-Slab Soil Gas

Attachment A Air Sampling Logs
Attachment B Field Logbook Notes
Attachment C Data Quality Evaluation
Attachment D Wind Roses
Attachment E BAAQMD Data
Attachment F Region 9 EPA Comments and Resolution

Figures



Former Orion Park Housing Area Boundary

Former Farm Building

Building/Structure

Road

Water

Housing Development Boundary

American Integrated Services, Inc.

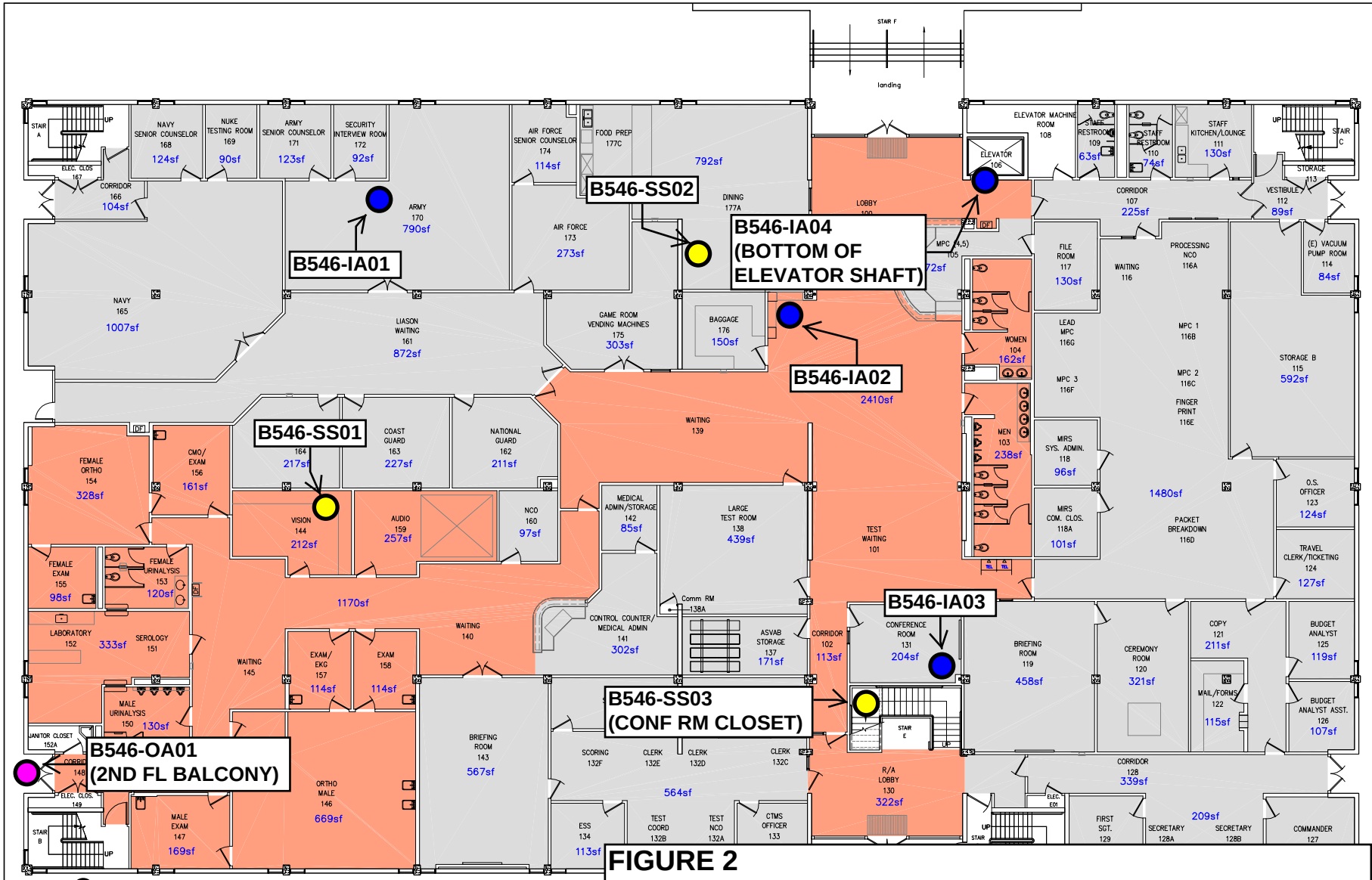
TETRA TECH

Former Orion Park Housing Area

Former Naval Air Station Moffett Field, Moffett Field, CA

FIGURE 1
FORMER ORION PARK
HOUSING AREA DEVELOPMENTS

2011-11-30 v:\misc_gis\moffett\projects\opha\supp_si\fig__orion_park_housing_area_dev.mxd TtEMI-OAK colin.lee



INDOOR AIR SAMPLE
SUB-SLAB SAMPLE
OUTDOOR AMBIENT AIR SAMPLE

Building 546
1st FLoorpla

FIGURE 2
BUILDING 546 (MEPS) SAMPLE LOCATIONS
FORMER ORION PARK HOUSING AREA AIR SAMPLING

CALIFORNIA AIR NATIONAL GUARD

129 BASE CIVIL ENGINEER
129MDG/CE/DEE
BLDG 683 MAIL STOP 17
MOFFETT FEDERAL ARFIELD
MOUNTAIN VIEW, CA 94035-5006

COMM: (650) 603-9205
FAX: (650) 603-9246
DSN: 359-9205

LEGEND

Function1 Function2 101 — Tenant/Use; Tenant/Use
202sf — Room Number
Square Footage

MEPS

JOINT USE – MEPS & 129th [Medical-Training-Exam]

PROJECT TITLE:
B546, REAL PROPERTY
SQ FOOTAGE ALLOCATION

GOVERNMENT PROJECT NO.:
GOVERNMENT WORK ORDER NO.:

PROJECT LOCATION:
CALIFORNIA AIR NATIONAL GUARD
129TH Rescue Wing
Moffett Federal Airfield
Mountain View, CA

DRAWING/SHEET TITLE:
BLDG 546 1st FLR
TENANT ALLOCATION PLAN

SCALE: NONE

DATE: 10 MAR 2002

DESIGNED BY:
DRAWN BY: ABB
CHECKED BY: JC

SHEET NO.
SHEET 1 OF 2

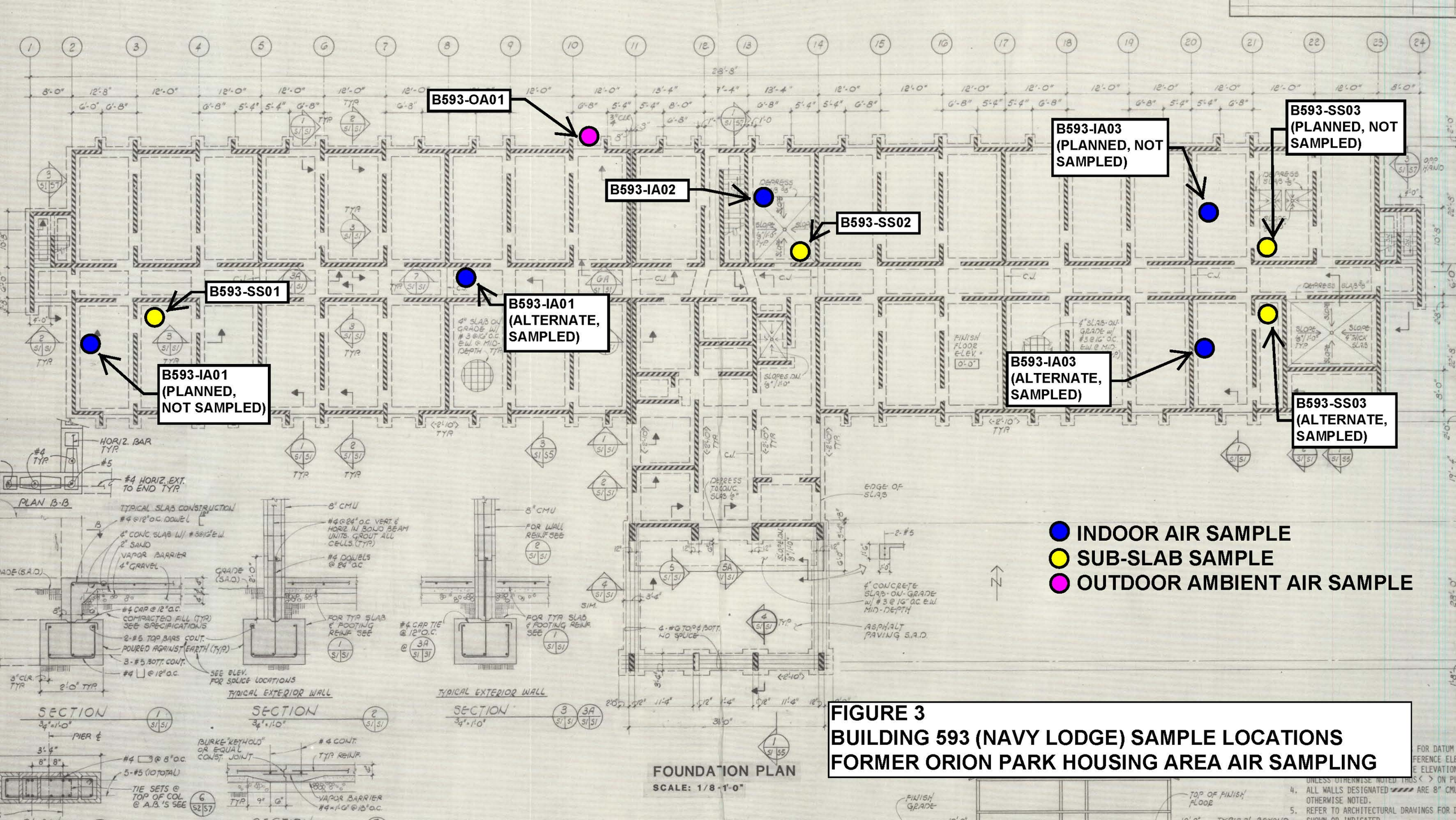


FIGURE 3
BUILDING 593 (NAVY LODGE) SAMPLE LOCATIONS
FORMER ORION PARK HOUSING AREA AIR SAMPLING

LANDSCAPE RETAINING WALL

24 UTILITY ROOM (90.0 SF)

22 WAITING AREA (123.0 SF)

CLOSET

23 CONTRACT FILE ROOM (691.0 SF)

ENTRANCE

21 LOBBY (123.0 SF)

ROOF OPNG.

COURTYARD (392.0 SF)

1 OFFICE (210.0 SF)

2 OFFICE (127.0 SF)

3 OFFICE (105.0 SF)

4 OFFICE (127.0 SF)

5 OFFICE (171.0 SF)

6 OFFICE (228.0 SF)

20 CORRIDOR (781.0 SF)

7 OFFICE (164.0 SF)

14A STORAGE (168.0 SF)

14 TER (123.0 SF)

15 ADMIN (92.0 SF)

16 BREAK (105.0 SF)

16A MEN (138.0 SF)

18 TOILET (38.0 SF)

17 JANITOR (38.0 SF)

19 WOMEN (95.0 SF)

20A KITCHENETTE (30.0 SF)

8 OFFICE (237.0 SF)

13 CONFERENCE (240.0 SF)

12 OFFICE (244.0 SF)

11 OFFICE (171.0 SF)

10 OFFICE (107.0 SF)

9 OFFICE (234.0 SF)

B685-SS01

B685-SS02

B685-SS03

B685-IA01

B685-IA02

B685-IA03

LANDSCAPE RETAINING WALL

ROOF DRIP LINE

INDOOR AIR SAMPLE

SUB-SLAB SAMPLE

N

10' 5' 0' 10' 20'

SCALE: 1 INCH = 10 FEET

B685-OA01
(EAST END ON ROOF)

FIGURE 4
BUILDING 685 SAMPLE LOCATIONS
FORMER ORION PARK HOUSING AREA AIR SAMPLING

REVISION	DESCRIPTION	DATE

63D RSC MOFFETT FIELD — MOUNTAIN VIEW, CALIFORNIA

BLDG 685 FLOOR PLAN

DESIGN BY: RASBERRY
DESIGN BY: RASBERRY
CHECKED BY: RASBERRY

U.S. ARMY RESERVE
63D REGIONAL SUPPORT COMMAND
MOFFETT FIELD
230 R.T. JONES RD. MOUNTAIN VIEW, CA 94035

SCALE: 1"=10'
SHEET NO. A1 1 OF 1
FAC ID: CA187
DATE: 17 JAN 2013
FILE NAME: FLOOR PLAN.DGN

ORIGINAL DRAWING SIZE: 11"x17"

Tables

TABLE 1
SAMPLE SUMMARY TABLE
FORMER ORION PARK HOUSING AREA AIR SAMPLING
JULY 2013

Sample ID	Date	Duration (hr:min)	Media	Location
Building 546 (MEPS)				
B546-SS01	2/27/13	0:16	sub-slab gas	vision testing (Room 144)
B546-SS01 DUPE	2/27/13	0:16	sub-slab gas	B546-SS01 field duplicate
B546-SS02	2/27/13	0:08	sub-slab gas	dining area (Room 177A)
B546-SS03	2/27/13	0:09	sub-slab gas	conference room (Room 131)
B546-IA01	2/26/13-2/27/13	21:51	indoor air	Army office (Room 170)
B546-IA02	2/26/13-2/27/13	21:42	indoor air	lobby (Room 100)
B546-IA03	2/26/13-2/27/13	19:23	indoor air	conference room closet
B546-IA04	2/26/13-2/27/13	0:09	indoor air	bottom of elevator shaft
B546-OA01	2/26/13-2/27/13	22:14	outdoor air	southwest balcony
Building 593 (Navy Lodge)				
B593-SS01	2/27/13	0:09	sub-slab gas	Room 101
B593-SS02	2/27/13	0:08	sub-slab gas	housekeeping laundry room
B593-SS03	2/27/13	0:09	sub-slab gas	Room 123
B593-IA01	2/26/13-2/27/13	18:09	indoor air	hallway, next to west interior double doors
B593-DUPE	2/26/13-2/27/13	18:09	indoor air	B593-IA01 field duplicate
B593-IA02	2/26/13-2/27/13	18:21	indoor air	housekeeping laundry room
B593-IA03	2/26/13-2/27/13	21:42	indoor air	Room 123
B593-OA01	2/26/13-2/27/13	21:51	outdoor air	Room 112 HVAC window unit intake
Building 685				
B685-SS01	2/27/13	0:09	sub-slab gas	storage (Room 14A)
B685-SS02	2/27/13	0:11	sub-slab gas	hallway (outside Room 17, janitor's closet)
B685-SS03	2/27/13	0:09	sub-slab gas	office (Room 11)
B685-IA01	2/27/13	11:25	indoor air	contract file room (Room 23)
B685-IA02	2/27/13	10:10	indoor air	men's restroom (Room 16A)
B685-IA03	2/27/13	10:09	indoor air	office (Room 9)
B685-OA01	2/27/13	12:03	outdoor air	roof HVAC intake
B685-DUPE	2/27/13	12:03	outdoor air	B685-OA01 field duplicate

TABLE 2
DATA SUMMARY TABLE - INDOOR/OUTDOOR AIR
FORMER ORION PARK HOUSING AREA AIR SAMPLING
JULY 2013

Building 546 - Indoor Air / **Outdoor Air**

Analyte	Residential Indoor Air Screening Level[2]	Non-Residential Indoor Air Screening Level[2]	B546-IA01		B546-IA02		B546-IA03		B546-IA04		B546-0A01	
1,1-Dichloroethene	210	880	0.0084	J	0.0051	J	0.0094	J	0.012	J	0.0079	U
Benzene	0.31	1.6	0.46		0.22	U	0.47		0.32		0.46	
cis-1,2-Dichloroethene	63[3]	260[3]	0.095	U	0.052	U	0.071	U	0.042	U	0.043	U
Tetrachloroethene	9.4	47	0.21	UJ	0.21	U	0.1	UJ	0.21	UJ	0.093	UJ
Trichloroethene	0.43	3	0.19	U	0.11	U	0.11	UJ	0.08	UJ	0.065	UJ
Vinyl chloride	0.16	2.8	0.009	J	0.0056	J	0.0088	J	0.009	J	0.0066	J

Building 593 - Indoor Air / **Outdoor Air**

Analyte	Residential Indoor Air Screening Level[2]	Non-Residential Indoor Air Screening Level[2]	B593-IA01		B593-IA01 DUPE		B593-IA02		B593-IA03		B593-OA01	
1,1-Dichloroethene	210	880	0.0079	U	0.0079	U	0.0079	U	0.0079	U	0.0079	U
Benzene	0.31	1.6	0.45		0.61		0.59		0.59		0.59	
cis-1,2-Dichloroethene	63[3]	260[3]	0.041	U	0.018	J	0.014	UJ	0.01	UJ	0.026	U
Tetrachloroethene	9.4	47	0.11	UJ	0.17	J	0.068	UJ	0.061	UJ	0.15	UJ
Trichloroethene	0.43	3	0.037	UJ	0.17		0.091	UJ	0.041	UJ	0.24	U
Vinyl chloride	0.16	2.8	0.0071	J	0.0054	J	0.0093	J	0.0057	J	0.0062	J

Building 685 - Indoor Air / **Outdoor Air**

Analyte	Residential Indoor Air Screening Level[2]	Non-Residential Indoor Air Screening Level[2]	B685-IA01		B685-IA02		B685-IA03		B685-OA01		B685-OA01 DUPE	
1,1-Dichloroethene	210	880	0.0079	U	0.0079	U	0.0079	U	0.0083	J	0.0079	U
Benzene	0.31	1.6	0.56		0.4		0.52		0.35		0.49	
cis-1,2-Dichloroethene	63[3]	260[3]	0.026		0.012	J	0.011	J	0.065		0.05	U
Tetrachloroethene	9.4	47	0.25	J	0.07	J	0.07	J	0.26	J	0.13	UJ
Trichloroethene	0.43	3	0.18		0.07	J	0.057	J	0.12	J	0.092	UJ
Vinyl chloride	0.16	2.8	0.0063	J	0.0051	U	0.0051	U	0.0061	J	0.0064	J

Notes

1. All values are in µg/m^3.
2. EPA Regional Screening Levels (RSLs) for air. http://www.epa.gov/region9/superfund/prg/ (accessed December 2012)
3. Based on long-term screening level for trans-1,2-DCE.
4. A shaded cell indicates an exceedance of the screening level.
5. Indoor air data were screened against non-residential indoor air screening levels.
6. Outdoor air data were screened against residential indoor air screening levels, for comparison purposes only. Exceedances are not site-related.
7. Results were also screened against the EPA Region 9 Interim Short-Term Management Action Levels. There were no exceedances.
8. U = non-detect; J = estimated; UJ = non-detect, estimated detection limit; J^+ = estimated, biased high

TABLE 3
DATA SUMMARY TABLE - SUB-SLAB SOIL GAS
FORMER ORION PARK HOUSING AREA AIR SAMPLING
JULY 2013

Building 546 - Sub-Slab Soil Gas

Analyte	Non-Residential Sub-Slab Soil Gas Screening Level[3]	B546-SS01		B546-SS01 DUPE		B546-SS02		B546-SS03	
1,1-Dichloroethene	29,333	0.0091	J^+	0.0085	J^+	0.013	J^+	0.01	J
Benzene	53	0.17	U	0.16	U	0.14	U	0.088	UJ
cis-1,2-Dichloroethene	86,800[4]	0.051	U	0.046	U	0.047	U	1.6	
Tetrachloroethene	1,567	0.32	UJ	0.32	UJ	0.31	UJ	5.7	
Trichloroethene	100	0.54	J^+	0.26	U	0.42	U	2.1	
Vinyl chloride	93	0.011	J^+	0.0074	J^+	0.012	J^+	0.0075	J

Building 593 - Sub-Slab Soil Gas

Analyte	Non-Residential Sub-Slab Soil Gas Screening Level[2,3]	B593-SS01		B593-SS02		B593-SS03	
1,1-Dichloroethene	29,333	0.0079	U	0.0079	U	0.0079	U
Benzene	53	2	J^+	0.11	UJ	0.11	UJ
cis-1,2-Dichloroethene	86,800[4]	0.028	U	0.03	U	0.024	UJ
Tetrachloroethene	1,567	0.8	J^+	0.58	U	0.88	
Trichloroethene	100	0.076	UJ	0.15	U	0.026	UJ
Vinyl chloride	93	0.0083	J^+	0.008	J^+	0.0072	J

Building 685 - Sub-Slab Soil Gas

Analyte	Non-Residential Sub-Slab Soil Gas Screening Level[2,3]	B685-SS01		B685-SS02		B685-SS03	
1,1-Dichloroethene	29,333	0.012	J^+	0.02	J^+	0.019	J^+
Benzene	53	0.29	J^+	0.71	J^+	0.22	U
cis-1,2-Dichloroethene	86,800[4]	0.05	J^+	0.053	U	0.034	U
Tetrachloroethene	1,567	0.41	J^+	0.4	U	0.36	U
Trichloroethene	100	0.062	J^+	0.069	UJ	0.057	UJ
Vinyl chloride	93	0.0068	J^+	0.013	J^+	0.012	J^+

Notes

1. All values are in $\mu g/m^3$.
2. Based on EPA Regional Screening Levels (RSLs) for air. http://www.epa.gov/region9/superfund/prg/ (accessed December 2012)
3. Assumes a sub-slab to indoor air attenuation factor of 0.03.
4. Based on long-term screening level for trans-1,2-DCE.
5. A shaded cell indicates an exceedance of the Screening Level.
6. Sub-slab data were screened against non-residential sub-slab soil gas SLs.
7. U = non-detect; J = estimated; UJ = non-detect, estimated detection limit; J^+ = estimated, biased high

Attachment A
Air Sampling Logs

Air Sampling Log

Sample Location/ID	Sample Type	Sample Duration	Canister ID	Restrictor ID	Date/Time Started	Initial Vacuum (" Hg)	Date/Time Stopped	Final Vacuum (" Hg)	Comments
B546-1A01	INDOOR	24 h	211	248	26 FEB 13 1602	30	27 FEB 13 1353	6	*
" -1A02	↓	↓	20	130	↓ 1608	>30	↓ 0350	19	
" -1A03	↓	↓	272	187	↓ 1552	30	↓ 1115	4.5	0806 vac 8.5" *
" -0A01	OUTDOOR	↓	217	88	↓ 1540	>30	↓ 1354	4	*
B593-1A01	INDOOR	↓	247	314	↓ 1703	28	↓ 1112	4	ROOM OCC. RELOCATE **
" -DUPE	↓	↓	179	314	↓ 1703	29	↓ 1112	4	TO HALLWAY **
" -1A02	↓	↓	10	134	↓ 1649	30	↓ 1110	5	*
" -1A03	↓	↓	326	121	↓ 1651	30	↓ 1433	5	
" -0A01	OUTDOOR	↓	175	208	↓ 1644	28	↓ 1435	3.5	INIT VAC ON CAN GAUGE
B685-0A01	↓	12 h	36	306 ~~128~~	27FEB13 0722	>30	27FEB13 1925	6	
B685-DUPE	↓	↓	3	306	↓ 0722	>30	↓ 1925	6	
B685-1A01	INDOOR	↓	8	310	↓ 0732	29.5	↓ 1857	4.5	
" -1A02	↓	↓	97	329	↓ 0736	29.5	↓ 1746	4	
" -1A03	↓	↓	267	308	↓ 0738	29.5	↓ 1747	4	
B593-SS03	SUBSLAB	GRAB	231	36 ~~49~~	↓ 1052	>30	↓ 1101	4	gage #49
~~B593-SS01~~		JVB 2/27/13	~~168~~	~~39~~	FAULTY FLOW CONTROLLER.				~~gage #49~~ JS 2/27/13
B593-SS01	SUBSLAB	GRAB	166	42	27FEB13 1222	>30	27FEB13 1231	4	gage #49
" SS02	"	"	31	20	" 1428	>30	" 1436	4	" "
B5 ~~B46~~-IA04	Pathway	Grab	184	19	" 1538	>30	" 1547	3	" "
B5 ~~B46~~-SS01	Sub slab	"	21 ~~349~~ JVB 2/27/13	40	" 1625	>30	" 1641	4	" "
" " Dupe	"	"	006	40	" 1625	>30	" 1641	4	" "

Weather/Temperature Start: clear overcast rain temp (F): 65°F
Weather/Temperature Stop: clear overcast rain temp (F): SEE LOG BOOK

Notes:

Sampler: JERRY SIMMS [signature] 2/26/13
Name JOSH VAN BOGAERT Sign [signature] Date 26 FEB 13

Air Sampling Log

Sample Location/ID	Sample Type	Sample Duration	Canister ID	Restrictor ID	Date/Time Started	Initial Vacuum (" Hg)	Date/Time Stopped	Final Vacuum (" Hg)	Comments
B546-SS02	SUBSLAB	GRAB	350/1163	62	27FEB13 1705	>30	27FEB13 1713	4	
" -SS03			22	32	1736	>30	1745	4	
B685-SS02			225	43	1826	>30	1837	4	REUSED RESTRICTOR DUE
" -SS03			41	43	1908	>30	1917	3	TO FAILED REST. EARLIER
" -SS01			15	19	2006	>30	2015	4	

JVB 2/27/13

Weather/Temperature Start: clear overcast rain temp (F): SEE LOGBOOK
Weather/Temperature Stop: clear overcast rain temp (F):

Notes: B685-SS02: RESISTANCE WHEN PURGING, FINE DUST IN BOTTOM OF HOLE WOULD NOT VAC OUT YESTERDAY, SAMPLING OK. LEAK TEST OK. SAME ISSUE W/ B685-SS01. HAD TO VAC HOLE AND RE-RUN LEAK TEST. ALSO TIGHTENED CONNECTIONS.

Sampler: JOSH VAN BOGAERT — Name; Sign; 27 FEB 13 — Date 2/27/13

JERRY SIMMS

Attachment B
Field Logbook Notes

TABLE OF CONTENTS - RESERVED

26 Feb 13 - FORMER OPHA AIR SAMPLING

0745 JOSH VAN BOGAERT (JVB) → WRITING
JERRY SIMMS (JS) } USACE

ONSITE. WEATHER: COOL 44°F, SUNNY AND CLEAR.
HUMIDITY 83%. BAROMETRIC PRESSURE: 30.22" Hg

- USING ppbRAE+, SN: 250-104570
PINE ENVIRONMENTAL RENTAL #15352

0800 - MURRAY WOODARD WITH BREAKAWAY CONCRETE CUTTING ONSITE TO DRILL SLAB HOLES.

0805 CALIBRATE PID w/ 10 ppm ISOBUTYLENE FROM PINE. LOT# 12-4413
AMBIENT CAL = 0.0 ppb
SPAN CAL = 10.0 ppm
READING AFTER CAL: SPAN = 10.0 ppm
AMBIENT: 0 ppb IN BREATHING ZONE

0810: JS HELD SAFETY BRIEFING.

0840: LOCATION B685-SS02 BREATHING ZONE = 0 ppb - 12 ppb
PID UNDER CARPET SQUARE: high of 296 ppb

0905: DRILL HOLE @ B685-SS02
PID IN HOLE: high of 580 ppb

JVB 26 Feb 13

26 Feb 13 OHPA AIR SAMPLING

~~SS~~ B685 - SS02 SLAB 6" THICK

0915 - MOVE TO B685-SS03.

PID BREATHING ZONE = 0 ppb

PID UNDER CARPET SQUARE = high of 1892 ppb in hole 512 ppb

- SLAB 5 1/4", 7 1/4" to VAPOR BARRIER

0930 - MOVE TO B685-SS01

BREATHING ZONE 0 ppb

UNDER CARPET TILE HIGH OF 663 ppb

BREATHING-ZONE AFTER LIFTING CARPET: 21 ppb, in hole 657 ppb

- Slab 5 1/2", 8.0" to Vapor Barrier

1000 - MOVE TO BLDG 593 NAVY LODGE

1005 - BREATHING ZONE @ B593-SS02 = 15 ppb. DRILL HOLE. PID 160 ppb IN HOLE

1007 - BREATHING ZONE (BZ) IN HALL NEAR WEST INTERIOR SPLIT DOORS = 720 ppb MAX

1010 - BZ Rm 101 MAX PEAK 260 ppb

1015 - DRILL B593-SS01 in Rm 101

- SLAB AT B593-SS01 = 3.5"

- SLAB AT B593-SS02 = 4"

- B593 SS01 PID IN HOLE 2559 ppb PEAK

JVB
26 Feb 13

26 FEB 13 OPHA AIR SAMPLING

1025 - Rm 123 BZ PEAK 154 ppb

- DRILL ~~B593~~ - ~~SS03~~ ~~B546~~ - SS03 B593

- SLAB DEPTH 3.5"

- PID IN HOLE PEAK 252 ppb

1040 - MOVE TO BLDG 546 - MEPS

- GO TO CONF. Rm CLOSET B546 - SS03 BZ PEAK 138 ppb

- COULD NOT GET THROUGH 3' SQ FOOTING UNDER COLUMN IN CLOSET

1045 - BREAK FOR LUNCH

1145 - RETURN. WILL MOVE HOLE TO OTHER SIDE OF CLOSET

B546 ~~B593~~ - SS03 SLAB 4"

PID IN HOLE 193 ppb PEAK

1200 - MOVE TO VISION ROOM

BZ AT ~~B593~~ B546 - SS01 : 300 ppb PEAK

SLAB 7.5", 8.5" VOID

PID IN HOLE 540 ppb PEAK

1215 - MOVE TO CAFETERIA

~~B593~~ B546 - SS02 BZ PEAK 191 ppb

SLAB 5.5"

PID IN HOLE: PEAK 1062 ppb

JVB
26 Feb 13

26 FEB 13: OPHA AIR SAMPLING

1225 - ALL SUBSLAB HOLES INSTALLED AS PLANNED EXCEPT B593-SS03 INSTALLED IN ALTERNATE LOCATION

1230 - PID B2 OUTDOOR AIR IN FRONT OF MEPS: 0 ppb

1230 - MW OFFSITE

1245 - NAVY LODGE BLDG 593

1300 - INSTALL PROBE B593-SS01

1315 - INSTALL PROBE B593-SS02

1345 - " " B593-SS03

1415 - INSTALL PROBE B546-SS02

1430 " " B546-SS03

1445 " " B546-SS01

1500 WEATHER: WARM, SUNNY, STILL 65°F, BP = 30.16" Hg, HUMIDITY 27%

1720 INSTALL PROBE B685-SS02

1740 " " " -SS03

1800 " " " -SS01

1815 JVB + JS OFFSITE

JVB
2/26/13

SAMPLE ID	CAN ID	RESTRICTOR ID	START 26 FEB 13	START 27 FEB 13	STOP TIME	VAC
B546-1A01	211	248	1602	20	1353	6
" -1A02	20	130	1608	>30	1350	19
" -1A03	272	187	1552	30	1115	4.5
" -0A01	217	88	1540	>30	1354	4
B593-1A01	247	314	1703	28	1112	4
" -DUPE	179	" ~~124~~	1703	29	1112	4
" -1A02	10	134	1649	30	1110	5
" -1A03	326	121	1651	30	1433	5
" -0A01	175	208	1644	28	1435	3.5

INIT VAC "Hg

JVB

26 Feb 13

26 FEB 13

27 FEB 13 - OPHA AIR SAMPLING

0700 - JVB + JS ONSITE

WEATHER: 46°F, SLIGHTLY CLOUDY, STILL, HUMIDITY 70%, BP 30.29"

0722 - 0738: START 12-HR SAMPLES AT BLDG 685.

0745 - CHECK SUB-SLAB PORTS

CHECK VACUUM ON 24-HR SAMPLES. THE FOLLOWING ARE LOW AND MAY NEED TO BE STOPPED EARLY. WILL MONITOR

B546-1A01 B593-1A01
" -1A03 -DUPE
-0A01 -1A02

0830 OFFSITE TO LOWES FOR SUPPLIES

0930 BACK ONSITE

0955 CALIBRATE PID. ZERO + SPAN CAL W/ 10 ppm ISOBUTYLENE READING AFTER CAL: 0, 10.0 ppm

1100 B2 Rm 123 = 79 ppb

1140 B2 Rm 101 = 54 ppb

1300 OFFSITE FOR LUNCH

1345 BACK ONSITE

1425 B2 B593 LAUNDRY Rm = 0 ppb

1612 B2 B546 VISION Rm = 76 ppb

1706 B2 B546 CAFE Rm = 92 ppb

JVB
2/27/13

SAMPLE ID	CAN ID	RESTRICTOR ID	START DATE	START TIME	VAC	STOP DATE	STOP TIME	VAC
B685-0A01	36	306	27FEB13	0722	>30	27FEB	1925	6
" -DUPE	3	306	"	0722	>30		1925	6
" -1A01	8	310	"	0732	29.5		1857	4.5
" -1A02	97	329	"	0736	"		1746	4
" -1A03	267	308	"	0738	"		1747	4
B593-SS03	231	36	"	1052	>30	27FEB	1101	4
B593-SS01	168	39	"	1222	>30		1231	4
" -SS02	31	20	" JVB 2/27/13	~~1224~~	1428	>30	1436	4
B546-1A04	184	19	"	1538	>30	27FEB	1547	3
B546-SS01	21	40	"	1625	>30	"	1641	4
B546-SS01-DUPE	6	40	"	1625	"	"	1641	4
B546-SS02	350/1163	62	"	1705	>30	"	1713	4
B546-SS03	22	32	" 1736	~~1713~~ JVB	>30	"	1745	4

10 OPHA AIR SAMPLING

LEAK TESTING - 27 FEB 13

PORT ID	TIME	SHROUD He Conc. %	Bag Conc ppm	
B593-SS03	1040	9.5-13	250	PASS
" -SS01	1145	1.0-1.2	0	PASS
" - SS02	1422	1-1.57	50	PASS
B546-SS01	1622	1.18-2.1	0	PASS
B546-SS02	1700	1.1-2.1	0	PASS
B546-SS03	1725	1.12-1.46	0	PASS
B685-SS02	1825	1.84-2.1	175	PASS
B685-SS03	1905	2.1-2.3	0	PASS
~~B685-SS01~~	~~200~~ JVB 2/27/13			
B685-SS01	1940	2.1-2.9	5850	FAIL
B685-SS01	2000	2.0-3.1	575	PASS

NOTE: FIRST LEAK TEST AT B685-SS01 FAILED. HIGH RESISTANCE DURING PURGING. DISASSEMBLED APPARATUS AND USED SYRINGE AND SS STRAW TO VACUUM HOLE. TIGHTENED ALL CONNECTIONS AND RE-RAN TEST. LESS RESISTANCE THIS TIME AND TEST PASSED.

JVB 2/27/13

27 FEB 13 - OPHA AIR SAMPLING

1705 - WEATHER: 62°F
CLEAR, SUNNY, STILL
HUMIDITY 49%
BP: 30.25" Hg

1710 - PID READING BELOW BLDG 546 ELEVATOR = 0-4 ppb

1730 - B2 BLDG 546 CONF RM = 95 ppb

1910 - B2 BLDG 685, SS03 OFFICE = 0 ppb

1900 - NOTE. DUE TO FAILED RESTRICTOR AT B593-SS01 EARLIER, WHICH WAS PUT OUT OF SERVICE, WE WERE ONE SHORT ON RESTRICTORS AND HAD TO REUSE ONE RESTRICTOR FOR BOTH SAMPLES B685-SS02 AND B685-SS03.

2045 OFFSITE

JVB 2/27/13

	SAMPLE ID	CAN ID	RESTRICT. ID	START DATE	START TIME	START VAC	STOP DATE	STOP TIME	STOP VAC
*	B685-SS02	225	43	27FEB13	1826	>30	27FEB	1837	4
	" -SS03	41	43	"	1908	>30	"	1917	3
**	" -SS01	15	19	"	2006	>30	"	2015	4

JNB 2/27/13

** B685-SS01 HAD SAME ISSUE AS BELOW. VACUUMING HOLE IMPROVED PROBLEM.

* DURING PURGING AND LEAK TESTING AT B685-SS02, THE SYRINGE PLUNGER WAS DIFFICULT TO PULL (DUE TO VACUUM RESISTANCE.) LIKELY DUE TO FINE DUST IN BOTTOM OF HOLE THAT WOULD NOT VAC OUT YESTERDAY. SAMPLE COLLECTION PROCEEDED OK.

Attachment C
Data Quality Evaluation

DATA QUALITY EVALUATION

Indoor Air, Outdoor Air, and Sub-Slab Soil Gas Sampling
Naval Air Station Moffett Field, Former Orion Park Housing Area,
Buildings 546-MEPS, 685, and 593-Navy Lodge
Moffett Field, California

Prepared by: U.S. Army Corps of Engineers, Louisville District

Date: April 8, 2013

1.0 INTRODUCTION

This data quality evaluation is for the analytical data generated from air samples collected in February 2013 from the Former Orion Park Housing Area, buildings 546-MEPs, 685, and 593-Navy Lodge at the Naval Air Station , Moffett Field, California.

Field and analytical work was conducted in accordance with the final project-specific Sampling and Analysis Plan (SAP) and its addendum dated February 2013. Samples consisted of indoor air, outdoor air and sub-slab soil gas samples. A total of twenty-two primary and three duplicate air samples were collected and submitted for analysis to Microbac Laboratories, Inc located in Merrillville, Indiana. Samples were analyzed for select volatile organic compounds by EPA Method TO-15 (SIM).

As defined in the SAP, a Tier 1A data validation was performed by a qualified chemist following EPA Region 9 Superfund Data Evaluation/Validation Guidance (R9QA/006.s). This data usability evaluation includes a review of the summary results of the laboratory quality control (QC), as well as, those of the associated field samples.

The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected resulting in analytical data that can be used to support the decision-making process. The procedures for assessing the precision, accuracy, representativeness, completeness, and comparability parameters (PARCC) were based on the project SAP and the USEPA Contract Laboratory National Functional Guidelines for Organic Data Review, June 2008.

This memorandum describes the quality of the data collected and brings to the attention of the data users any data quality problems encountered during the course of analysis. Below are the findings from the evaluation of the analytical data, which are also presented in tabular form in the attached tables. Table 1 presents a summary of the samples collected. Table 2 summarizes sample data qualifications and Table 3 presents the analytical results obtained for this sampling event affixed with their final data qualifications.

2.0 ANALYTICAL DATA

Microbac analyzed the samples for select volatile organic compounds by EPA Method TO-15 (SIM). Analytes included the following:

- 1,1-Dichloroethene (1,1-DCE),
- Benzene,
- cis-1,2-Dichloroethene (cis-1,2-DCE),
- Tetrachloroethene (PCE),
- Trichloroethene (TCE) and
- Vinyl Chloride.

Results were provided in sample delivery groups (SDG) 13C0118, 13C0168, 13C0175, and 13C0180.

The SDGs were assessed by reviewing the following: (1) chain-of-custody documentation, (2) sample preservation and holding-time compliance, (3) case narratives, (4) surrogate recoveries, (5) method blank results, (6) laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results, (7) laboratory duplicate precision,(8) field duplicate precision, and (9) reporting limits (RLs).

The data qualifiers used in this assessment are defined as follows:

- U = the analyte was not detected at the specified limit of detection.
- J = the identification of the analyte is acceptable but the quality assurance criteria indicate that the quantitative values may be outside the normal expected range of precision. An accompanying + or – indicates that the result is biased high or low, respectively. This qualifier is also used to identify detects reported below the reporting limit (RL).
- UJ = analyte is considered a nondetect but the specified detection limit may not be accurate or precise (estimated).
- R = the data are unusable due to deficiencies in the ability to analyze the sample and meet QC criteria.

Sample qualifications are summarized on Table 2.

3.0 FINDINGS

There were two sample preparation batches associated with the samples: B038684 and B038789. The samples associated with each preparation batch are indicated on the attached sample summary table, Table 1. The results of the Tier 1A data validation are discussed in the following sections and summarized on Table 2. Sample results, affixed with their final data qualifiers, are provided in Table 3.

Chain-of-Custody

Samples were submitted under chain of custody procedures to the laboratory. The chains of custody were appropriately signed by both field and laboratory personnel with all samples and analyses accounted for.

Samples with field IDs containing “IA0” were mistakenly logged into the laboratory as “1A0”. The correct designation has been used in this memorandum.

Sample Preservation and Holding Time Requirements

All analyses were performed within the maximum allowable hold time of 30 days. No chemical preservation is applicable. Sample canisters were shipped at ambient temperature and pressure.

Case Narrative

The case narratives indicated that some samples had high internal standard responses due to matrix interferences explaining that SIM analysis uses internal standard level 100x lower than the full scan method, which makes them much more susceptible to matrix interferences. Review of internal standard information is not required as part of a Tier 1A validation. However, it should be noted that high internal standard responses would tend to bias the data high. All samples were impacted except for samples B593-IA02, B593-IA03, B593-DUPE, and B685-Dupe.

Surrogates

Surrogate spike recoveries were within the quality control (QC) limits prescribed in the SAP of 77.7 – 127% for the samples, method blanks, and laboratory control samples (LCS) with the following exceptions:

Samples Qualified for Surrogate Recoveries					
SDG	SAMPLE	Surrogate	RECOVERY	LIMIT	QUALIFICATION
	B038789-BLK1	4-bromofluorobenzene	76%	77.7 - 127%	J- detects/nondetects
13C0118	B593-SS01	4-bromofluorobenzene	164%	77.7 - 127%	J+ detects
	B593-SS02	4-bromofluorobenzene	131%	77.7 - 127%	J+ detects
	B685-SS03	4-bromofluorobenzene	209%	77.7 - 127%	J+ detects
	B685-SS02	4-bromofluorobenzene	158%	77.7 - 127%	J+ detects
	B546-SS01 Dupe	4-bromofluorobenzene	135%	77.7 - 127%	J+ detects
	B685-SS01	4-bromofluorobenzene	203%	77.7 - 127%	J+ detects
	B546-SS01	4-bromofluorobenzene	129%	77.7 - 127%	J+ detects
	B546-SS02	4-bromofluorobenzene	128%	77.7 - 127%	J+ detects

Laboratory Control Samples

LCS/LSCDs were analyzed as required. Accuracy and precision criteria were met except for the tetrachloroethene recoveries of 69.8% in B038684-BS1 and B038684-BSD1. This was marginally below the lower QC limit of 70%. Based upon professional judgment, no sample qualifications were applied.

Method Blanks

Method blanks were assessed using the National Function Guidelines 5 times rule. Target compound detects in the sample that were less than or equal to 5 times the blank detection were qualified as nondetected at the reported level of detection.

Low levels (less than the reporting limit) of benzene, cis-1, 2-dichloroethene, tetrachloroethene, and trichloroethene were detected in method blank B038684-BLK1. The following associated samples were impacted and qualified as nondetect:

Samples Qualified for Method Blank Contamination						
Preparation Batch	Analyte	MDL	Reporting Limit	B038684-BLK1 Results ug/m3	B038684-BLK1 Lab Qual	Associated Samples
B308684	cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene	0.0079 0.014 0.0054	0.025 0.34 0.13	0.024 0.13 0.11	J J J	All batch samples except: B546-SS01 B546-SS03 B593-SS01 B593-SS03
	Benzene	0.013	0.13	0.059	J	B546-IA02 B546-SS02 B546-SS03 B593-SS02 B685-SS03 B546-SS01DUPE
	Benzene cis-1,2-Dichloroethene Tetrachloroethene	0.013 0.0079 0.014	0.13 0.025 0.34	0.059 0.024 0.13	J J J	B546-SS01
	cis-1,2-Dichloroethene Trichloroethene	0.0079 0.0054	0.025 0.13	0.024 0.11	J J	B593-SS01
	Benzene cis-1,2-Dichloroethene Trichloroethene	0.013 0.0079 0.0054	0.13 0.025 0.13	0.059 0.024 0.11	J J J	B593-SS03

Laboratory Duplicates

Laboratory duplicates were analyzed on samples B593-DUPE and B685-Dupe, as required. All RPDs met laboratory precision criteria.

Field Duplicates

Three field duplicates were collected and analyzed. Precision criteria in the SAP of RPDs $\leq$ 25 was applied when both sample results were greater than 5 times the RL. In cases where results were less than 5 times the RL, the reasonable control limit of $\pm$ the RL was applied. Results were with control limits.

Reporting Limit Requirements

All reporting limits (RLs) met the requirements prescribed in the SAP. It should be noted that nondetect sample results were reported down to the method reporting limit (MDL) rather than the RL

4.0 OVERALL ASSESSMENT

Overall, the completeness objectives were achieved and the precision and accuracy of the data as measured by field and laboratory QC indicators, demonstrate that project goals have been met. The data is acceptable for use as qualified. No data were rejected.

TABLE 1
SAMPLE ANALYSIS SUMMARY FOR TO-15

SDG	SAMPLE ID	FIELD DUPLICATE	LABORATORY ID	DATE COLLECTED	SAMPLE PREPARATION	PREPARATION BATCH	DATE ANALYZED
13C0118	B593-SS01		13C0118-02	2/27/2013	3/6/2013	B038684	3/11/2013
	B593-SS02		13C0118-04	2/27/2013	3/6/2013	B038684	3/11/2013
	B593-SS03		13C0118-03	2/27/2013	3/6/2013	B038684	3/11/2013
	B685-SS03		13C0118-05	2/27/2013	3/6/2013	B038684	3/11/2013
	B685-SS02		13C0118-06	2/27/2013	3/6/2013	B038684	3/12/2013
	B685-SS01		13C0118-08	2/27/2013	3/6/2013	B038684	3/12/2013
	B546-SS01		13C0118- 11	2/27/2013	3/6/2013	B038684	3/12/2013
		B546-SS01 DUPE	13C0118-07	2/27/2013	3/6/2013	B038684	3/12/2013
	B546-SS02		13C0118-12	2/27/2013	3/6/2013	B038684	3/12/2013
	B546-SS03		13C0118-10	2/27/2013	3/6/2013	B038684	3/12/2013
	B546-IA04		13C0118-09	2/27/2013	3/6/2013	B038684	3/12/2013
	B685-OA01		13C0188-13	2/27/2013	3/6/2013	B038684	3/12/2013
		B685-Dupe	13C0138-01	2/27/2013	3/6/2013	B038684	3/11/2013
13C0175	B593-IA01		132C0175-01	2/26/2013	3/7/2013	B038684	3/12/2013
		B593-DUPE	132C0175-04	2/26/2013	3/14/2013	B038789	3/14/2013
	B593-IA02		132C0175-02	2/26/2013	3/13/2013	B038789	3/14/2013
	B593-IA03		132C0175-03	2/26/2013	3/13/2013	B038789	3/14/2013
13C0168	B546-0A01		13C0168-01	2/26/2013	3/7/2013	B038684	3/12/2013
	B546-1A01		13C0168-02	2/26/2013	3/7/2013	B038684	3/12/2013
	B546-1A02		13C0168-03	2/26/2013	3/7/2013	B038684	3/12/2013
	B546-1A03		13C0168-04	2/26/2013	3/7/2013	B038684	3/12/2013
13C0180	B685-IA01		13C0180-02	2/27/2013	3/13/2013	B038789	3/14/2013
	B685-IA02		13C0180-03	2/27/2013	3/13/2013	B038789	3/13/2013
	B685-IA03		13C0180-04	2/27/2013	3/13/2013	B038789	3/14/2013
	B593-OA01		13C0180-01	2/26/2013	3/13/2013	B038789	3/14/2013

TABLE 2
SAMPLE QUALIFICATION SUMMARY

Sample ID	Analyte	Results	RLimit	MDL	Units	Lab Qualifier	Validation Qualifier	Reason	Final Qualifier
B546-0A01	cis-1,2-Dichloroethene	0.043	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.093	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.065	0.13	0.0054	ug/m3	J	U	MB	UJ
B546-IA01	cis-1,2-Dichloroethene	0.095	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.21	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.19	0.13	0.0054	ug/m3		U	MB	U
B546-IA02	Benzene	0.22	0.064	0.0064	ug/m3		U	MB	U
	cis-1,2-Dichloroethene	0.052	0.012	0.0040	ug/m3		U	MB	U
	Tetrachloroethene	0.21	0.17	0.0068	ug/m3		U	MB	U
	Trichloroethene	0.11	0.067	0.0027	ug/m3		U	MB	U
B546-IA03	cis-1,2-Dichloroethene	0.071	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.1	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.11	0.13	0.0054	ug/m3	J	U	MB	UJ
B546-IA04	cis-1,2-Dichloroethene	0.042	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.21	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.08	0.13	0.0054	ug/m3	J	U	MB	UJ
B546-SS01	1,1-Dichloroethene	0.0091	0.025	0.0079	ug/m3	J	J^+	High Surrogate	J^+
	Benzene	0.17	0.13	0.013	ug/m3		U	MB	U
	cis-1,2-Dichloroethene	0.051	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.32	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.54	0.13	0.0054	ug/m3		J^+	High Surrogate	J^+
	Vinyl chloride	0.011	0.016	0.0051	ug/m3	J	J^+	High Surrogate	J^+
B546-SS01 DUPE	1,1-Dichloroethene	0.0085	0.025	0.0079	ug/m3	J	J^+	High Surrogate	J^+
	Benzene	0.16	0.13	0.013	ug/m3		U	MB	U
	cis-1,2-Dichloroethene	0.046	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.32	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.26	0.13	0.0054	ug/m3		U	MB	U
	Vinyl chloride	0.0074	0.016	0.0051	ug/m3	J	J^+	High Surrogate	J^+
B546-SS02	1,1-Dichloroethene	0.013	0.025	0.0079	ug/m3	J	J^+	High Surrogate	J^+
	Benzene	0.14	0.13	0.013	ug/m3		U	MB	U
	cis-1,2-Dichloroethene	0.047	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.31	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.42	0.13	0.0054	ug/m3		U	MB	U
	Vinyl chloride	0.012	0.016	0.0051	ug/m3	J	J^+	High Surrogate	J^+
B546-SS03	Benzene	0.088	0.13	0.013	ug/m3	J	U	MB	UJ
B593-IA01	cis-1,2-Dichloroethene	0.041	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.11	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.037	0.13	0.0054	ug/m3	J	U	MB	UJ
B593-IA02	cis-1,2-Dichloroethene	0.014	0.025	0.0079	ug/m3	J	U	MB	UJ
	Tetrachloroethene	0.068	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.091	0.13	0.0054	ug/m3	J	U	MB	UJ
B593-IA03	cis-1,2-Dichloroethene	0.01	0.025	0.0079	ug/m3	J	U	MB	UJ
	Tetrachloroethene	0.061	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.041	0.13	0.0054	ug/m3	J	U	MB	UJ
B593-OA01	cis-1,2-Dichloroethene	0.026	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.15	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.24	0.13	0.0054	ug/m3		U	MB	U
B593-SS01	Benzene	2	0.72	0.072	ug/m3		J^+	High Surrogate	J^+
	cis-1,2-Dichloroethene	0.028	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.8	0.34	0.014	ug/m3		J^+	High Surrogate	J^+
	Trichloroethene	0.076	0.13	0.0054	ug/m3	J	U	MB	UJ
	Vinyl chloride	0.0083	0.016	0.0051	ug/m3	J	J^+	High Surrogate	J^+
B593-SS02	Benzene	0.11	0.13	0.013	ug/m3	J	U	MB	UJ
	cis-1,2-Dichloroethene	0.03	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.58	0.34	0.014	ug/m3		U	MB	U
	Trichloroethene	0.15	0.13	0.0054	ug/m3		U	MB	U
	Vinyl chloride	0.008	0.016	0.0051	ug/m3	J	J^+	High Surrogate	J^+

TABLE 2
SAMPLE QUALIFICATION SUMMARY

Sample ID	Analyte	Results	RLimit	MDL	Units	Lab Qualifier	Validation Qualifier	Reason	Final Qualifier
B593-SS03	Benzene	0.11	0.13	0.013	ug/m3	J	U	MB	UJ
	cis-1,2-Dichloroethene	0.024	0.025	0.0079	ug/m3	J	U	MB	UJ
	Trichloroethene	0.026	0.13	0.0054	ug/m3	J	U	MB	UJ
B685-Dupe	cis-1,2-Dichloroethene	0.05	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.13	0.34	0.014	ug/m3	J	U	MB	UJ
	Trichloroethene	0.092	0.13	0.0054	ug/m3	J	U	MB	UJ
B685-SS01	1,1-Dichloroethene	0.012	0.025	0.0079	ug/m3	J	J^+	High Surrogate	J^+
	Benzene	0.29	0.13	0.013	ug/m3		J^+	High Surrogate	J^+
	cis-1,2-Dichloroethene	0.05	0.025	0.0079	ug/m3		J^+	High Surrogate	J^+
	Tetrachloroethene	0.41	0.34	0.014	ug/m3		J^+	High Surrogate	J^+
	Trichloroethene	0.062	0.13	0.0054	ug/m3	J	J^+	High Surrogate	J^+
	Vinyl chloride	0.0068	0.016	0.0051	ug/m3	J	J^+	High Surrogate	J^+
B685-SS02	1,1-Dichloroethene	0.02	0.025	0.0079	ug/m3	J	J^+	High Surrogate	J^+
	Benzene	0.71	0.13	0.013	ug/m3		J^+	High Surrogate	J^+
	cis-1,2-Dichloroethene	0.053	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.4	0.34	0.014	ug/m3		U	MB	U
	Trichloroethene	0.069	0.13	0.0054	ug/m3	J	U	MB	UJ
	Vinyl chloride	0.013	0.016	0.0051	ug/m3	J	J^+	High Surrogate	J^+
B685-SS03	1,1-Dichloroethene	0.019	0.025	0.0079	ug/m3	J	J^+	High Surrogate	J^+
	Benzene	0.22	0.13	0.013	ug/m3		U	MB	U
	cis-1,2-Dichloroethene	0.034	0.025	0.0079	ug/m3		U	MB	U
	Tetrachloroethene	0.36	0.34	0.014	ug/m3		U	MB	U
	Trichloroethene	0.057	0.13	0.0054	ug/m3	J	U	MB	UJ
	Vinyl chloride	0.012	0.016	0.0051	ug/m3	J	J^+	High Surrogate	J^+

Notes:

ug/m3 = micrograms per cubic meter
U = analyte not detected at the specified detection limit
J = analyte is present but reported value is estimated
J^+ = reported value is baised high
UJ = analyte was not detected but detection limit is estimated
MB = method blank contamination

Rlimit = reporting limit
MDL = method detection limit

TABLE 3
FINAL SAMPLE RESULTS

Analyte	B546-0A01		B546-IA01		B546-IA02		B546-IA03		B546-IA04		B546-SS01		B546-SS01 DUPE		B546-SS02		B546-SS03	
	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual
1,1-Dichloroethene	0.0079	U	0.0084	J	0.0051	J	0.0094	J	0.012	J	0.0091	J^+	0.0085	J^+	0.013	J^+	0.01	J
Benzene	0.46		0.46		0.22	U	0.47		0.32		0.17	U	0.16	U	0.14	U	0.088	UJ
cis-1,2-Dichloroethene	0.043	U	0.095	U	0.052	U	0.071	U	0.042	U	0.051	U	0.046	U	0.047	U	1.6	
Tetrachloroethene	0.093	UJ	0.21	UJ	0.21	U	0.1	UJ	0.21	UJ	0.32	UJ	0.32	UJ	0.31	UJ	5.7	
Trichloroethene	0.065	UJ	0.19	U	0.11	U	0.11	UJ	0.08	UJ	0.54	J^+	0.26	U	0.42	U	2.1	
Vinyl chloride	0.0066	J	0.009	J	0.0056	J	0.0088	J	0.009	J	0.011	J^+	0.0074	J^+	0.012	J^+	0.0075	J

Analyte	B593-IA01		B593-IA02		B593-IA03		B593-OA01		B593-DUPE		B593-SS01		B593-SS02		B593-SS03		B685-IA01	
	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual
1,1-Dichloroethene	0.0079	U	0.0079	U	0.0079	U	0.0079	U	0.0079	U	0.0079	U	0.0079	U	0.0079	U	0.0079	U
Benzene	0.45		0.59		0.59		0.59		0.61		2	J^+	0.11	UJ	0.11	UJ	0.56	
cis-1,2-Dichloroethene	0.041	U	0.014	UJ	0.01	UJ	0.026	U	0.018	J	0.028	U	0.03	U	0.024	UJ	0.026	
Tetrachloroethene	0.11	UJ	0.068	UJ	0.061	UJ	0.15	UJ	0.17	J	0.8	J^+	0.58	U	0.88		0.25	J
Trichloroethene	0.037	UJ	0.091	UJ	0.041	UJ	0.24	U	0.17		0.076	UJ	0.15	U	0.026	UJ	0.18	
Vinyl chloride	0.0071	J	0.0093	J	0.0057	J	0.0062	J	0.0054	J	0.0083	J^+	0.008	J^+	0.0072	J	0.0063	J

Analyte	B685-IA02		B685-IA03		B685-OA01		B685-Dupe		B685-SS01		B685-SS02		B685-SS03	
	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual	Results ug/m3	Final Qual
1,1-Dichloroethene	0.0079	U	0.0079	U	0.0083	J	0.0079	U	0.012	J^+	0.02	J^+	0.019	J^+
Benzene	0.4		0.52		0.35		0.49		0.29	J^+	0.71	J^+	0.22	U
cis-1,2-Dichloroethene	0.012	J	0.011	J	0.065		0.05	U	0.05	J^+	0.053	U	0.034	U
Tetrachloroethene	0.07	J	0.07	J	0.26	J	0.13	UJ	0.41	J^+	0.4	U	0.36	U
Trichloroethene	0.07	J	0.057	J	0.12	J	0.092	UJ	0.062	J^+	0.069	UJ	0.057	UJ
Vinyl chloride	0.0051	U	0.0051	U	0.0061	J	0.0064	J	0.0068	J^+	0.013	J^+	0.012	J^+

Notes:

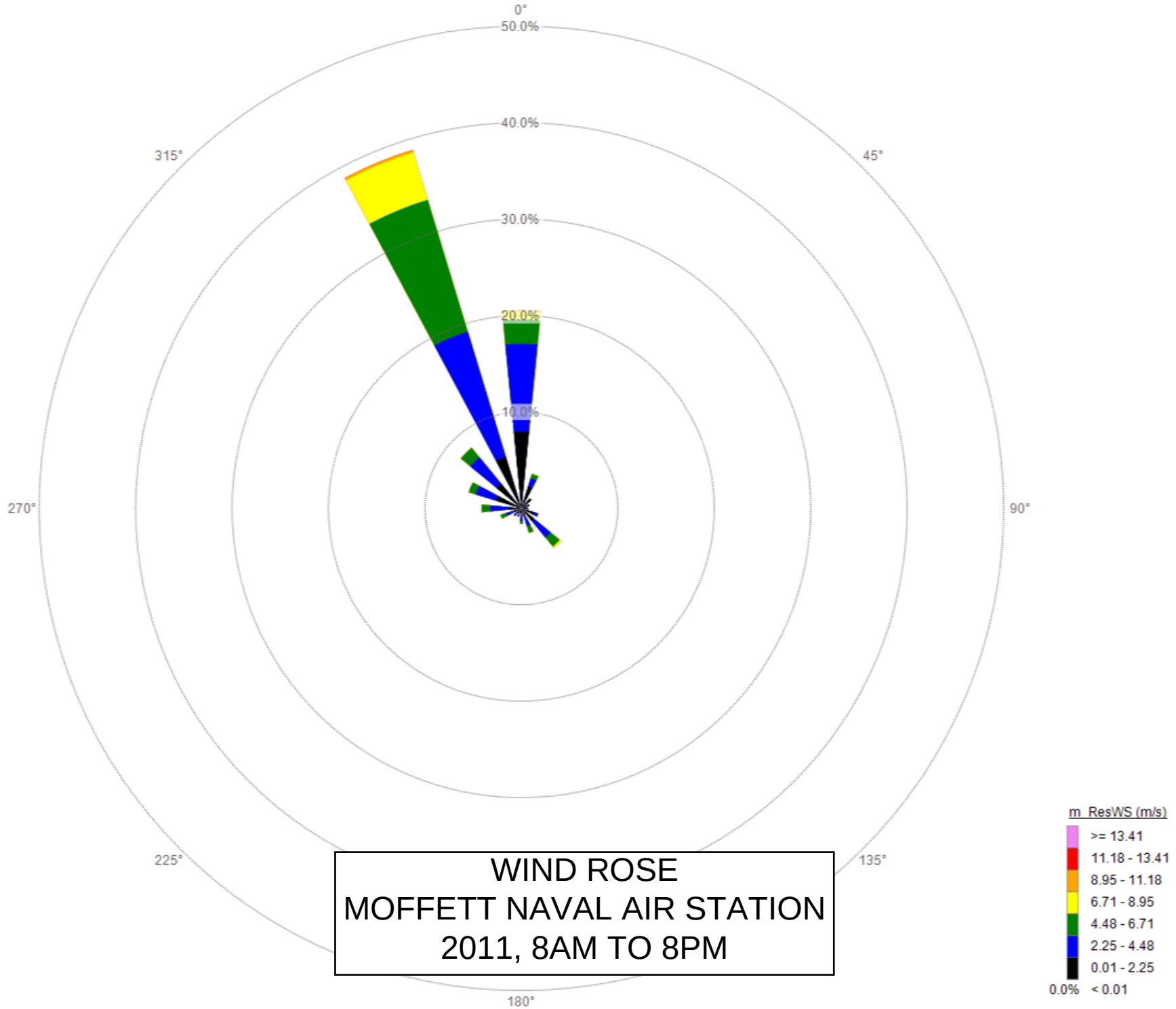
ug/m3 = micrograms per cubic meter
U = analyte not detected at the specified detection limit
J = analyte is present but reported value is estimated
J^+ = reported value is baised high
UJ = analyte was not detected but detection limit is estimated

Attachment D
Wind Roses

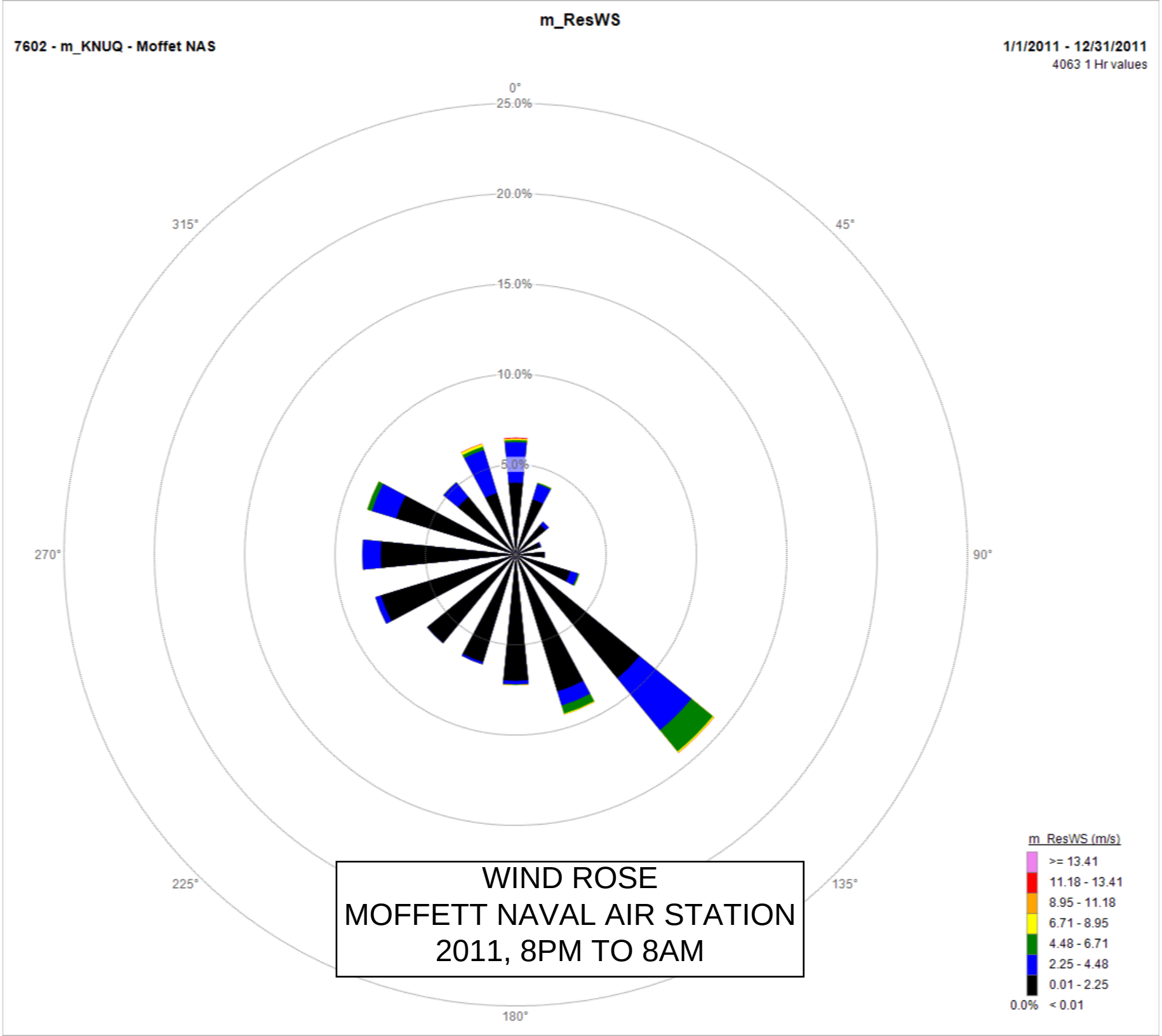
m_ResWS

7602 - m_KNUQ - Moffet NAS

1/1/2011 - 12/31/2011
4077 1 Hr values



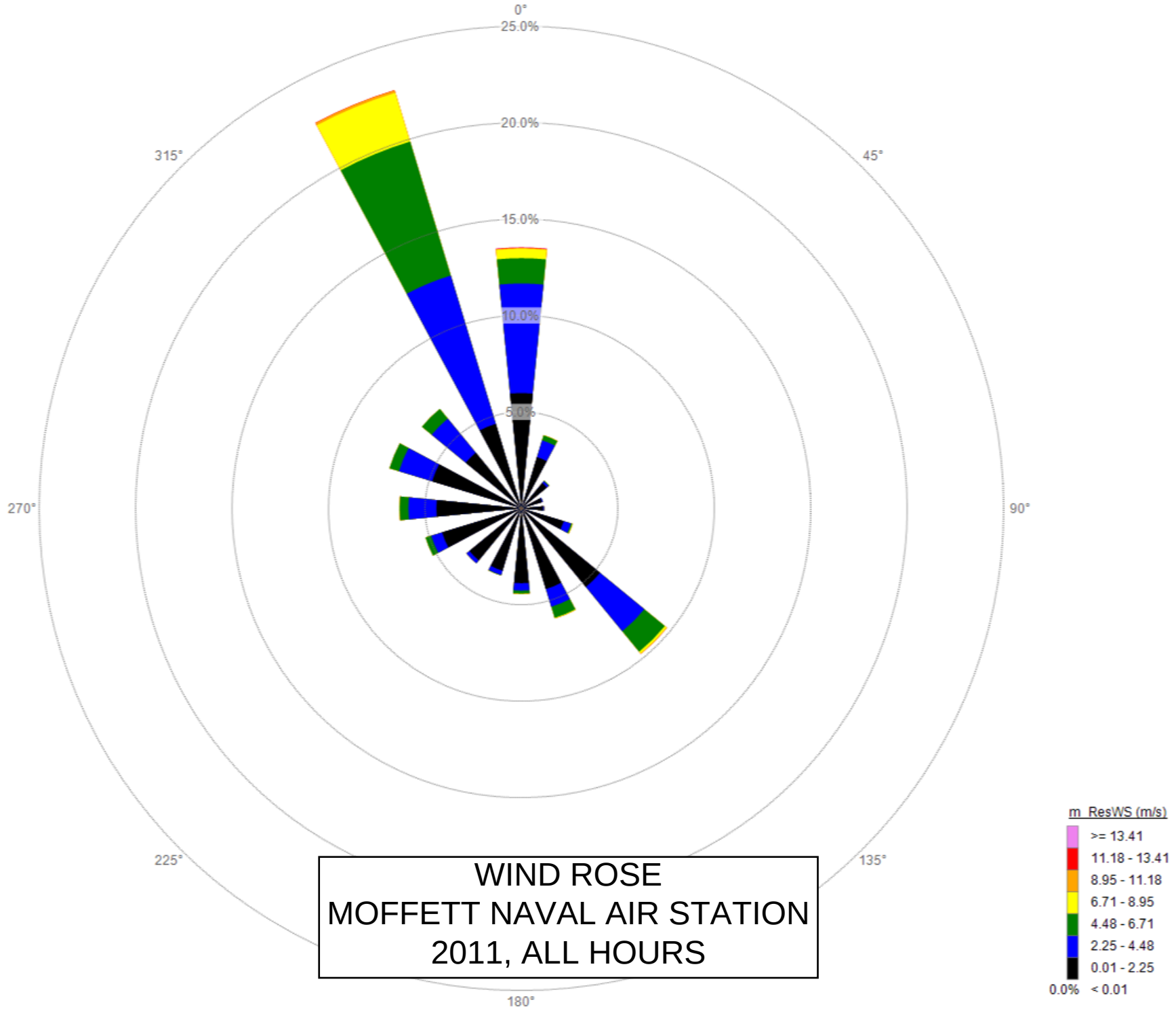
WIND ROSE
MOFFETT NAVAL AIR STATION
2011, 8AM TO 8PM


m_ResWS
7602 - m_KNUQ - Moffet NAS
1/1/2011 - 12/31/2011
4063 1 Hr values
0°
25.0%
20.0%
15.0%
10.0%
5.0%
45°
90°
135°
180°
225°
270°
315°
m_ResWS (m/s)
>= 13.41
11.18 - 13.41
8.95 - 11.18
6.71 - 8.95
4.48 - 6.71
2.25 - 4.48
0.01 - 2.25
0.0% < 0.01
WIND ROSE
MOFFETT NAVAL AIR STATION
2011, 8PM TO 8AM

m_ResWS

7602 - m_KNUQ - Moffet NAS

1/1/2011 - 12/31/2011
8140 1 Hr values



WIND ROSE
MOFFETT NAVAL AIR STATION
2011, ALL HOURS

Attachment E
BAAQMD Data

Site	Parameter	Date (LST)	Value	Unit	Value	Unit	Latitude	Longitude	Duration	Frequency
Redwood City	tx_Benzene	1/10/2012 0:00	0.973	ppb	3.11	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	1/22/2012 0:00	0.241	ppb	0.77	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	2/3/2012 0:00	0.619	ppb	1.98	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	2/16/2012 0:00	0.335	ppb	1.07	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	2/27/2012 0:00	0.267	ppb	0.85	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	3/10/2012 0:00	0.261	ppb	0.83	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	4/3/2012 0:00	0.214	ppb	0.68	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	4/15/2012 0:00	0.168	ppb	0.54	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	4/27/2012 0:00	0.135	ppb	0.43	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	5/9/2012 0:00	0.149	ppb	0.48	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	5/21/2012 0:00	0.07	ppb	0.22	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	6/2/2012 0:00	0.058	ppb	0.19	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	6/14/2012 0:00	0.09	ppb	0.29	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	6/26/2012 0:00	0.089	ppb	0.28	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	7/10/2012 0:00	0.106	ppb	0.34	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	7/20/2012 0:00	0.087	ppb	0.28	µg/m^3	37.482934	-122.203524	Hrs	None
Redwood City	tx_Benzene	8/1/2012 0:00	0.153	ppb	0.49	µg/m^3	37.482934	-122.203524	Hrs	None
Redwood City	tx_Benzene	8/13/2012 0:00	0.09	ppb	0.29	µg/m^3	37.482934	-122.203524	Hrs	None
Redwood City	tx_Benzene	8/25/2012 0:00	0.178	ppb	0.57	µg/m^3	37.482934	-122.203524	Hrs	None
Redwood City	tx_Benzene	9/6/2012 0:00	0.222	ppb	0.71	µg/m^3	37.482934	-122.203524	Hrs	None
Redwood City	tx_Benzene	9/18/2012 0:00	0.081	ppb	0.26	µg/m^3	37.482934	-122.203524	Hrs	None
Redwood City	tx_Benzene	9/30/2012 0:00	0.291	ppb	0.93	µg/m^3	37.482934	-122.203524	Hrs	None
Redwood City	tx_Benzene	10/12/2012 0:00	0.143	ppb	0.46	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	10/24/2012 0:00	0.209	ppb	0.67	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	11/5/2012 0:00	0.472	ppb	1.51	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	11/17/2012 0:00	0.208	ppb	0.66	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	11/29/2012 0:00	0.21	ppb	0.67	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	12/11/2012 0:00	0.486	ppb	1.55	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Benzene	12/23/2012 0:00	0.211	ppb	0.67	µg/m^3	37.482934	-122.203524	Hrs	Every 12th day
Average					**0.75**					
Minimum					**0.19**					
Maximum					**3.11**					

Site	Parameter	Date (LST)	Value	Unit	Value	Unit	Latitude	Longitude	Duration	Frequency
San Jose - Jackson St.	tx_Benzene	1/4/2012 0:00	1.249	ppb	3.99	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	1/10/2012 0:00	1.017	ppb	3.25	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	1/16/2012 0:00	0.505	ppb	1.61	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	1/22/2012 0:00	0.17	ppb	0.54	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	1/28/2012 0:00	0.499	ppb	1.59	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	2/3/2012 0:00	0.623	ppb	1.99	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	2/9/2012 0:00	0.552	ppb	1.76	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	2/15/2012 0:00	0.204	ppb	0.65	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	2/21/2012 0:00	0.396	ppb	1.26	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	2/27/2012 0:00	0.216	ppb	0.69	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	3/4/2012 0:00	0.504	ppb	1.61	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	3/13/2012 0:00	0.163	ppb	0.52	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	3/16/2012 0:00	0.182	ppb	0.58	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	3/28/2012 0:00	0.173	ppb	0.55	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	4/3/2012 0:00	0.216	ppb	0.69	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	4/9/2012 0:00	0.213	ppb	0.68	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	4/15/2012 0:00	0.178	ppb	0.57	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	4/21/2012 0:00	0.358	ppb	1.14	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	4/27/2012 0:00	0.147	ppb	0.47	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	5/3/2012 0:00	0.12	ppb	0.38	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	5/9/2012 0:00	0.144	ppb	0.46	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	5/15/2012 0:00	0.146	ppb	0.47	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	5/21/2012 0:00	0.074	ppb	0.24	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	5/27/2012 0:00	0.074	ppb	0.24	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	5/31/2012 0:00	0.081	ppb	0.26	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	6/8/2012 0:00	0.078	ppb	0.25	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	6/14/2012 0:00	0.065	ppb	0.21	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	6/21/2012 0:00	0.153	ppb	0.49	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	6/26/2012 0:00	0.06	ppb	0.19	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	7/2/2012 0:00	0.065	ppb	0.21	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	7/8/2012 0:00	0.039	ppb	0.12	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	7/14/2012 0:00	0.07	ppb	0.22	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	7/20/2012 0:00	0.108	ppb	0.34	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	7/26/2012 0:00	0.123	ppb	0.39	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	8/1/2012 0:00	0.122	ppb	0.39	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	8/7/2012 0:00	0.101	ppb	0.32	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	8/13/2012 0:00	0.13	ppb	0.42	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	8/19/2012 0:00	0.093	ppb	0.3	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	8/25/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	8/31/2012 0:00	0.171	ppb	0.55	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	9/6/2012 0:00	0.174	ppb	0.56	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	9/12/2012 0:00	0.167	ppb	0.53	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	9/18/2012 0:00	0.075	ppb	0.24	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	9/24/2012 0:00	0.212	ppb	0.68	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	9/30/2012 0:00	0.303	ppb	0.97	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Benzene	10/6/2012 0:00	0.315	ppb	1.01	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	10/12/2012 0:00	0.191	ppb	0.61	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	10/24/2012 0:00	0.208	ppb	0.66	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	10/30/2012 0:00	0.23	ppb	0.73	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	11/5/2012 0:00	1.139	ppb	3.64	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	11/11/2012 0:00	0.373	ppb	1.19	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	11/17/2012 0:00	0.155	ppb	0.5	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	11/23/2012 0:00	0.809	ppb	2.58	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	11/29/2012 0:00	0.147	ppb	0.47	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	12/5/2012 0:00	0.265	ppb	0.85	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	12/11/2012 0:00	0.518	ppb	1.65	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	12/17/2012 0:00	0.21	ppb	0.67	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	12/23/2012 0:00	0.136	ppb	0.43	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Benzene	12/29/2012 0:00	0.584	ppb	1.87	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
Average					**0.85**					
Minimum					**0**					
Maximum					**3.99**					

Site	Paramete	Date (LST)	Value	Unit	Value	Unit	Latitude	Longitude	Duration	Frequency
Redwood City	tx_Trichloroethylene	1/10/2012 0:00	0.03	ppb	0.16	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	1/22/2012 0:00	0.042	ppb	0.23	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	2/3/2012 0:00	0.047	ppb	0.25	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	2/16/2012 0:00	0.033	ppb	0.18	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	2/27/2012 0:00	0.481	ppb	2.58	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	3/10/2012 0:00	0.06	ppb	0.32	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	4/3/2012 0:00	0.18	ppb	0.97	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	4/15/2012 0:00	0.063	ppb	0.34	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	4/27/2012 0:00	0.073	ppb	0.39	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	5/9/2012 0:00	0.028	ppb	0.15	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	5/21/2012 0:00	0.583	ppb	3.13	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	6/2/2012 0:00	0.066	ppb	0.35	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	6/14/2012 0:00	0.115	ppb	0.62	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	6/26/2012 0:00	0.529	ppb	2.84	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	7/10/2012 0:00	0.028	ppb	0.15	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	7/20/2012 0:00	0.044	ppb	0.24	µg/m³	37.482934	-122.203524	Hrs	None
Redwood City	tx_Trichloroethylene	8/1/2012 0:00	0.294	ppb	1.58	µg/m³	37.482934	-122.203524	Hrs	None
Redwood City	tx_Trichloroethylene	8/13/2012 0:00	0.042	ppb	0.23	µg/m³	37.482934	-122.203524	Hrs	None
Redwood City	tx_Trichloroethylene	8/25/2012 0:00	0.172	ppb	0.92	µg/m³	37.482934	-122.203524	Hrs	None
Redwood City	tx_Trichloroethylene	9/6/2012 0:00	0.054	ppb	0.29	µg/m³	37.482934	-122.203524	Hrs	None
Redwood City	tx_Trichloroethylene	9/18/2012 0:00	0.048	ppb	0.26	µg/m³	37.482934	-122.203524	Hrs	None
Redwood City	tx_Trichloroethylene	9/30/2012 0:00	0	ppb	0	µg/m³	37.482934	-122.203524	Hrs	None
Redwood City	tx_Trichloroethylene	10/12/2012 0:00	0.118	ppb	0.63	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	10/24/2012 0:00	0.139	ppb	0.75	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	11/5/2012 0:00	0.012	ppb	0.06	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	11/17/2012 0:00	0	ppb	0	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	11/29/2012 0:00	0.011	ppb	0.06	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	12/11/2012 0:00	0.046	ppb	0.25	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Redwood City	tx_Trichloroethylene	12/23/2012 0:00	0	ppb	0	µg/m³	37.482934	-122.203524	Hrs	Every 12th day
Average					**0.62**					
Minimum					**0**					
Maximum					**3.13**					

Site	Parameter	Date (LST)	Value	Unit	Value	Unit	Latitude	Longitude	Duration	Frequency
San Jose - Jackson St.	tx_Trichloroethylene	1/4/2012 0:00	0.021	ppb	0.11	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	1/10/2012 0:00	0.015	ppb	0.08	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	1/16/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	1/22/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	1/28/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	2/3/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	2/9/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	2/15/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	2/21/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	2/27/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	3/4/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	3/13/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	3/16/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	3/28/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	4/3/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	4/9/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	4/15/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	4/21/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	4/27/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	5/3/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	5/9/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	5/15/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	5/21/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	5/27/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	5/31/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	6/8/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	6/14/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	6/21/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	6/26/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	7/2/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	7/8/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	7/14/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	7/20/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	7/26/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	8/1/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	8/7/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	8/13/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	8/19/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	8/25/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	8/31/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	9/6/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	9/12/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	9/18/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	9/24/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	9/30/2012 0:00	0.013	ppb	0.07	µg/m³	37.348497	-121.894898	24 Hrs	None
San Jose - Jackson St.	tx_Trichloroethylene	10/6/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	10/12/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	10/24/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	10/30/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	11/5/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	11/11/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	11/17/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	11/23/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	11/29/2012 0:00	0.014	ppb	0.08	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	12/5/2012 0:00	0.014	ppb	0.08	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	12/11/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	12/17/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	12/23/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
San Jose - Jackson St.	tx_Trichloroethylene	12/29/2012 0:00	0	ppb	0	µg/m³	37.348497	-121.894898	24 Hrs	Every 6th day
Average					**0.01**					
Minimum					**0**					
Maximum					**0.11**					

Attachment F
Region 9 EPA Comments and Resolution

Van Bogaert, Joshua LRL

From: Lee, Alana [lee.alana@epa.gov]
Sent: Tuesday, July 02, 2013 10:11 AM
To: Van Bogaert, Joshua LRL
Cc: Anders, Doris A CIV (US); Sherman, Amanda R CIV USARMY IMCOM AEC (US); Meier, Kari L LRL
Subject: RE: EPA Review of Air Sampling Results: Buildings 546, 593, and 685, Former Orion Park Housing Area (UNCLASSIFIED)

Yes, the suggested revisions are fine.

Thanks,

Alana

-----Original Message-----
From: Van Bogaert, Joshua LRL [mailto:Joshua.Vanbogaert@usace.army.mil]
Sent: Tuesday, July 02, 2013 6:01 AM
To: Lee, Alana
Cc: Anders, Doris A CIV (US); Sherman, Amanda R CIV USARMY IMCOM AEC (US); Meier, Kari L LRL
Subject: RE: EPA Review of Air Sampling Results: Buildings 546, 593, and 685, Former Orion Park Housing Area (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Alana,

The Region 9 RSLs were in the approved work plan; however, screening against the California PCE SL does not change any conclusions, since there are still no exceedances. The Army prefers to address this by adding the following statement to the text of the report:

"In accordance with the approved work plan, the data were screening using the Region 9 RSLs, and there were no exceedances. The more conservative State of California screening levels for PCE (0.4 ug/m3 for residential use, 2 ug/m3 for non-residential use) were also considered, and there were no exceedances."

Does this address your comment?

Thanks and have a great day!
Josh

-----Original Message-----
From: Lee, Alana [mailto:lee.alana@epa.gov]
Sent: Monday, July 01, 2013 10:52 AM
To: Van Bogaert, Joshua LRL
Cc: Meier, Kari L LRL; Sherman, Amanda R CIV USARMY IMCOM AEC (US)
Subject: RE: EPA Review of Air Sampling Results: Buildings 546, 593, and 685, Former Orion Park Housing Area (UNCLASSIFIED)

Thank you for providing the revised report. There is one revision requested prior to finalizing. The screening levels for PCE (tetrachlorothene) should also be compared using the State of California's toxicity value. This would result in PCE indoor air screening level of

0.4 micrograms per cubic meter for residential, and 2 micrograms per cubic meter for non-residential.

Please contact me at 415.972.3141 if you have any questions or would like to discuss.

Thanks,

Alana

-----Original Message-----
From: Van Bogaert, Joshua LRL [mailto:Joshua.Vanbogaert@usace.army.mil]
Sent: Friday, June 21, 2013 8:48 AM
To: Lee, Alana
Cc: Meier, Kari L LRL; Sherman, Amanda R CIV USARMY IMCOM AEC (US)
Subject: RE: EPA Review of Air Sampling Results: Buildings 546, 593, and 685, Former Orion Park Housing Area (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Alana, please see the attached revised report to backcheck your comments were addressed. Are you available this afternoon? I'll be here until about 430 EDT today. Please let me know if there is a good time I can call to discuss. If not today, what's a good time on next week?

After you concur on the revised report. I'll finalize and remove the watermark.

Thanks and have a great day!

Josh

-----Original Message-----
From: Lee, Alana [mailto:lee.alana@epa.gov]
Sent: Friday, June 14, 2013 4:38 AM
To: Meier, Kari L LRL; Sherman, Amanda R CIV USARMY IMCOM AEC (US); Van Bogaert, Joshua LRL
Subject: RE: EPA Review of Air Sampling Results: Buildings 546, 593, and 685, Former Orion Park Housing Area (UNCLASSIFIED)

Hi Kari and Josh,

Thank you for summarizing our discussion and for working closely with me throughout this air sampling project to address EPA's comments. I concur with a few clarification edits in blue to specific comments 2 and 4 below.

2) Specific Comment. "Need to compare Sub-Slab Samples to screening with attenuation factor (0.03)." This is such that data is screened at 33 x non-residential indoor air screening level. Additionally, we discussed screening for Indoor Air will be Non residential for these buildings. Outdoor Air comparison for residential criteria will remain.

4) Specific Comment. EPA did not recall whether there is benzene in GW, and indicated that if there is not, there is no indication of site specific subsurface benzene source. Together on the call, we checked the data in the 2007 report and found no detection in GW for benzene. "EPA would like inclusion of the 2007 report findings regarding Benzene from field work conducted in Dec 2005 and March 2006 to be included in the report for further support that benzene is not site related." Furthermore, emphasis on the regional air quality data (and potential lack of consistency in statistics and data reporting of low concentrations) will be reduced such that the report focuses more on the lack of subsurface benzene source.

Thank you again for your responsiveness. Please contact me if you have any questions.

Regards,

Alana Lee
EPA Project Manager
Superfund Division
415.972.3141
Lee.Alana@epa.gov

-----Original Message-----
From: Meier, Kari L LRL [mailto:Kari.L.Meier@usace.army.mil]
Sent: Thursday, June 13, 2013 1:40 PM
To: Lee, Alana; Sherman, Amanda R CIV USARMY IMCOM AEC (US); Van Bogaert, Joshua LRL
Subject: RE: EPA Review of Air Sampling Results: Buildings 546, 593, and 685, Former Orion Park Housing Area (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Thanks so much, Alana, for taking the time to talk us through your comments on the draft report. The comments I have recorded for the EPA, you review, as discussed on our call this morning at 9:00EST are as follows:

1) General. "The Sampling was good and does not indicate Vapor Intrusion is occurring, or if it is, not at levels that would be a concern."

2) Specific Comment. "Need to compare Sub-Slab Samples to screening with attenuation factor (0.03)." This is such that data is screened at 33 x non-residential screening level. Additionally, we discussed screening for Indoor Air will be Non residential for these buildings. Outdoor Air comparison for residential criteria will remain.

3) Specific Comment. "Need to separate Indoor Air from Sub Slab screening findings & conclusions for clarity in the report."

4) Specific Comment. EPA did not recall whether there is benzene in GW, and indicated that if there is not, there is no indication of site specific source. Together on the call, we checked the data in the 2007 report and found no detection in GW for benzene. "EPA would like inclusion of the 2007 report findings regarding Benzene from field work conducted in Dec 2005 and March 2006 to be included in the report for further support that benzene is not site related." Furthermore, emphasis on the regional air quality data (and potential lack of quality of the data therein) will be reduced such that the report focuses more on the lack of source.

Please respond with your concurrence that these are your comments, as documented above, so that we can continue with implementation of the changes to finalize the report. We would like to finalize the findings next week.

Thanks for a very productive call, Alana.

Kari L. Meier, Ph.D.
Environmental Project Manager
USACE, Louisville District
kari.l.meier@usace.army.mil
(502) 315-6316