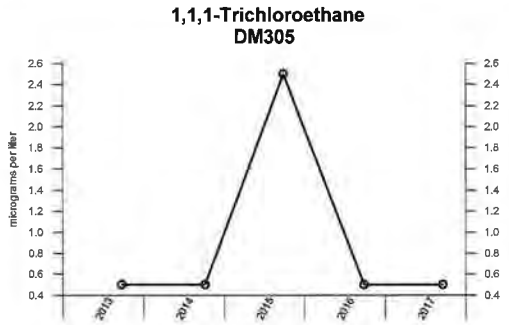
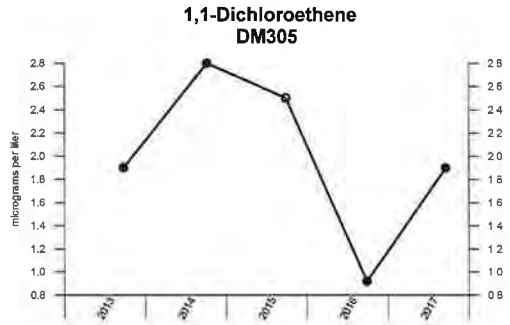
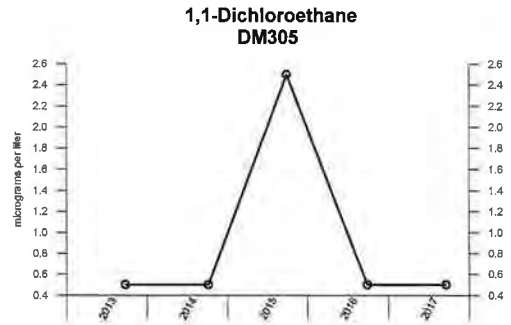
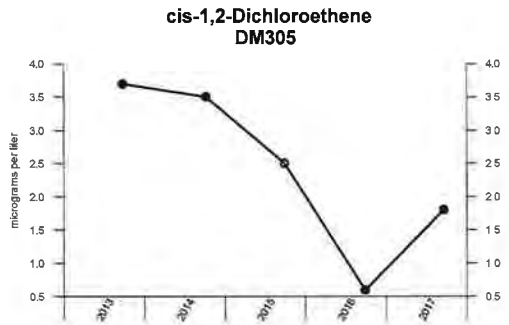
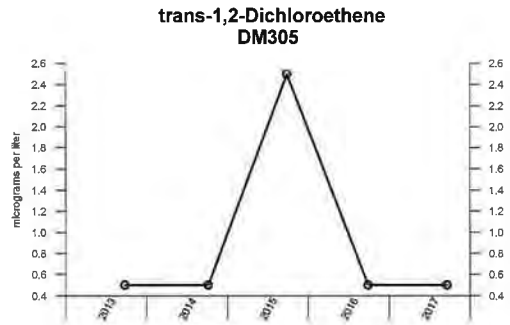
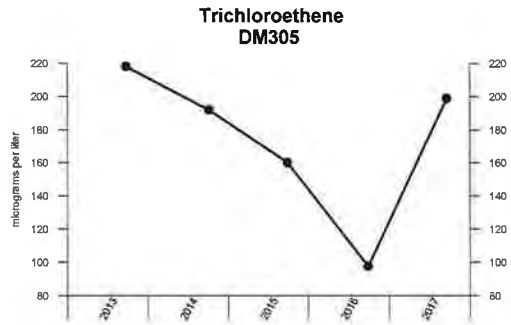


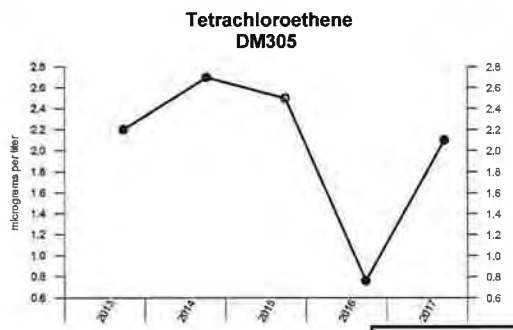


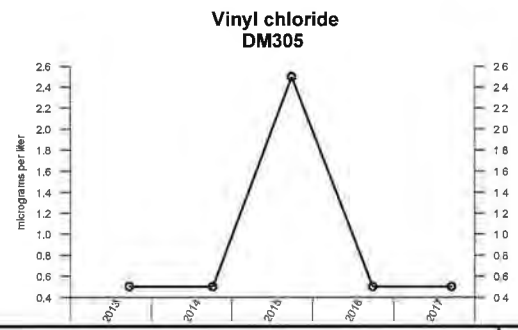


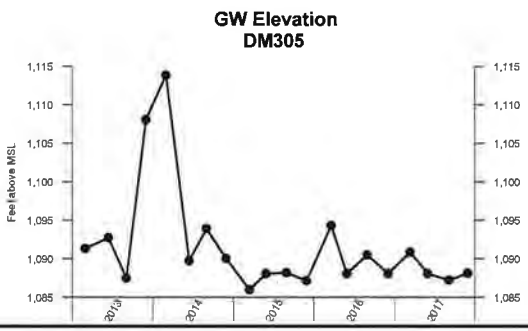












EXPLANATION

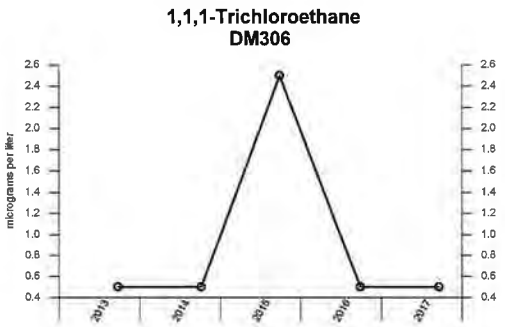
● - Measured Value
○ - Undetected (Displayed at RL)

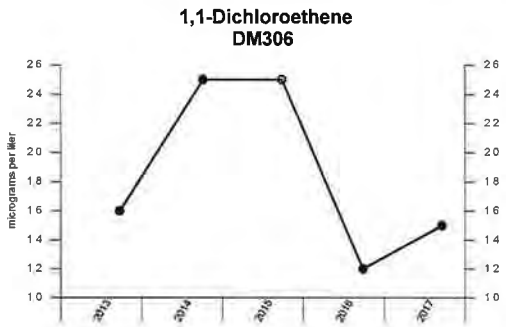
CLEAR CREEK ASSOCIATES

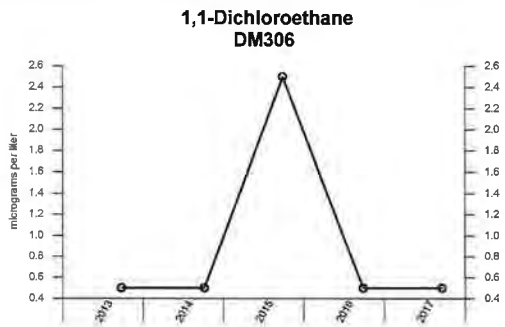
Project Name: MI52 OU1 Effectiveness Report

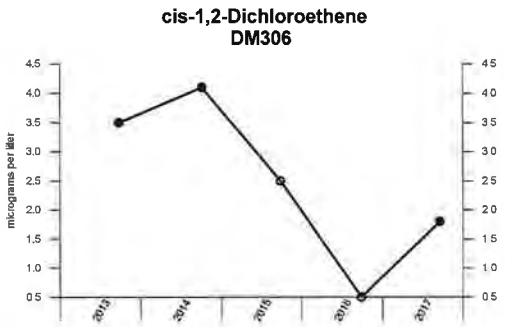
Job No: CC18.1000.00-12 | Date: March 2018

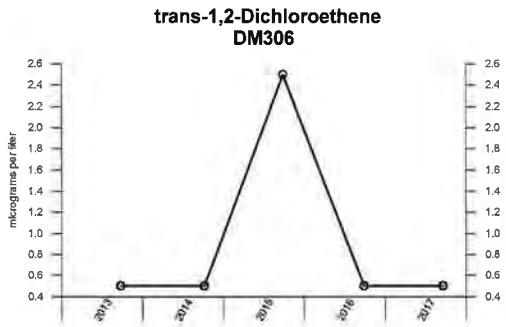
Time-Series Graphs
DM305
MI52 OU1 Effectiveness Report
Phoenix, Arizona

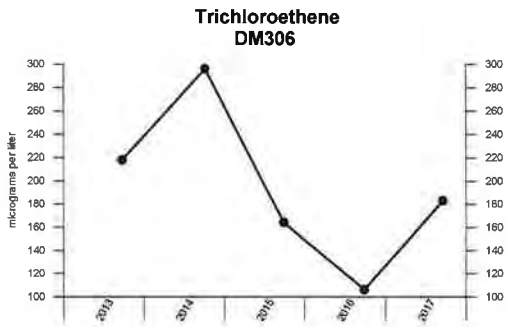


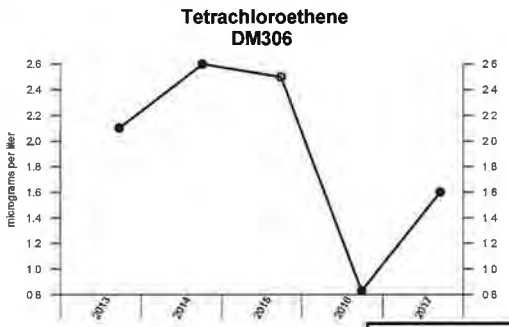


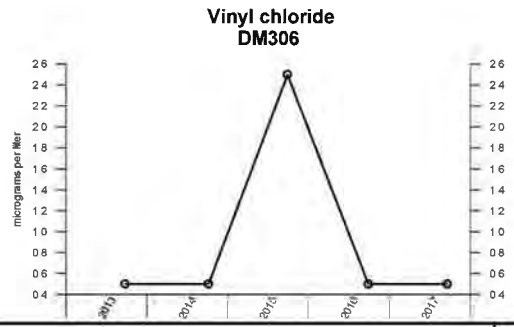


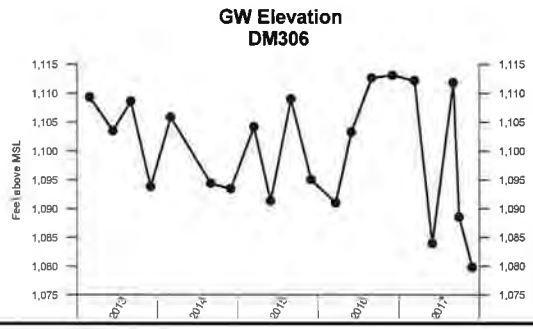












EXPLANATION

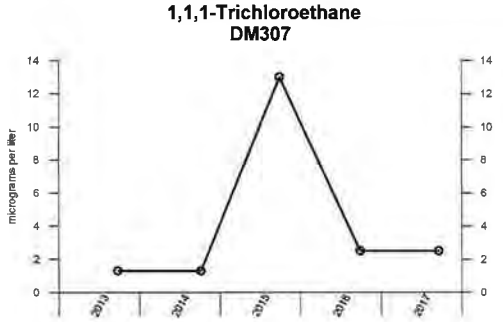
● - Measured Value
○ - Undetected (Displayed at RL)

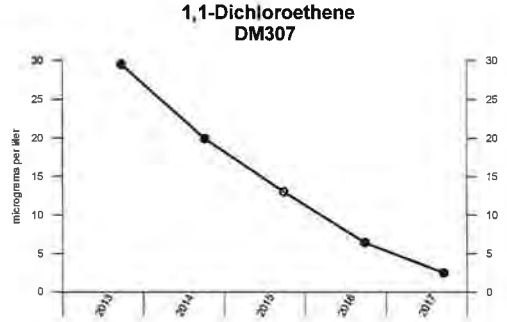
CLEAR CREEK ASSOCIATES

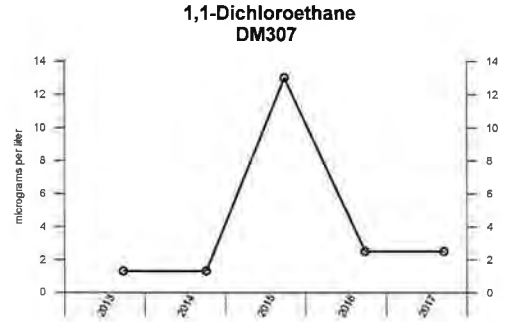
Project Name: MI52 OU1 Effectiveness Report

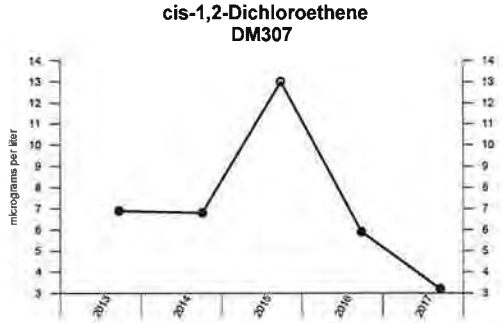
Job No: CC18.1000.00-12 | Date: March 2018

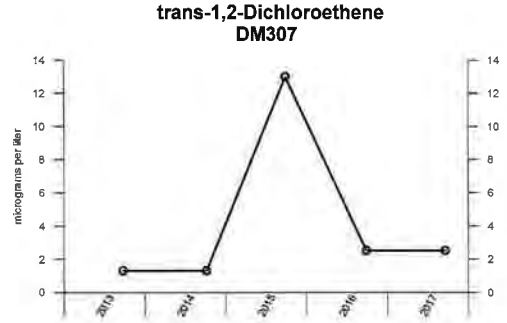
Time-Series Graphs
DM306
MI52 OU1 Effectiveness Report
Phoenix, Arizona

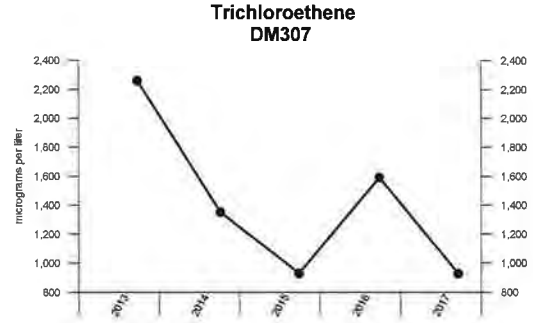


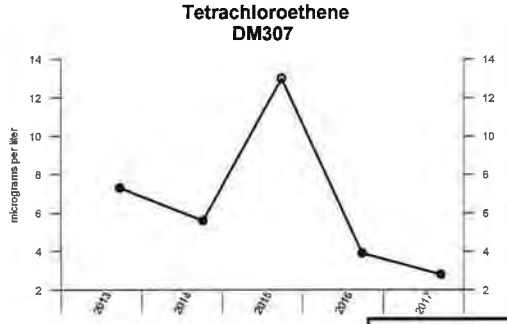


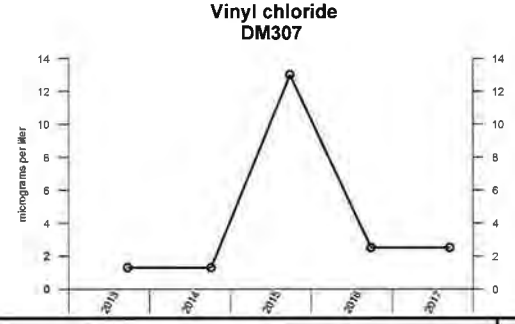


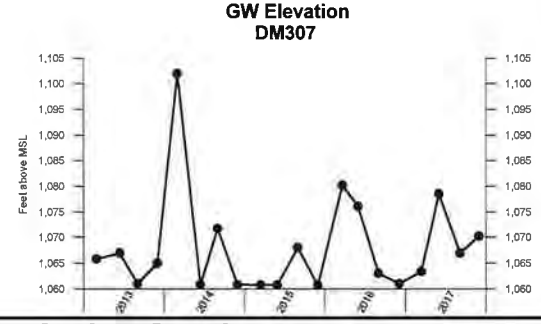












EXPLANATION

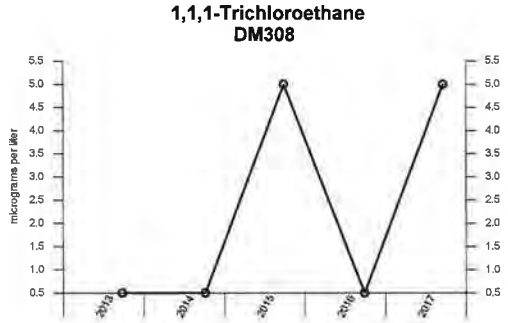
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

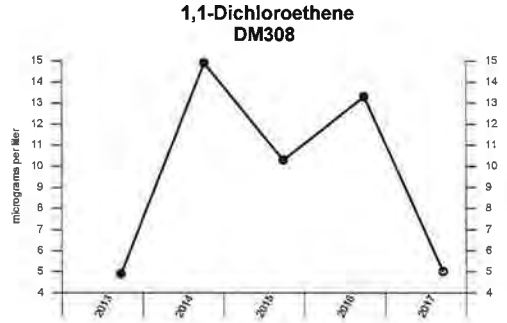
CLEAR CREEK ASSOCIATES

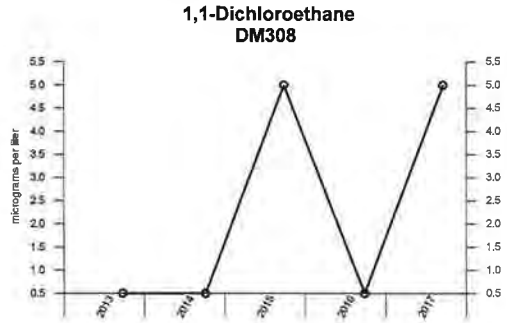
Project Name: MI52 OU1 Effectiveness Report

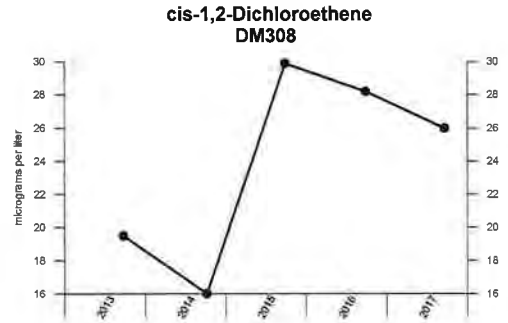
Job No: CC18.1000.00-12 | Date: March 2018

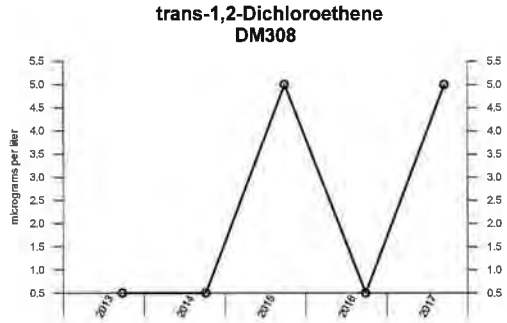
Time-Series Graphs
DM307
MI52 OU1 Effectiveness Report
Phoenix, Arizona

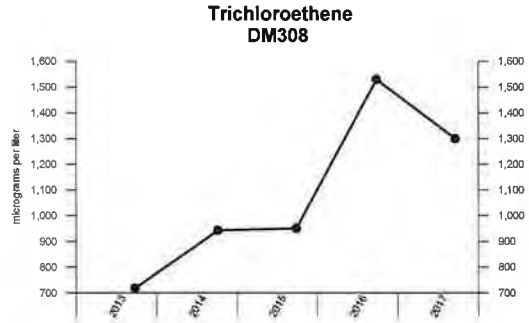


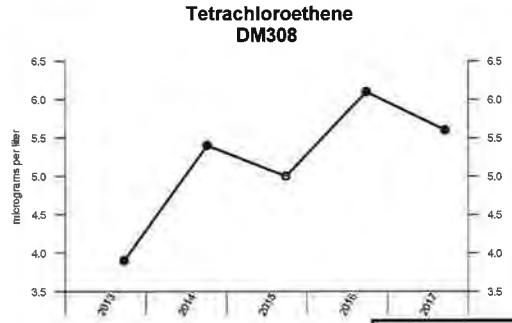


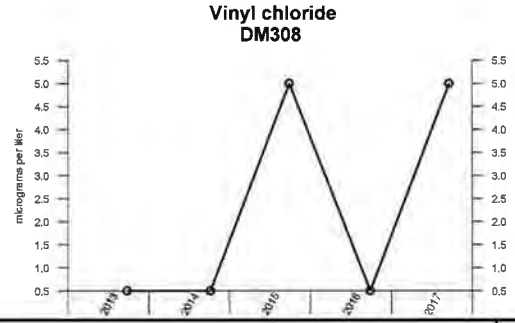


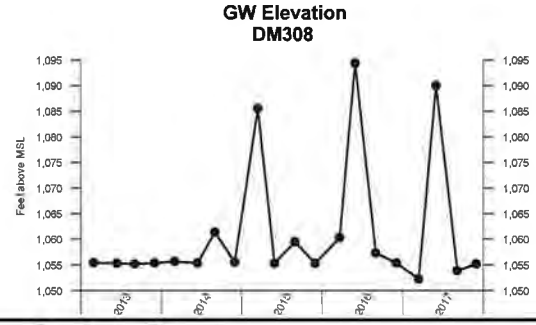












EXPLANATION

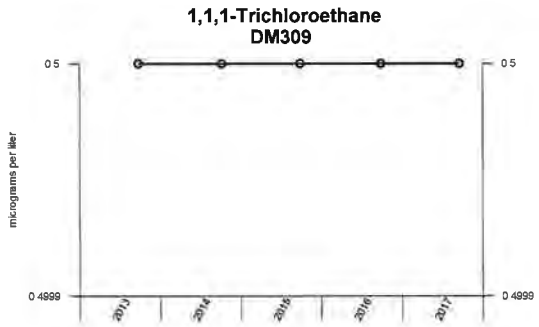
● - Measured Value
○ - Undetected (Displayed at RL)

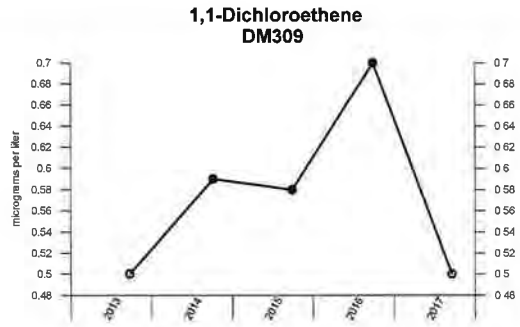
CLEAR CREEK ASSOCIATES

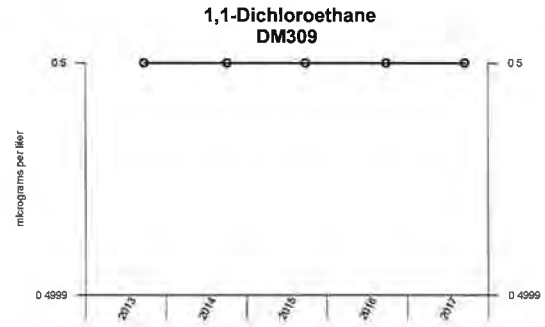
Project Name: MI52 OU1 Effectiveness Report

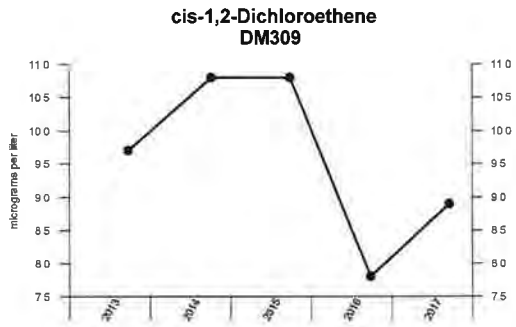
Job No: CC18.1000.00-12 | Date: March 2018

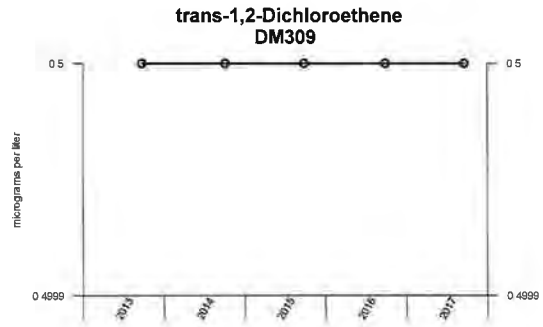
Time-Series Graphs
DM308
MI52 OU1 Effectiveness Report
Phoenix, Arizona

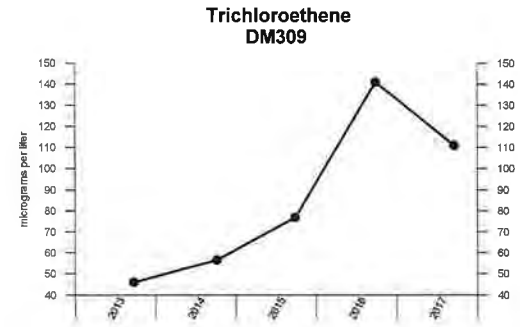


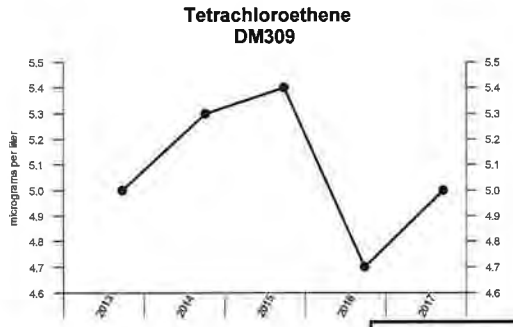


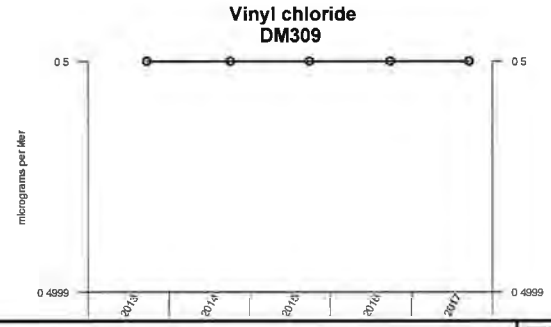


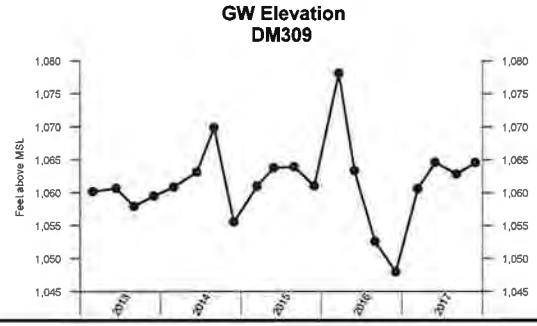












EXPLANATION

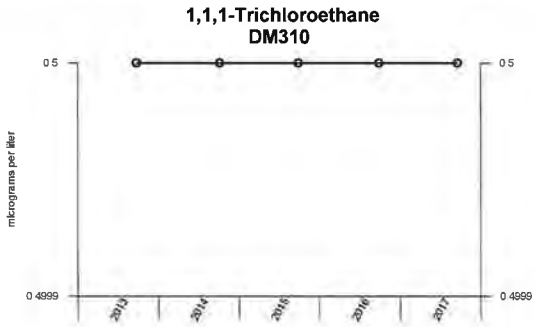
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

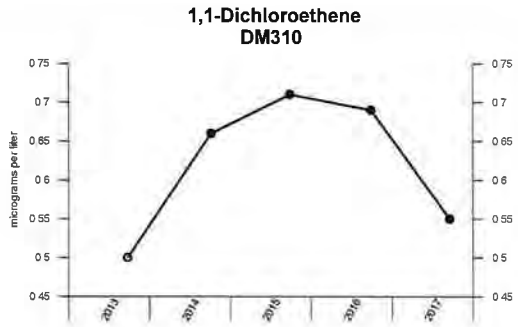
CLEAR CREEK ASSOCIATES

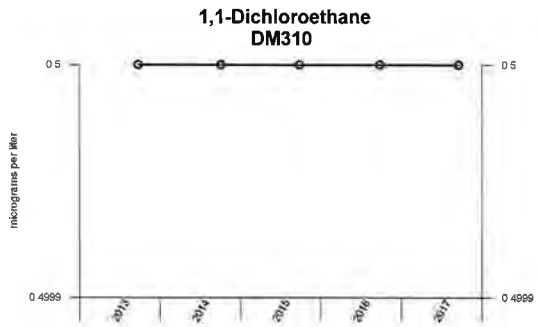
Project Name: MI52 OU1 Effectiveness Report

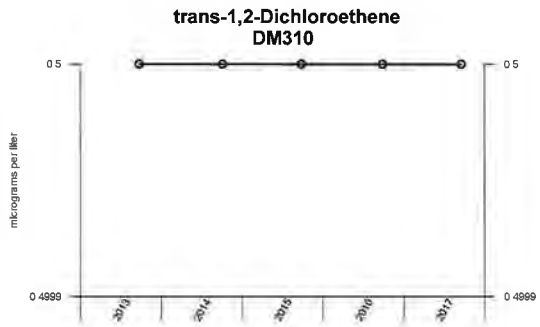
Job No: CC18.1000.00-12 | Date: March 2018

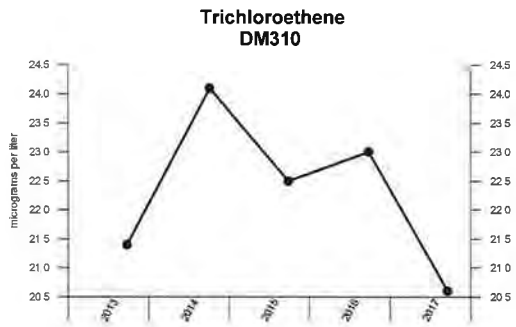
Time-Series Graphs
DM309
MI52 OU1 Effectiveness Report
Phoenix, Arizona

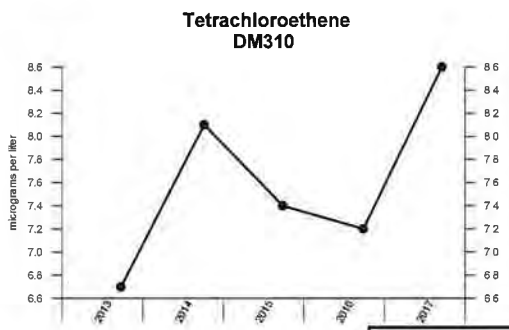


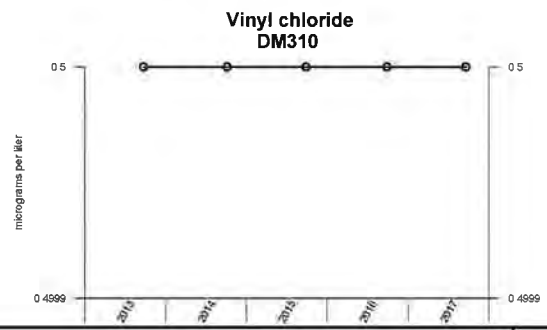


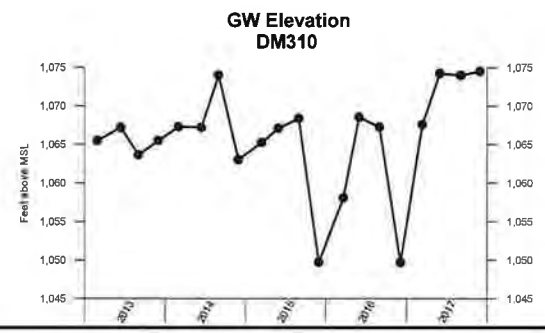












EXPLANATION

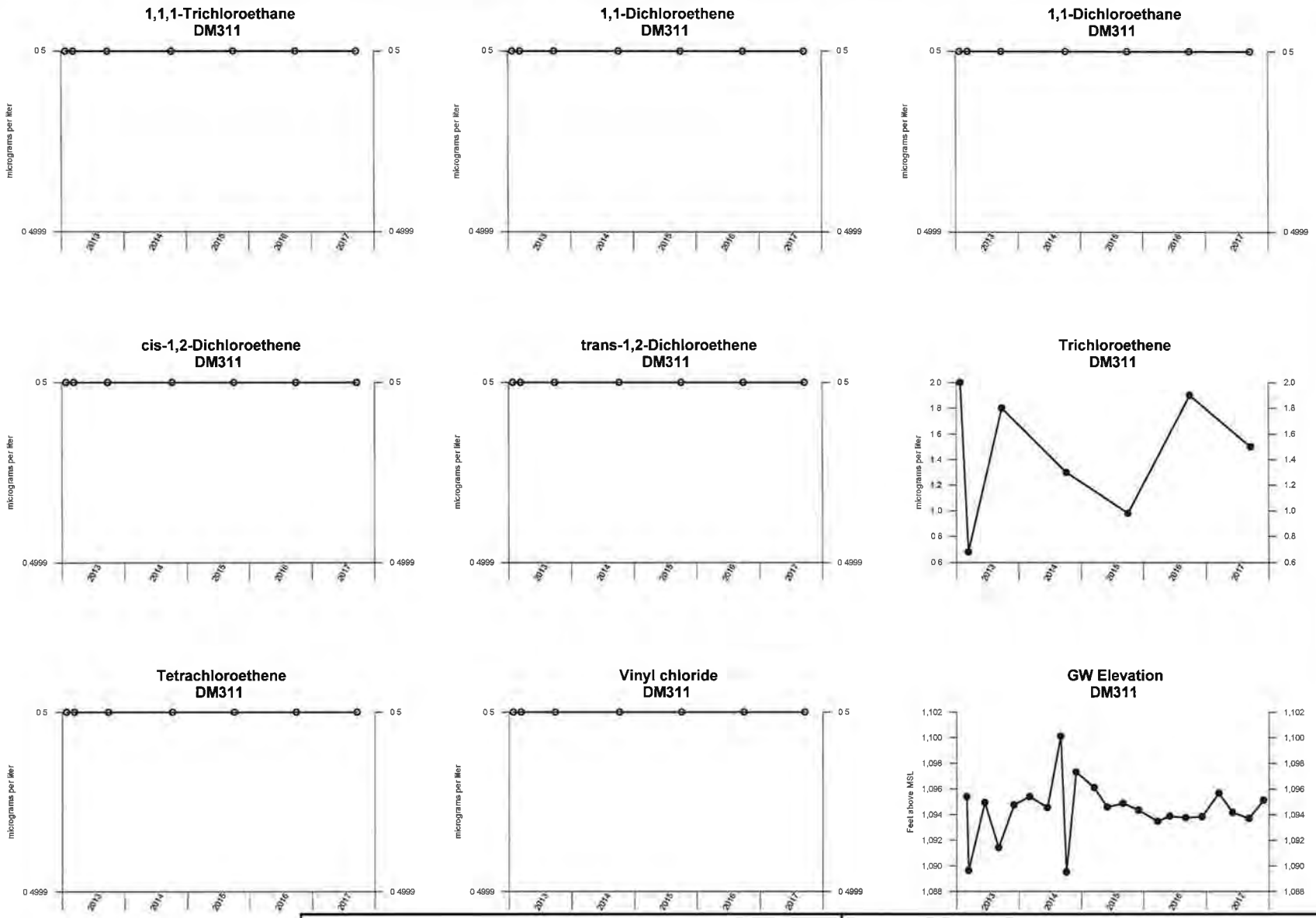
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM310
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

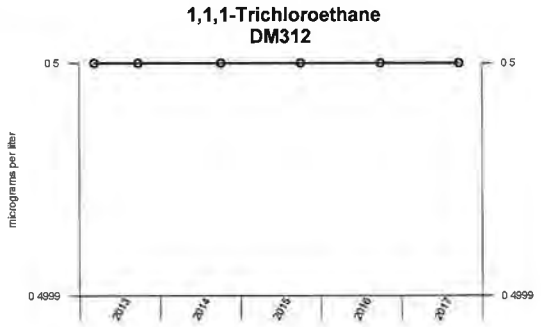
● - Measured Value
○ - Undetected (Displayed at RL)

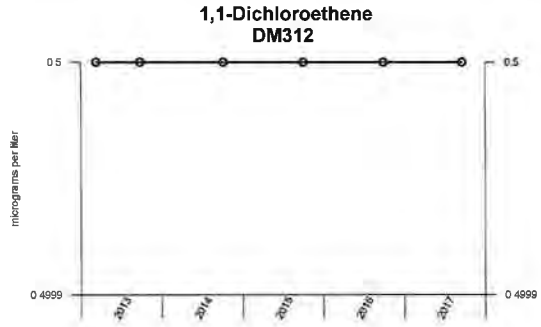
CLEAR CREEK ASSOCIATES

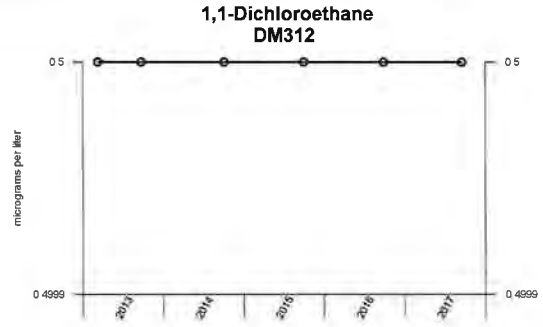
Project Name: MI52 OU1 Effectiveness Report

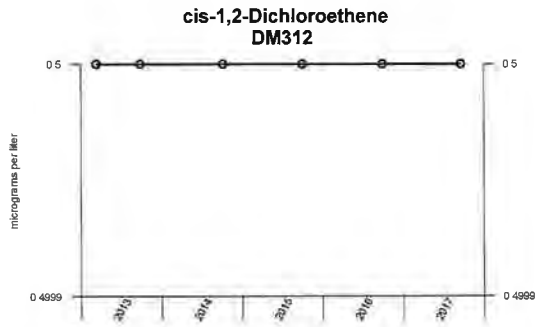
Job No: CC18.1000.00-12 | Date: March 2018

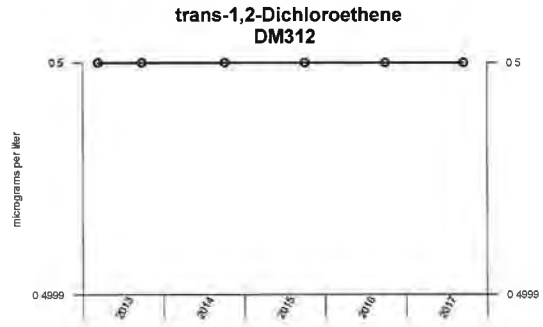
Time-Series Graphs
DM311
MI52 OU1 Effectiveness Report
Phoenix, Arizona

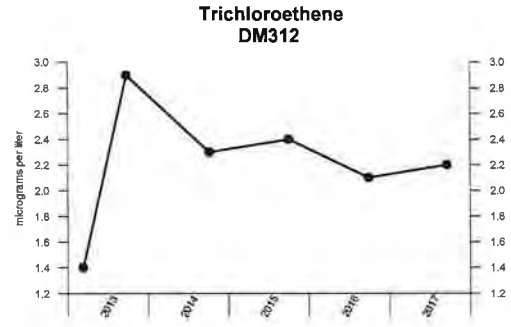


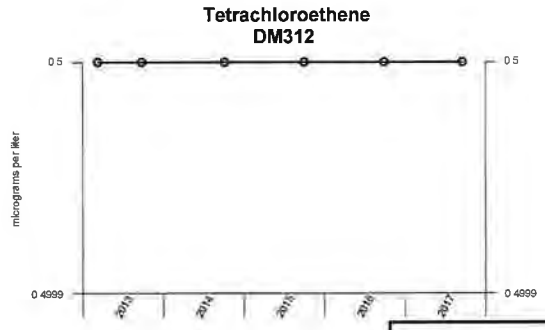


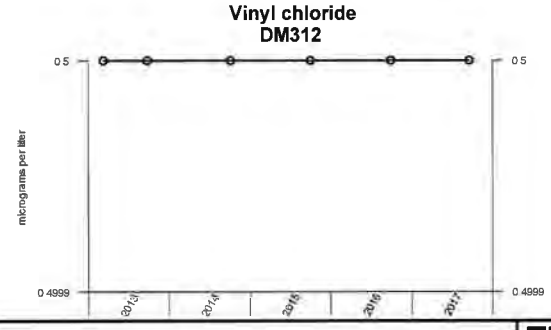


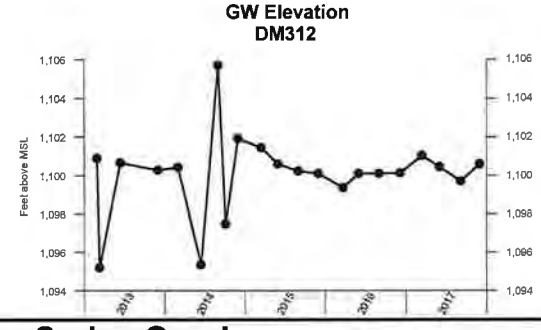












EXPLANATION

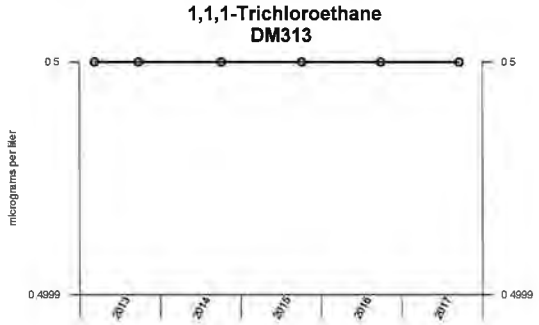
● - Measured Value
○ - Undetected (Displayed at RL)

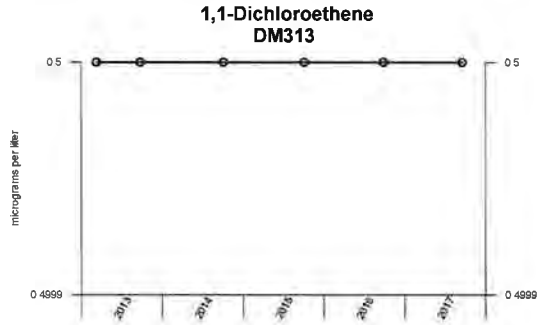
CLEAR CREEK ASSOCIATES

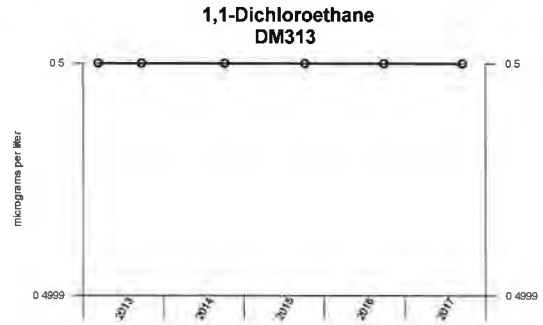
Project Name: MI52 OU1 Effectiveness Report

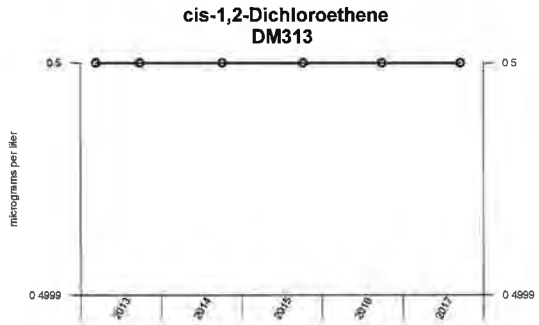
Job No: CC18.1000.00-12 | Date: March 2018

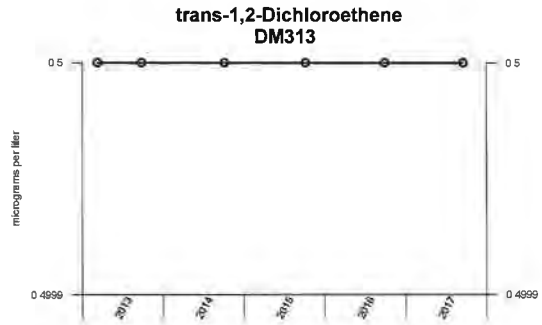
Time-Series Graphs
DM312
MI52 OU1 Effectiveness Report
Phoenix, Arizona

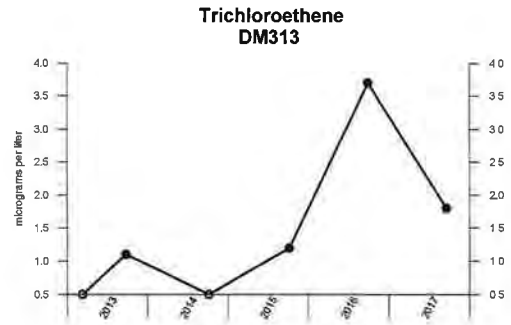


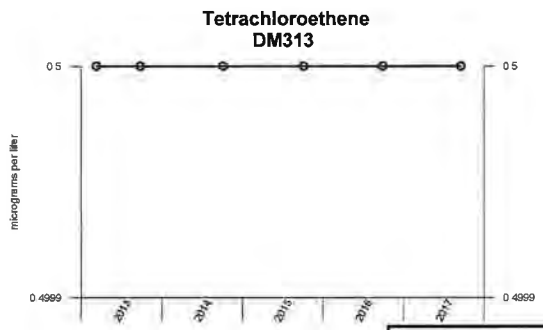


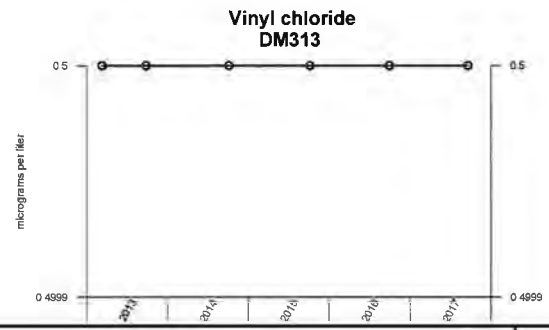


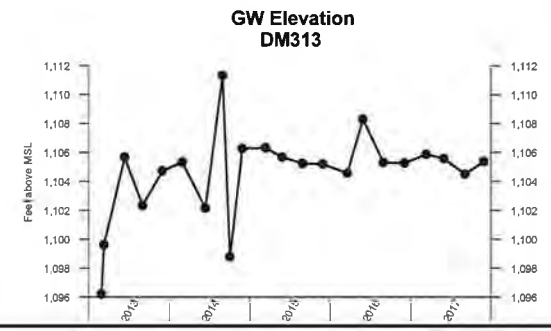












EXPLANATION

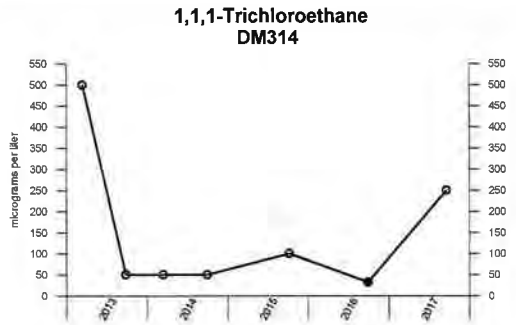
● - Measured Value
○ - Undetected (Displayed at RL)

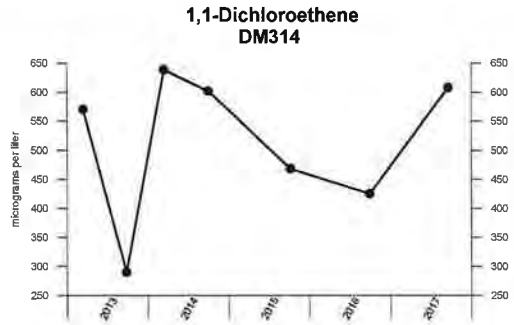
CLEAR CREEK ASSOCIATES

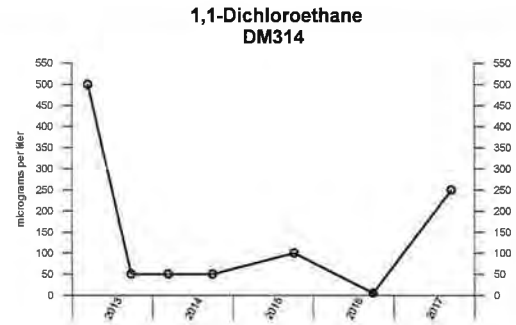
Project Name: MI52 OU1 Effectiveness Report

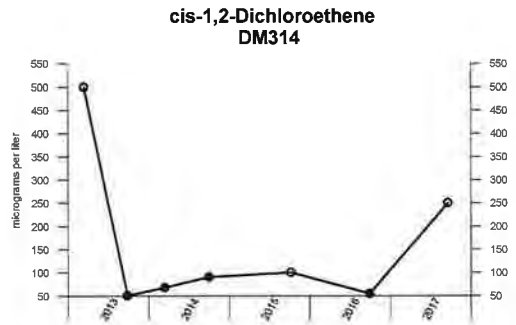
Job No: CC18.1000.00-12 | Date: March 2018

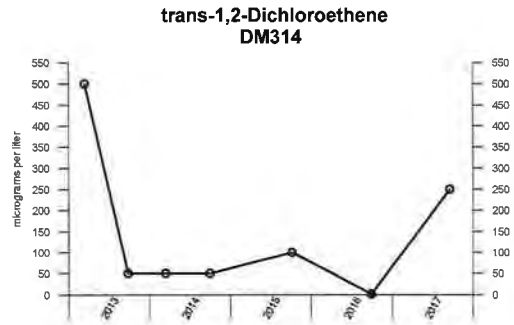
Time-Series Graphs
DM313
MI52 OU1 Effectiveness Report
Phoenix, Arizona

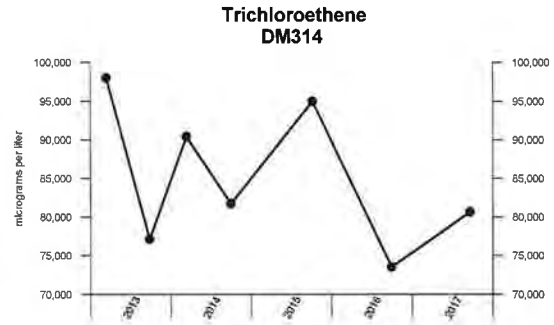


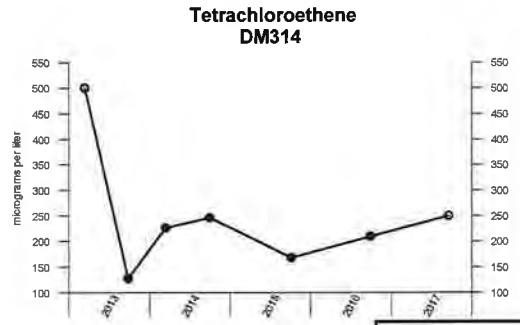


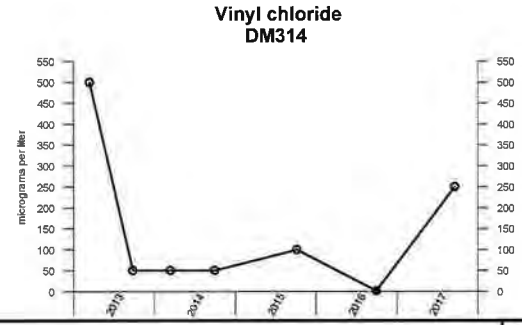


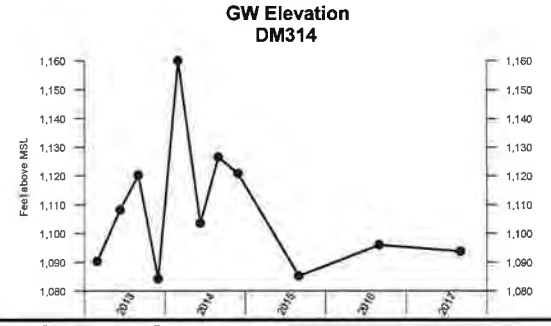












EXPLANATION

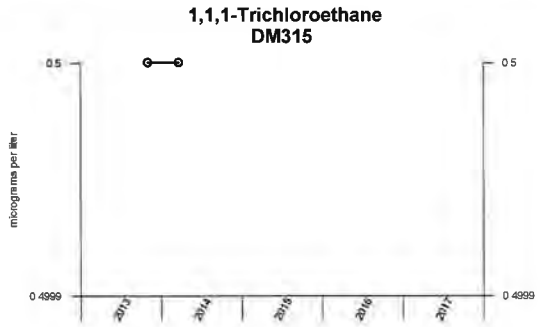
● - Measured Value
○ - Undetected (Displayed at RL)

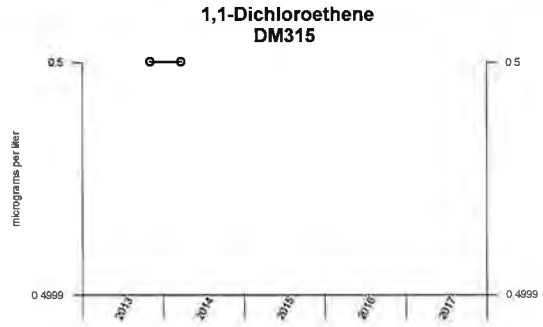
CLEAR CREEK ASSOCIATES

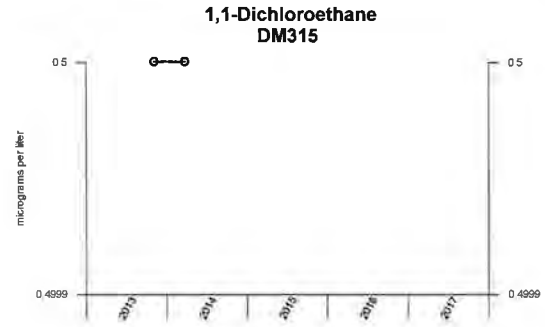
Project Name: MI52 OU1 Effectiveness Report

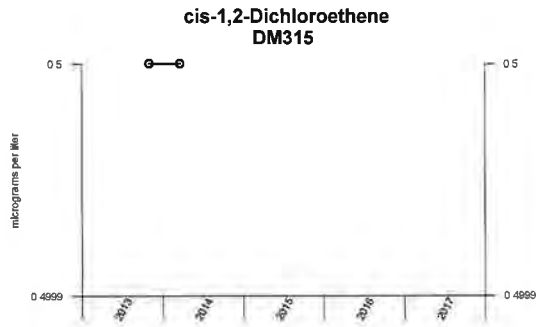
Job No: CC18.1000.00-12 | Date: March 2018

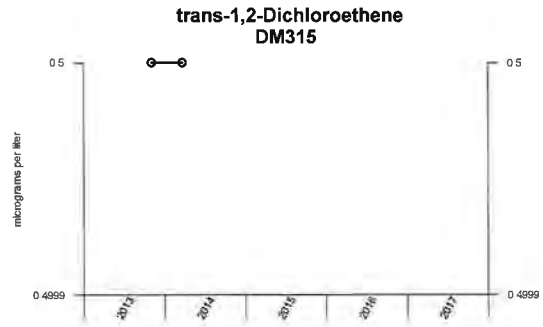
Time-Series Graphs
DM314
MI52 OU1 Effectiveness Report
Phoenix, Arizona

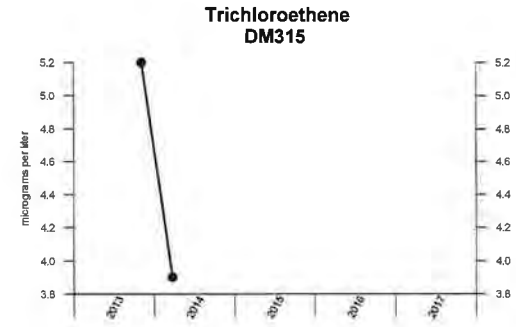


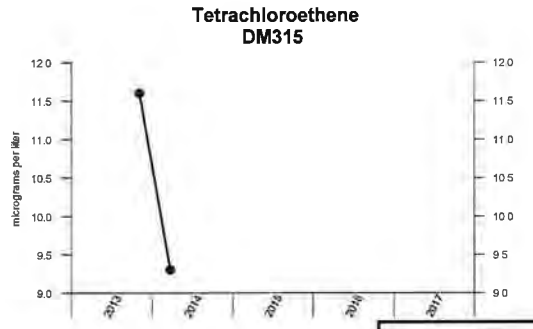


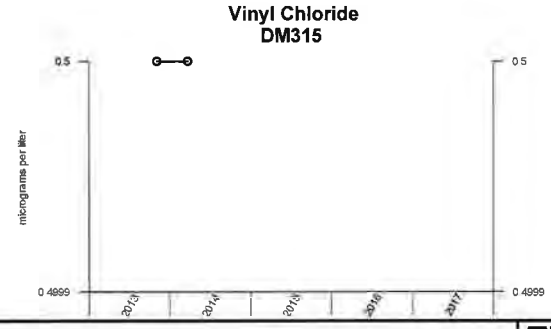


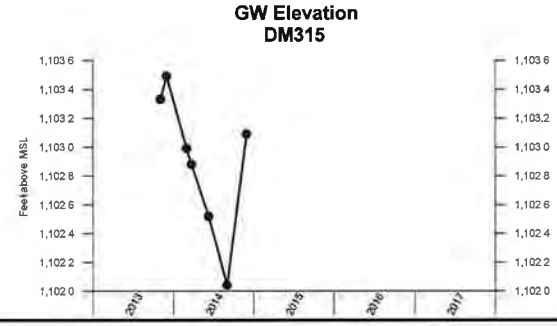












EXPLANATION

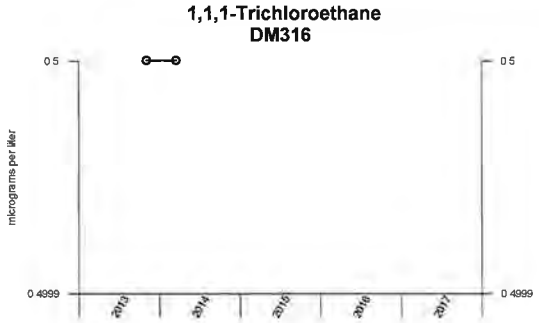
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

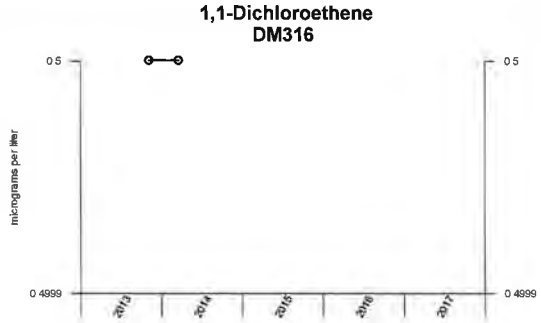
CLEAR CREEK ASSOCIATES

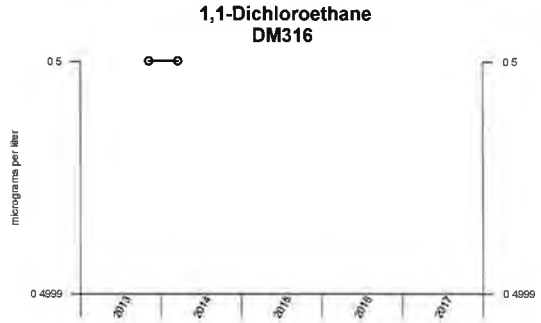
Project Name: MI52 OU1 Effectiveness Report

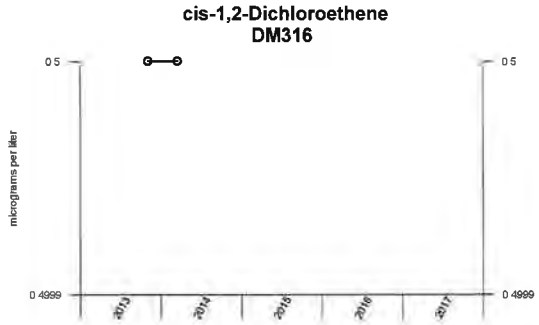
Job No: CC18.1000.00-12 | Date: March 2018

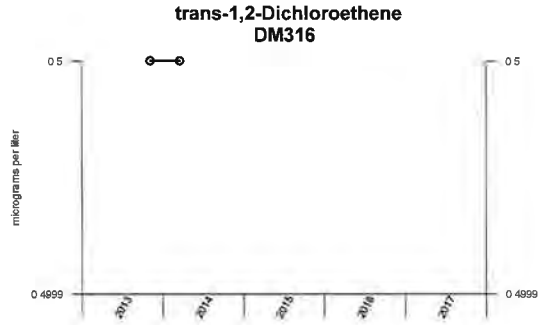
Time-Series Graphs
DM315
MI52 OU1 Effectiveness Report
Phoenix, Arizona

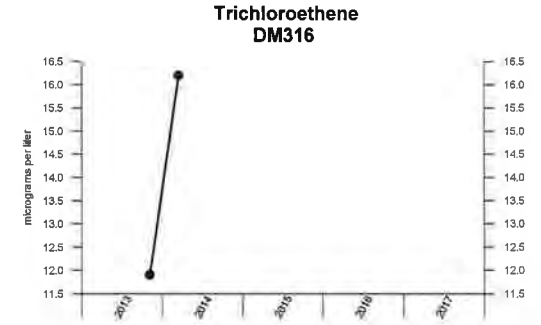


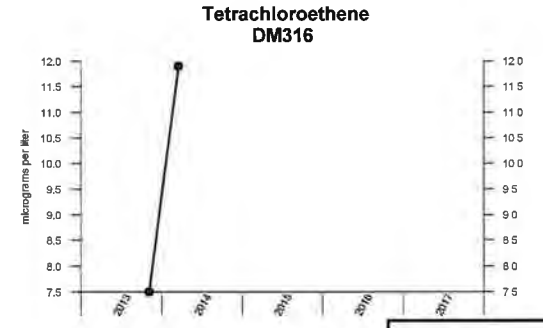


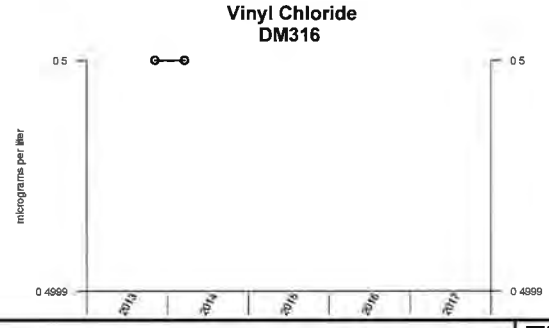


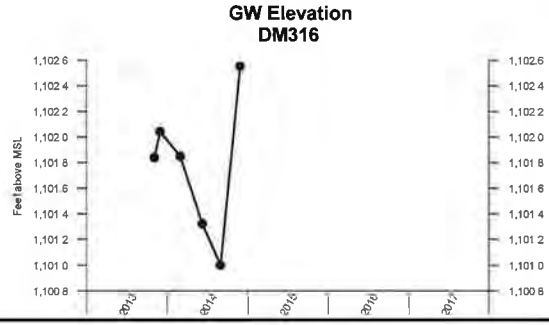












EXPLANATION

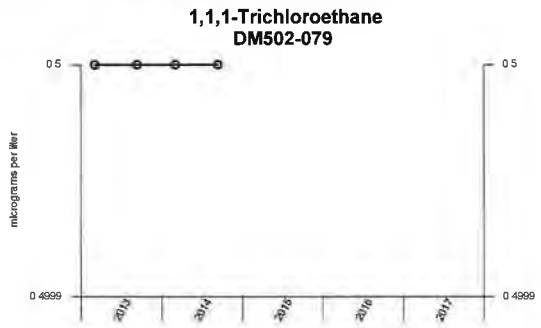
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

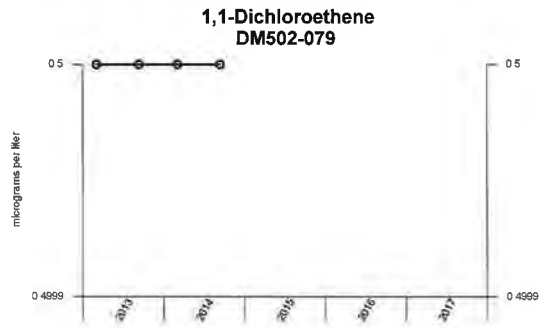
CLEAR CREEK ASSOCIATES

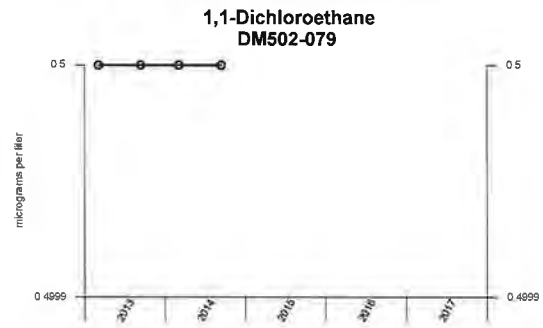
Project Name: MI52 OU1 Effectiveness Report

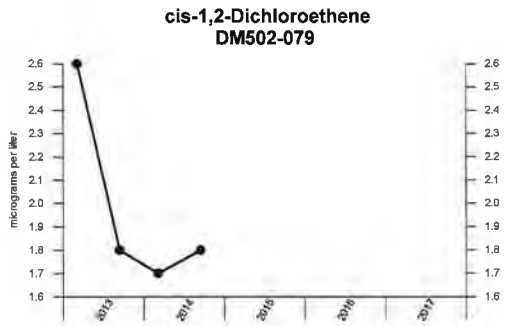
Job No: CC18.1000.00-12 | Date: March 2018

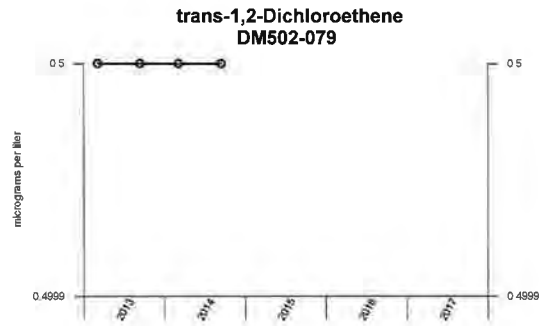
Time-Series Graphs
DM316
MI52 OU1 Effectiveness Report
Phoenix, Arizona

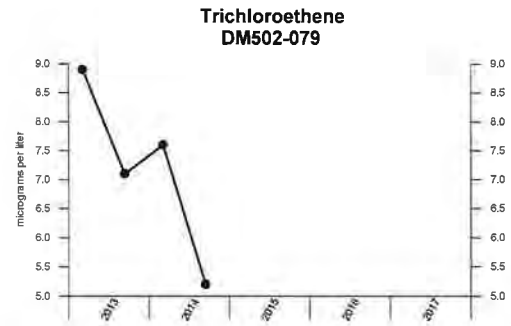


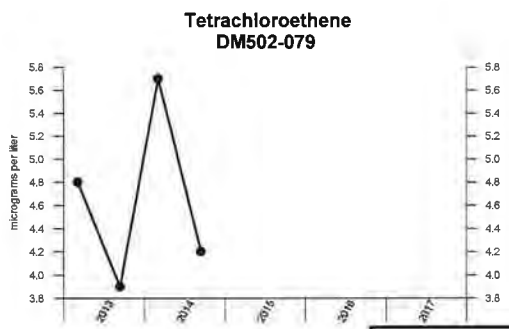


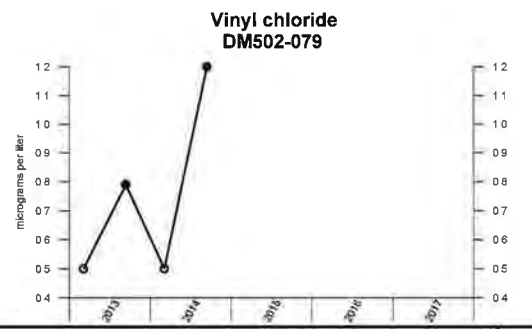


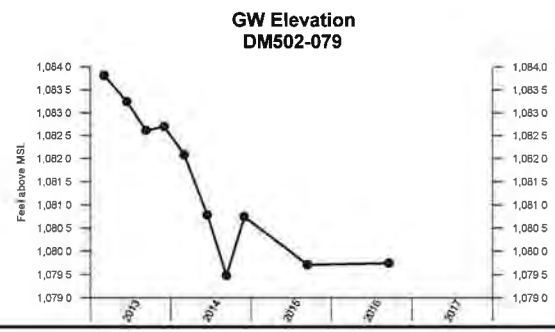












EXPLANATION

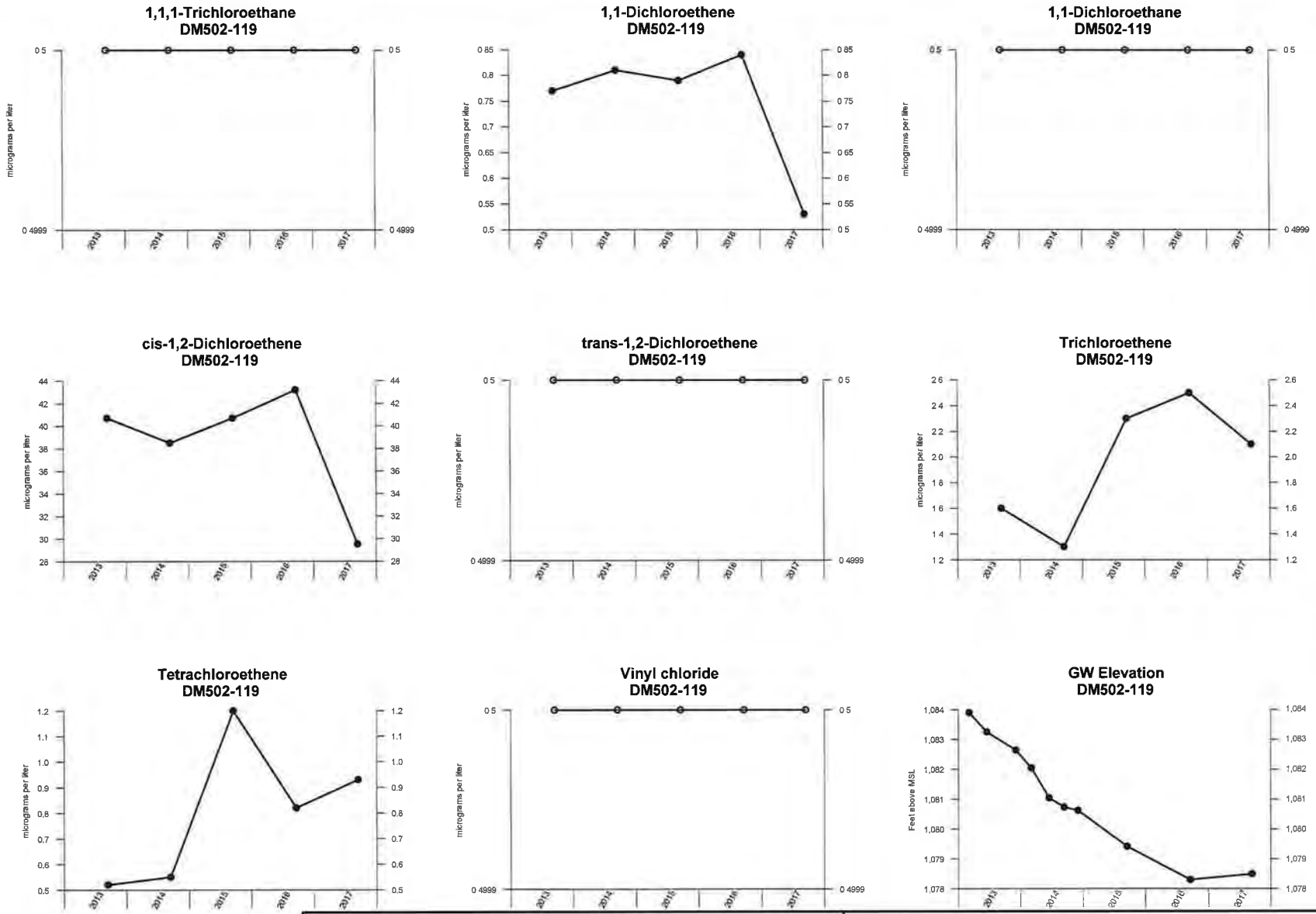
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM502-079
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

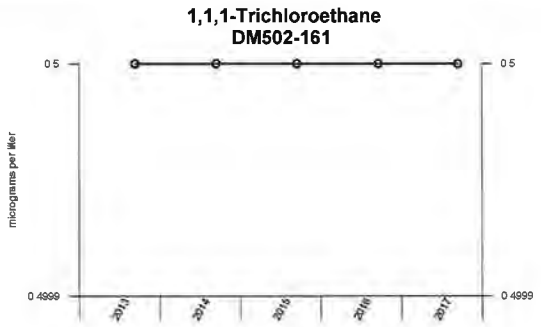
● - Measured Value
○ - Undetected (Displayed at RL)

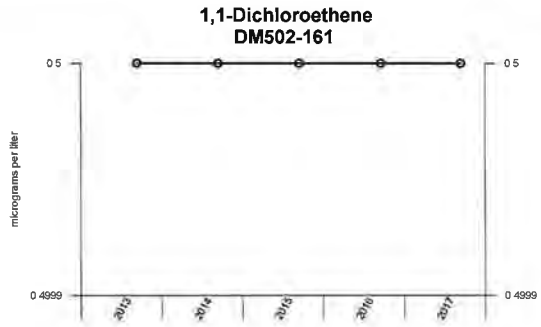
CLEAR CREEK ASSOCIATES

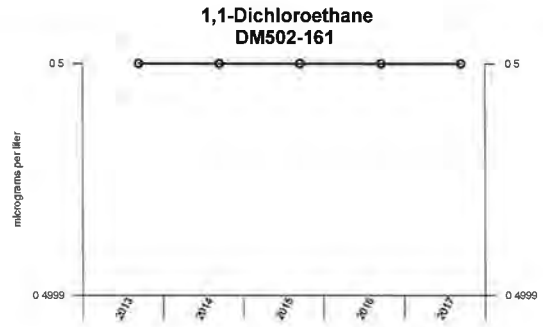
Project Name: MI52 OU1 Effectiveness Report

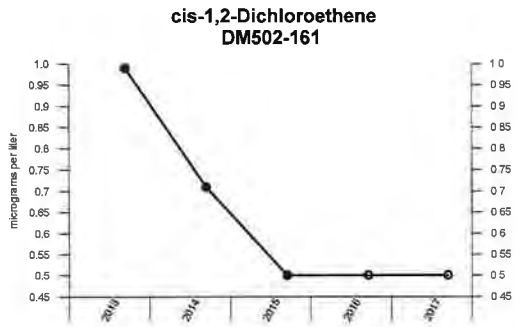
Job No: CC18.1000.00-12 | Date: March 2018

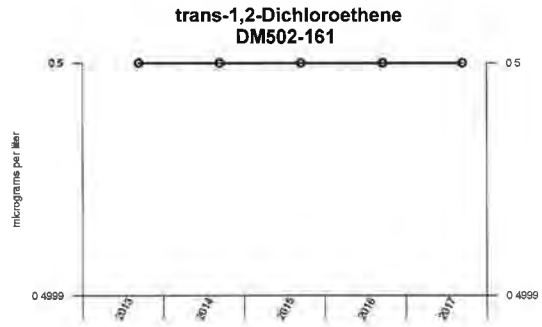
Time-Series Graphs
DM502-119
MI52 OU1 Effectiveness Report
Phoenix, Arizona

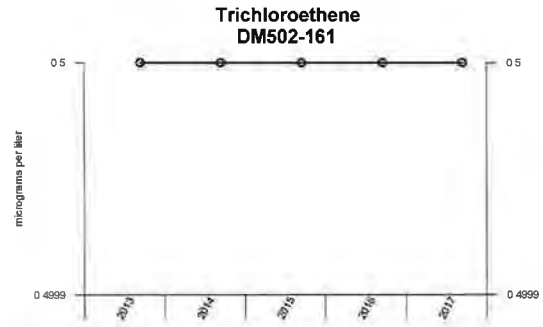


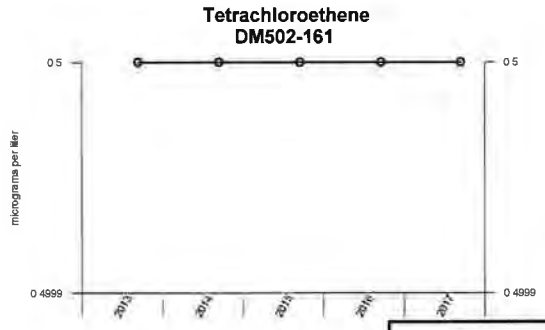


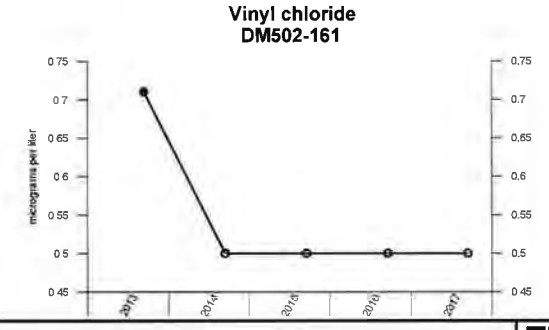


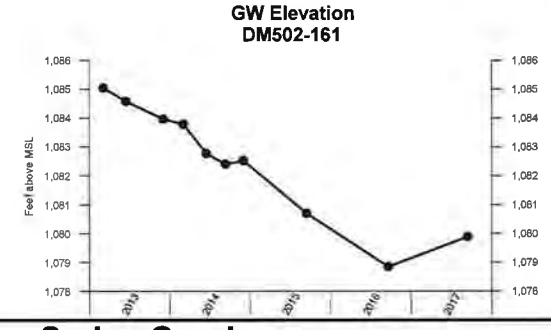












EXPLANATION

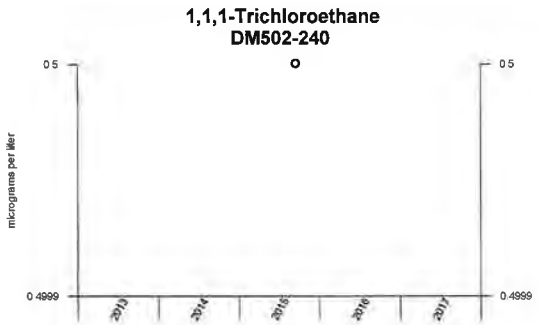
● - Measured Value
○ - Undetected (Displayed at RL)

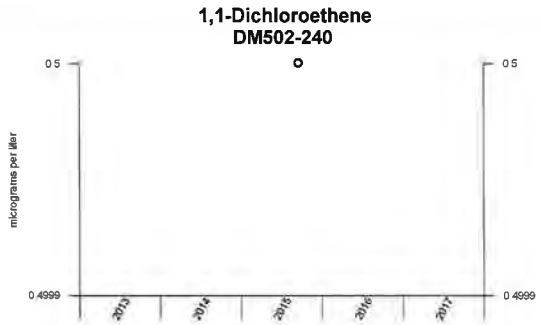
CLEAR CREEK ASSOCIATES

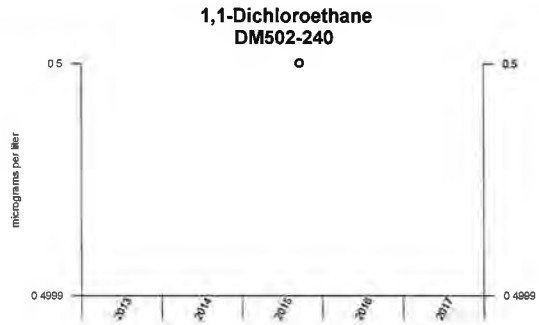
Project Name: MI52 OU1 Effectiveness Report

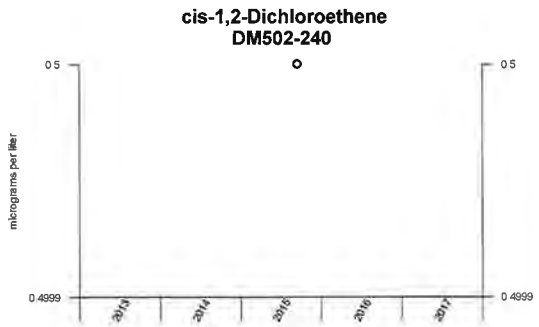
Job No: CC18.1000.00-12 | Date: March 2018

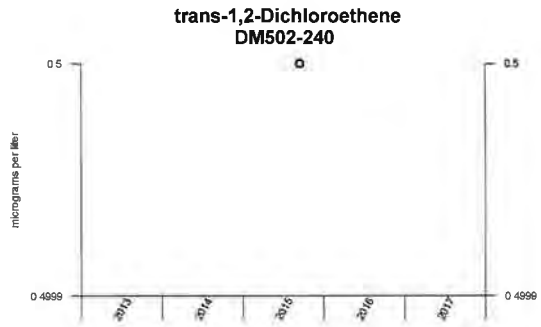
Time-Series Graphs
DM502-161
MI52 OU1 Effectiveness Report
Phoenix, Arizona

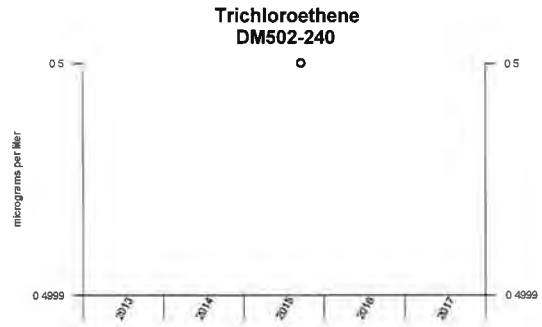


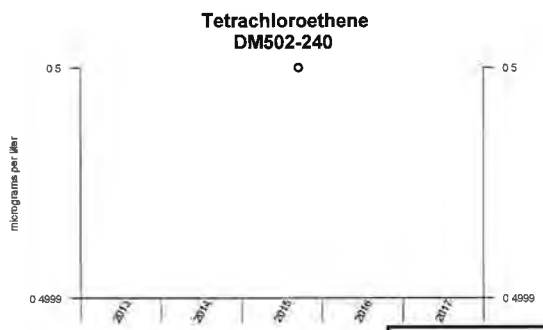


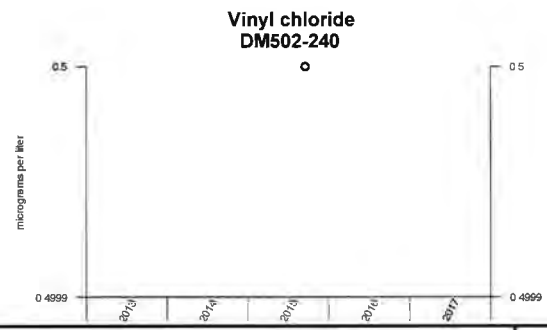


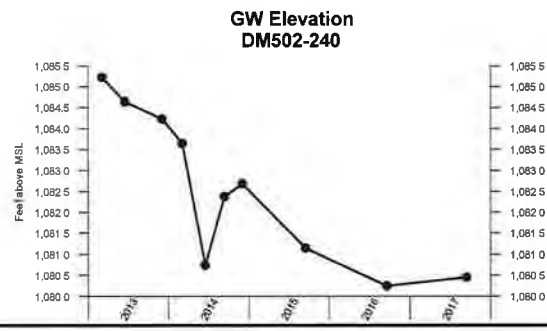












EXPLANATION

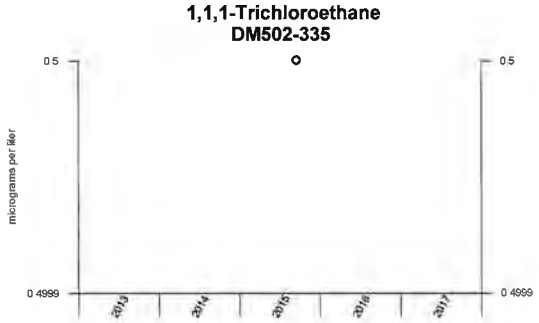
● - Measured Value
○ - Undetected (Displayed at RL)

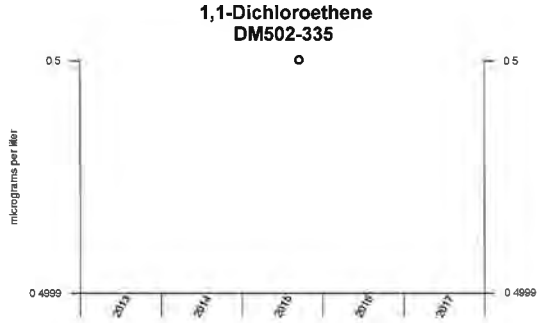
CLEAR CREEK ASSOCIATES

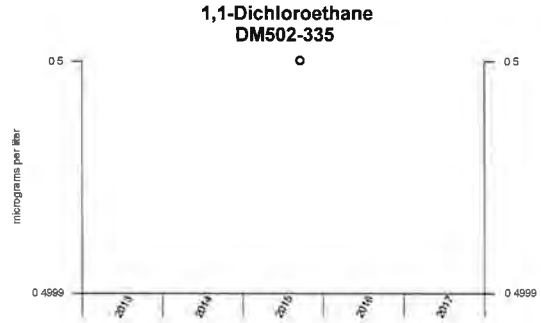
Project Name: MI52 OU1 Effectiveness Report

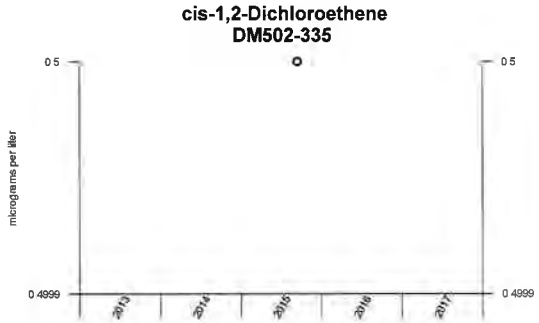
Job No: CC18.1000.00-12 | Date: March 2018

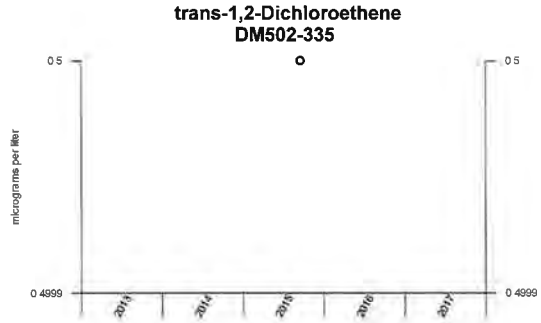
Time-Series Graphs
DM502-240
MI52 OU1 Effectiveness Report
Phoenix, Arizona

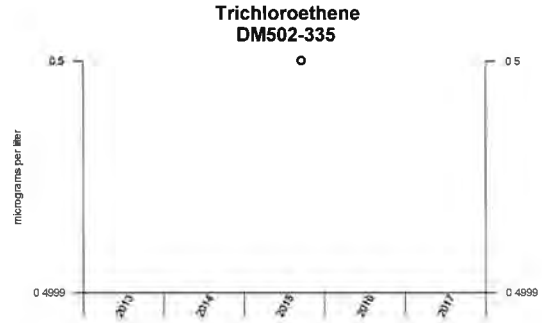


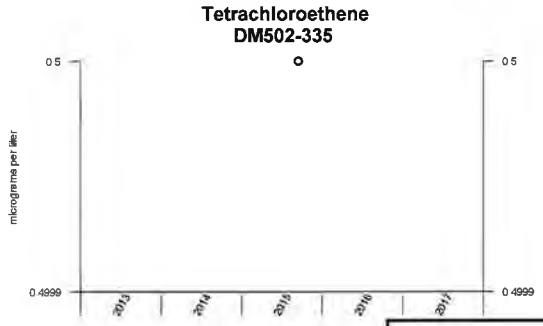


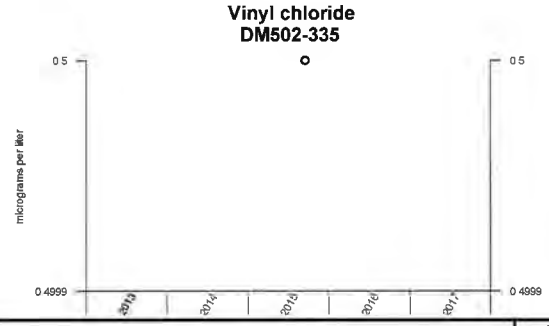


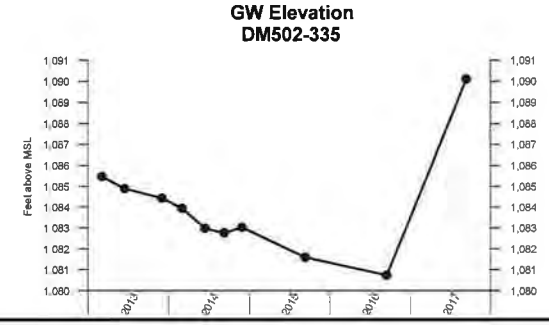












EXPLANATION

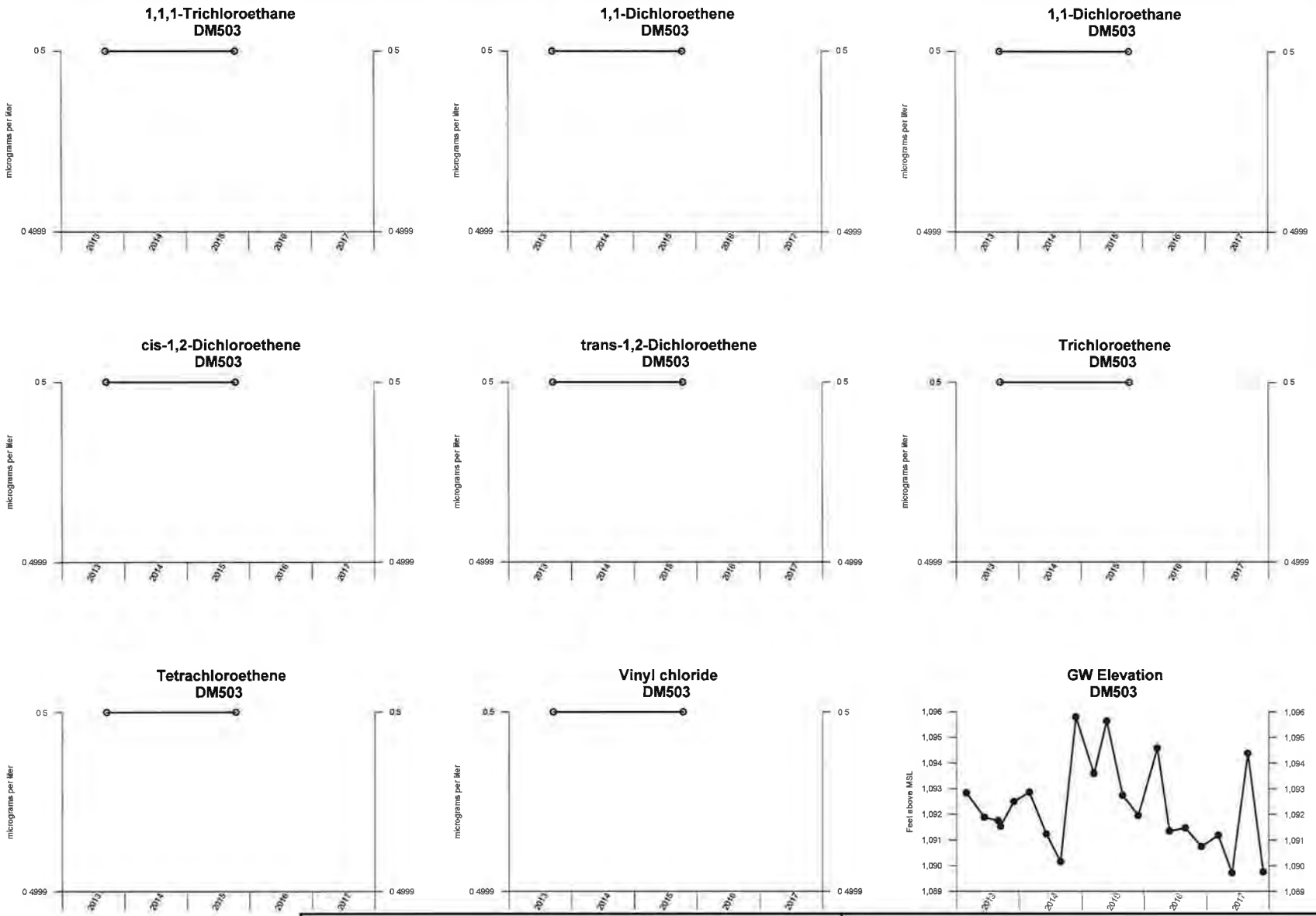
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM502-335
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

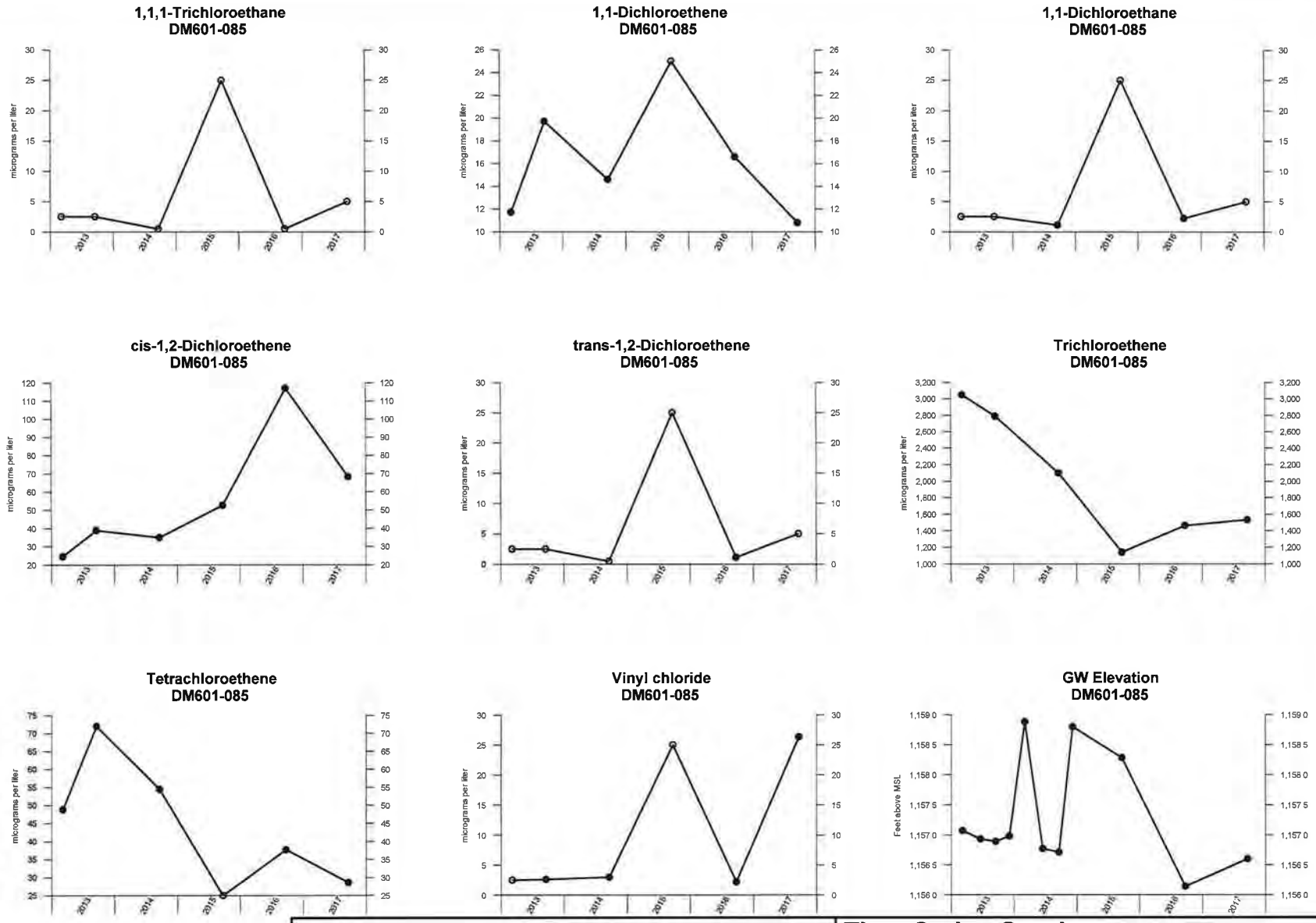
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM503
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

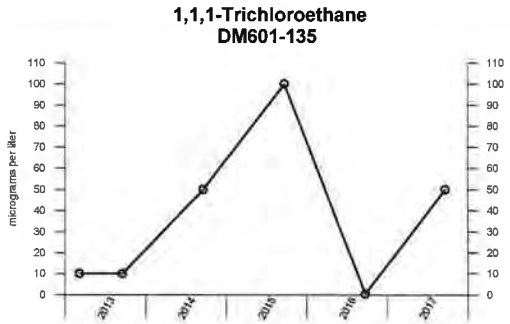
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

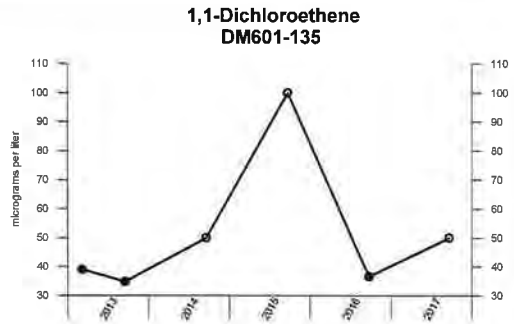
CLEAR CREEK ASSOCIATES

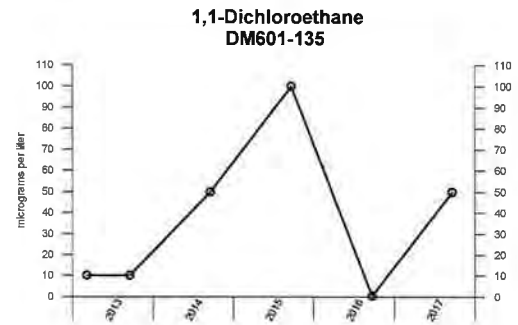
Project Name: MI52 OU1 Effectiveness Report

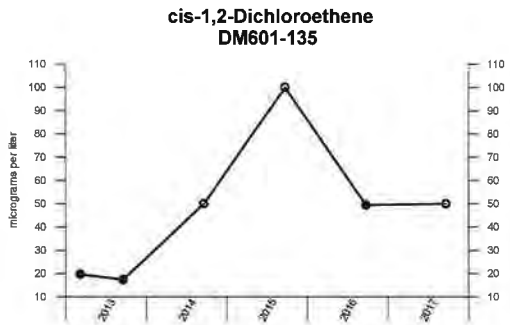
Job No: CC18.1000.00-12 | Date: March 2018

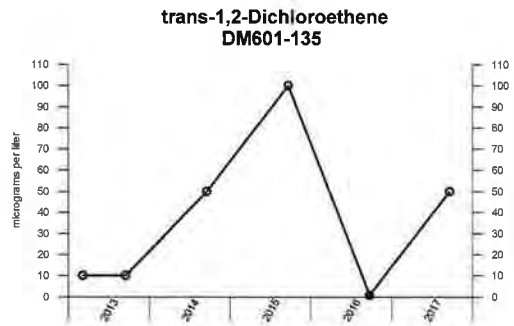
Time-Series Graphs
DM601-085
MI52 OU1 Effectiveness Report
Phoenix, Arizona

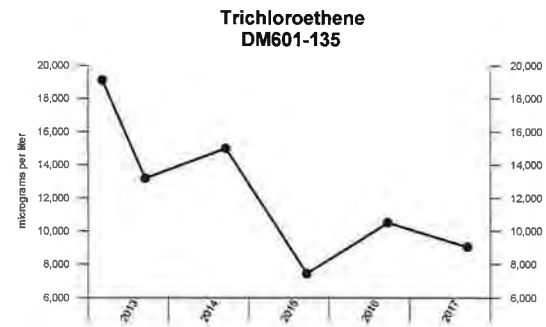


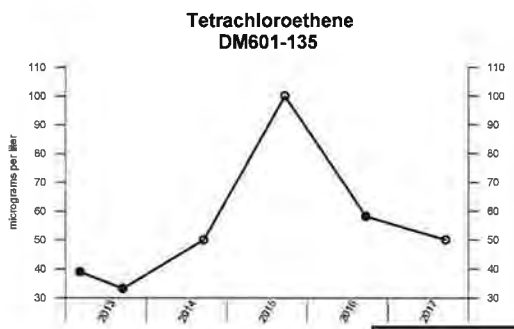


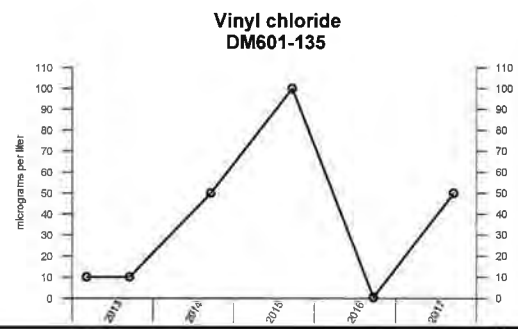


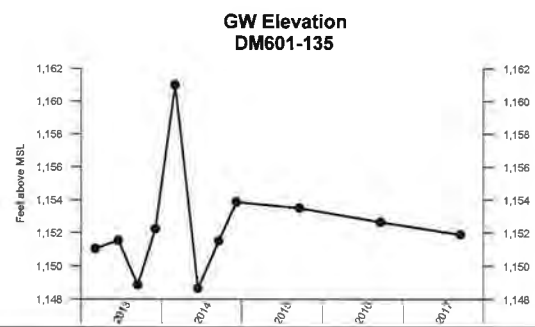












EXPLANATION

● - Measured Value
○ - Undetected (Displayed at RL)

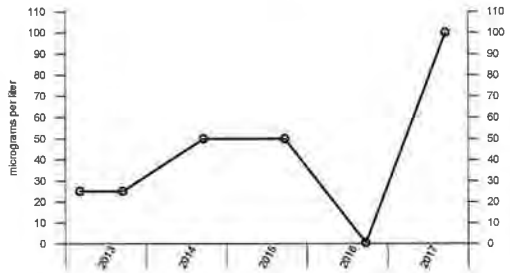
CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

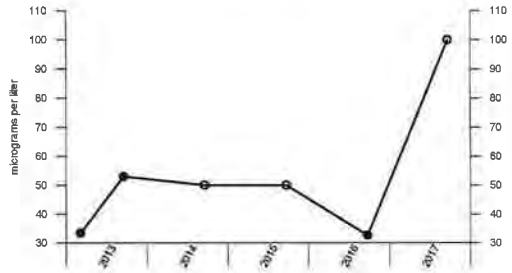
Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM601-135
MI52 OU1 Effectiveness Report
Phoenix, Arizona

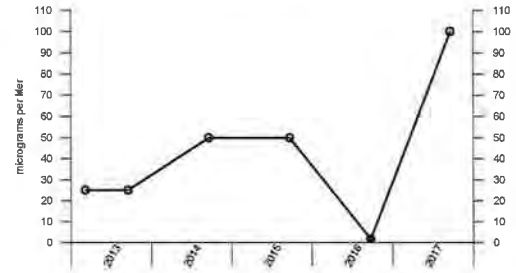
1,1,1-Trichloroethane
DM601-200



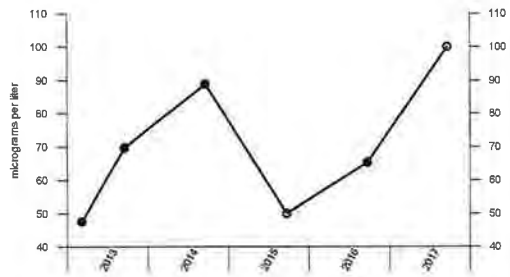
1,1-Dichloroethene
DM601-200



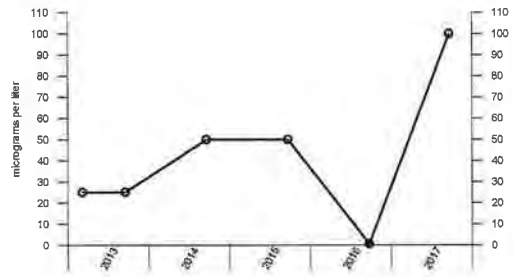
1,1-Dichloroethane
DM601-200



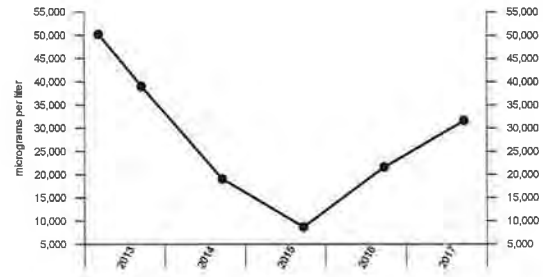
cis-1,2-Dichloroethene
DM601-200



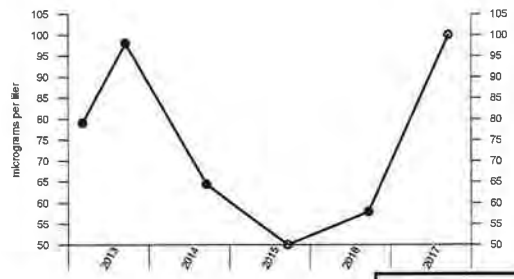
trans-1,2-Dichloroethene
DM601-200



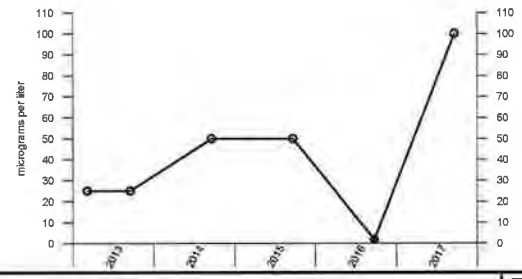
Trichloroethene
DM601-200



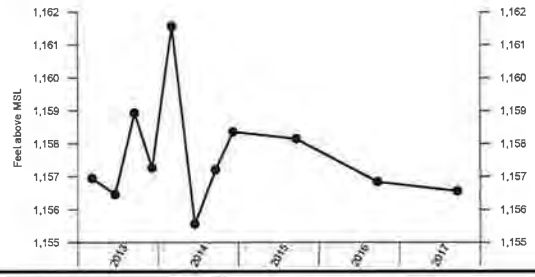
Tetrachloroethene
DM601-200



Vinyl chloride
DM601-200



GW Elevation
DM601-200



EXPLANATION

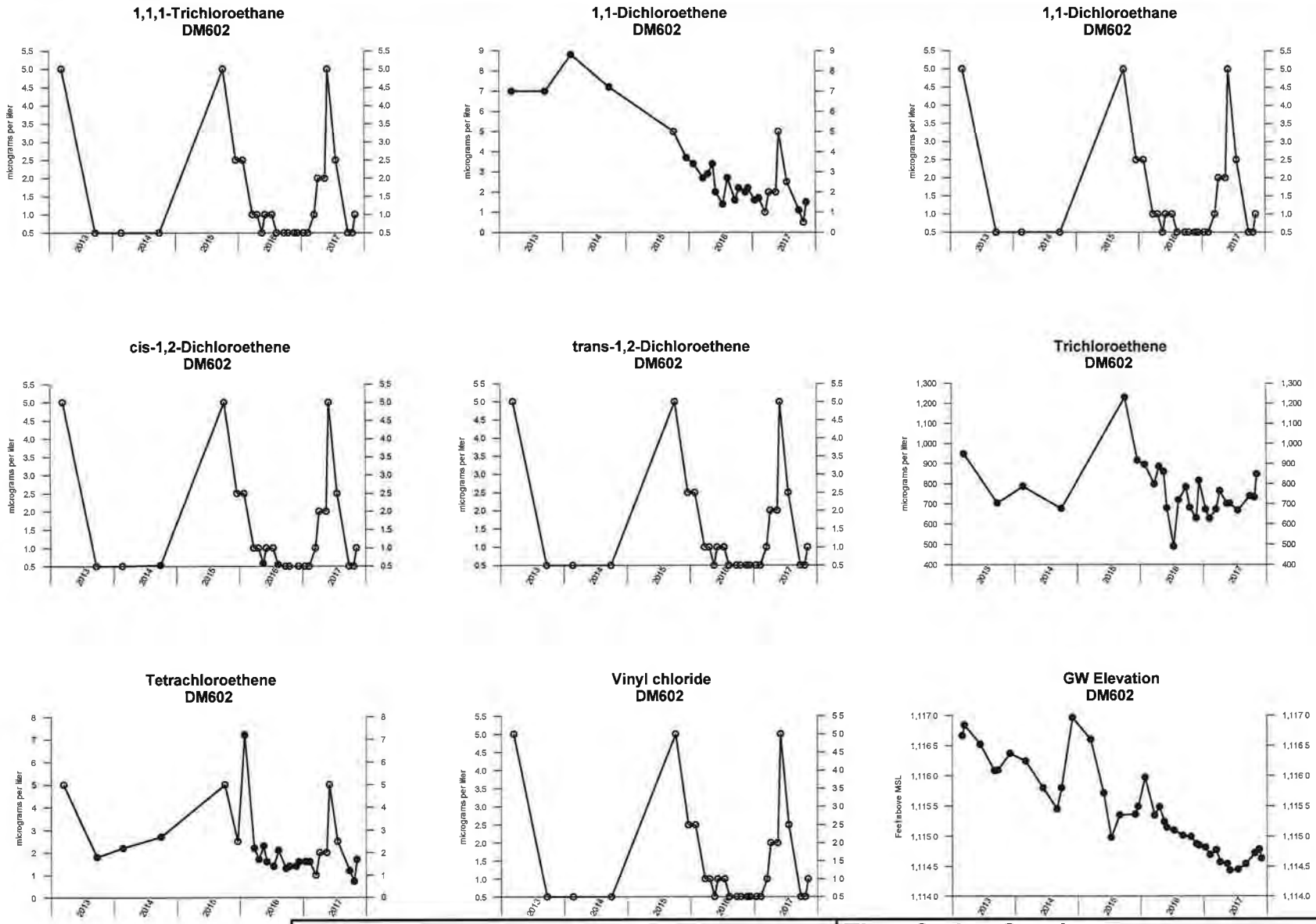
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM601-200
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

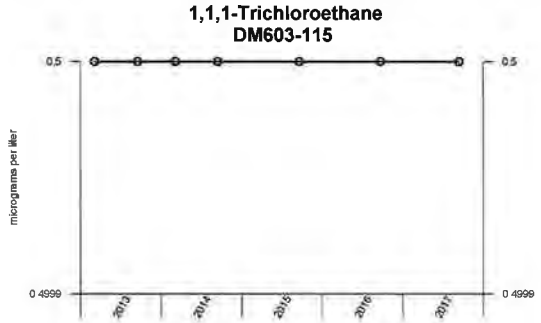
● - Measured Value
○ - Undetected (Displayed at RL)

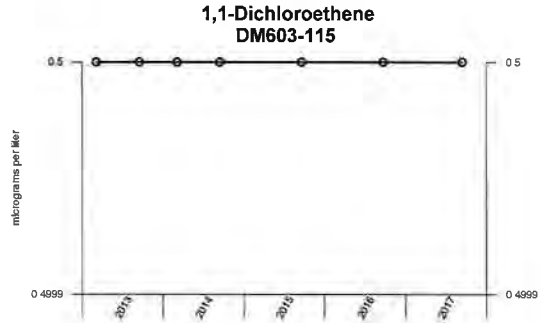
CLEAR CREEK ASSOCIATES

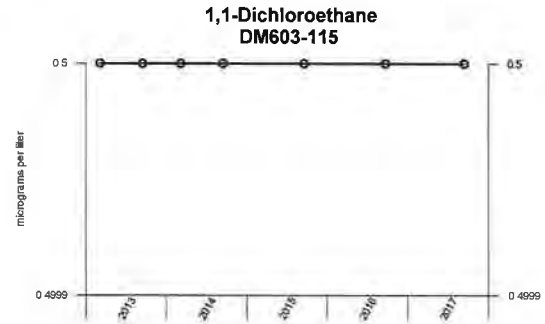
Project Name: MI52 OU1 Effectiveness Report

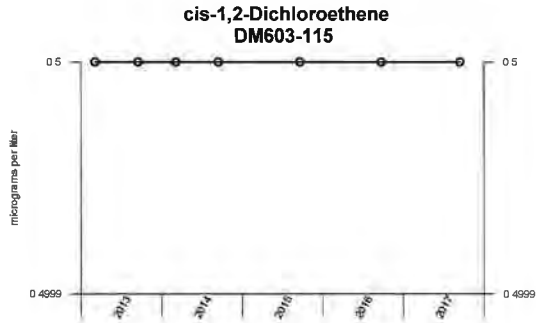
Job No: CC18.1000.00-12 | Date: March 2018

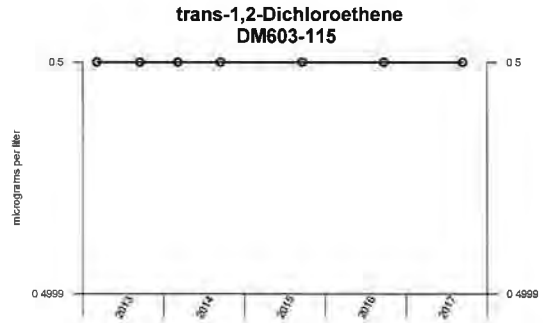
Time-Series Graphs
DM602
MI52 OU1 Effectiveness Report
Phoenix, Arizona

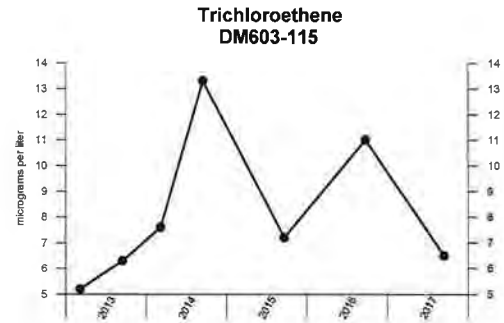


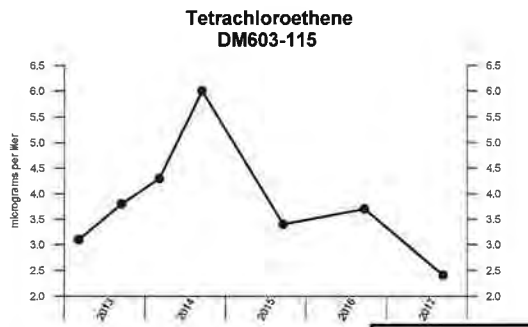


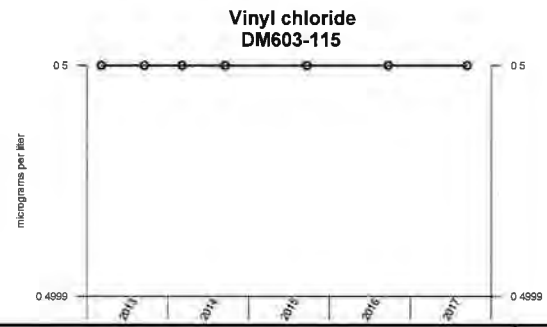


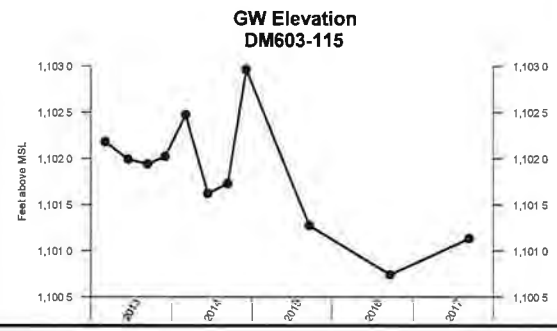












EXPLANATION

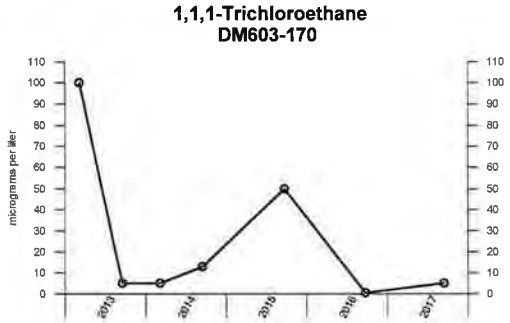
● - Measured Value
○ - Undetected (Displayed at RL)

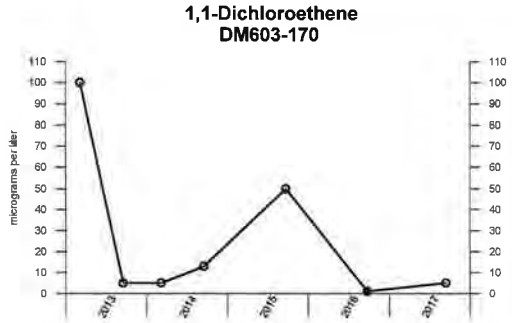
CLEAR CREEK ASSOCIATES

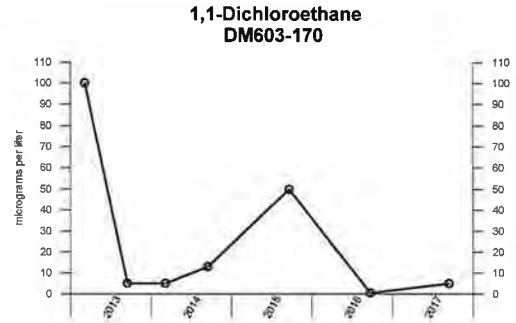
Project Name: MI52 OU1 Effectiveness Report

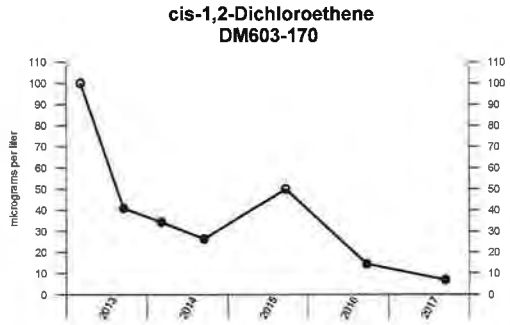
Job No: CC18.1000.00-12 | Date: March 2018

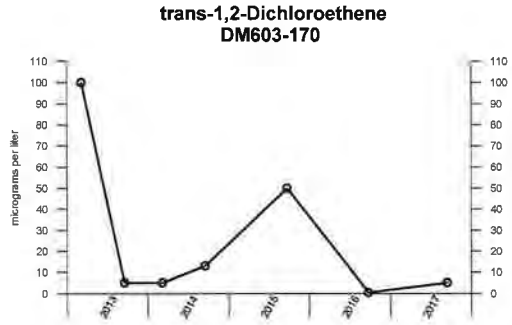
Time-Series Graphs
DM603-115
MI52 OU1 Effectiveness Report
Phoenix, Arizona

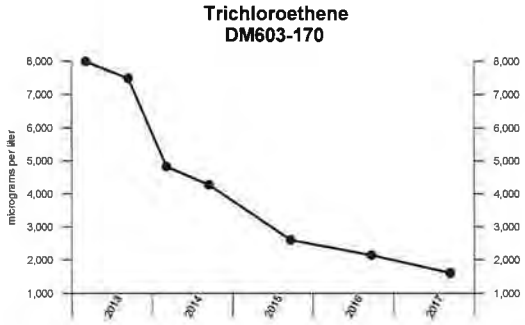


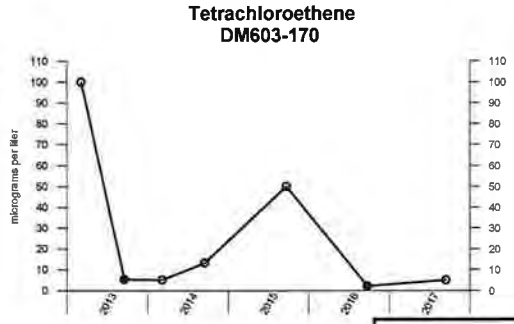


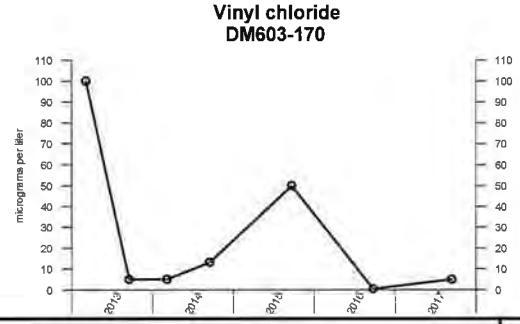


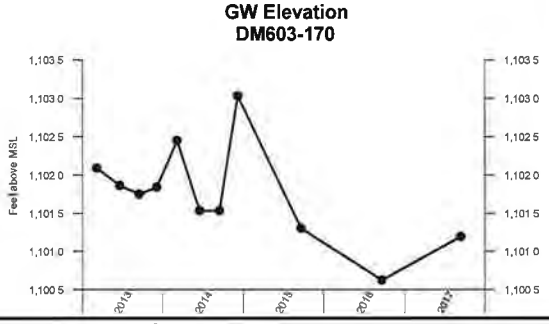












EXPLANATION

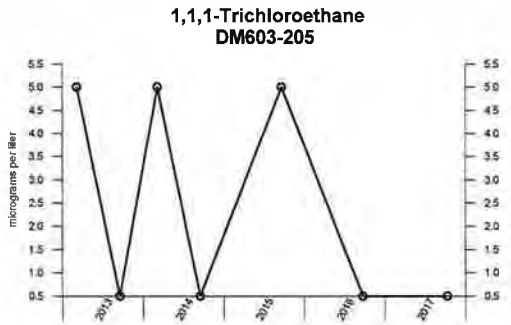
● - Measured Value
○ - Undetected (Displayed at RL)

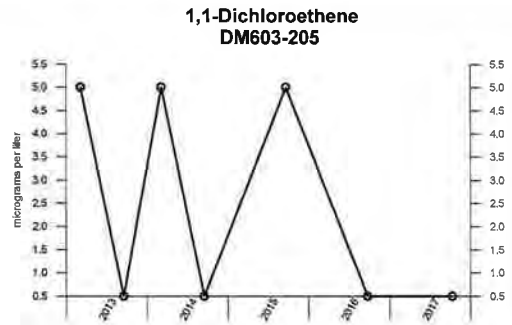
CLEAR CREEK ASSOCIATES

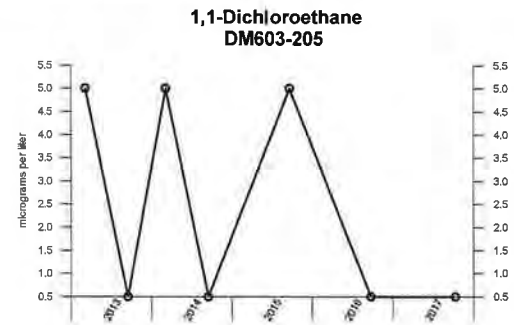
Project Name: MI52 OU1 Effectiveness Report

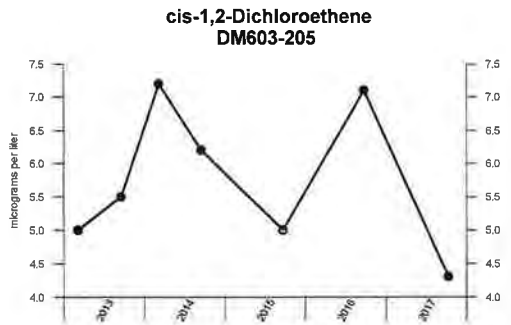
Job No: CC18.1000.00-12 | Date: March 2018

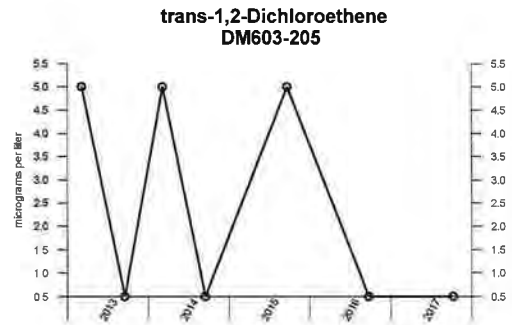
Time-Series Graphs
DM603-170
MI52 OU1 Effectiveness Report
Phoenix, Arizona

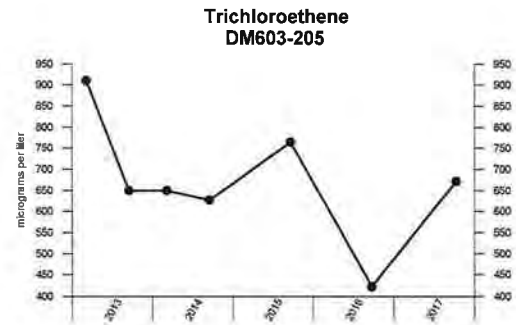


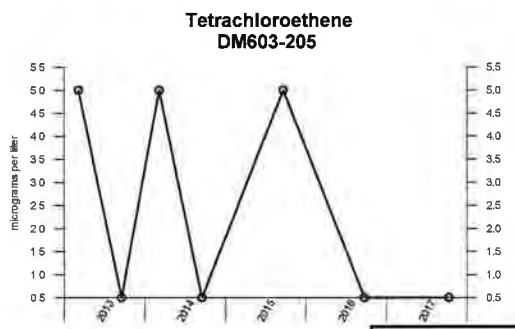


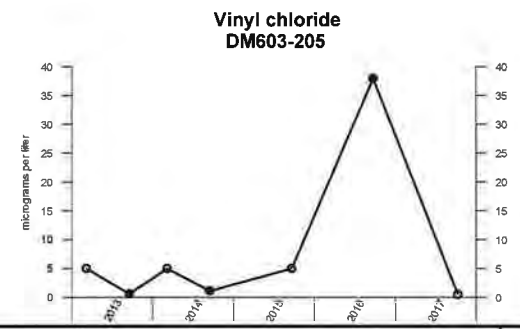


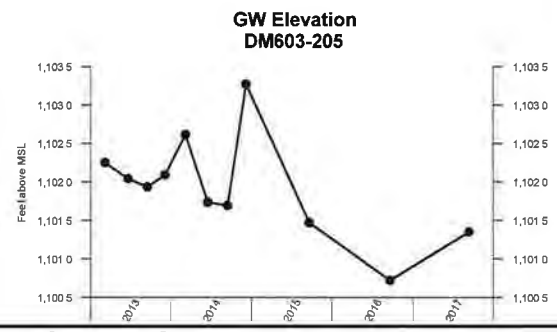












EXPLANATION

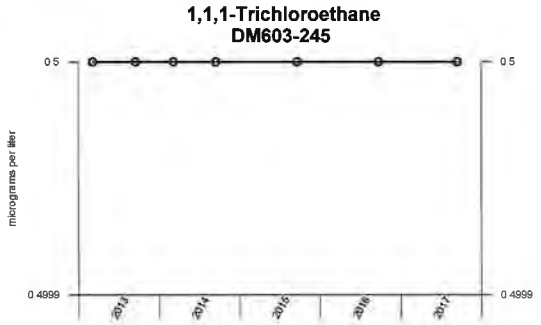
● - Measured Value
○ - Undetected (Displayed at RL)

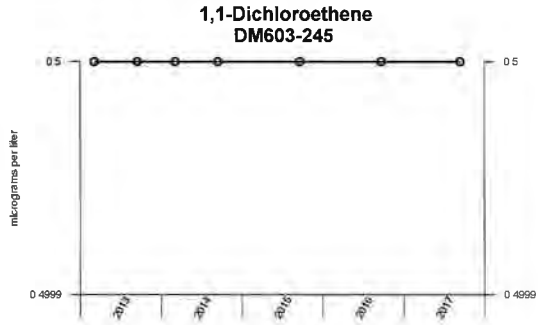
CLEAR CREEK ASSOCIATES

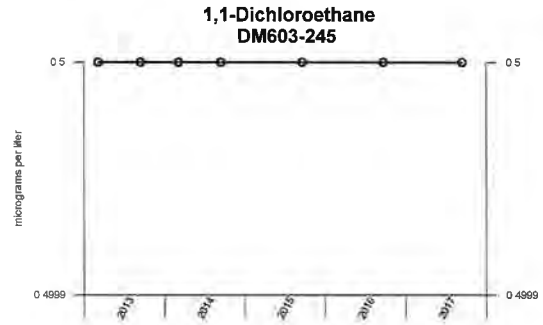
Project Name: MI52 OU1 Effectiveness Report

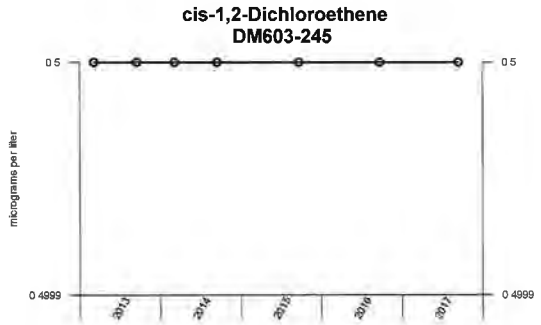
Job No: CC18.1000.00-12 | Date: March 2018

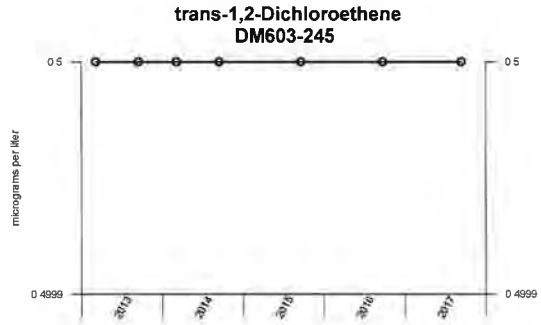
Time-Series Graphs
DM603-205
MI52 OU1 Effectiveness Report
Phoenix, Arizona

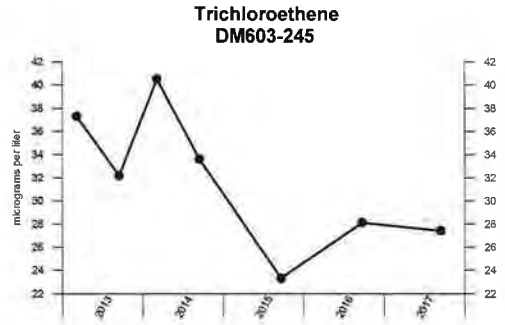


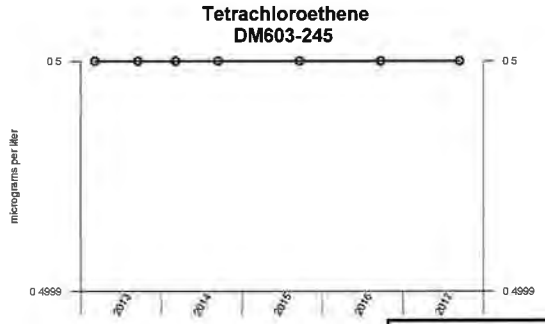


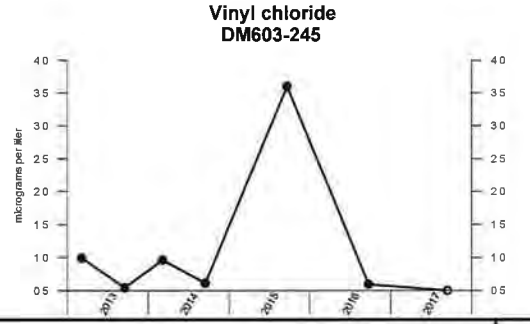


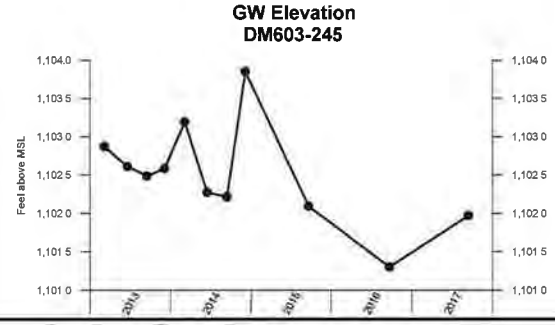












EXPLANATION

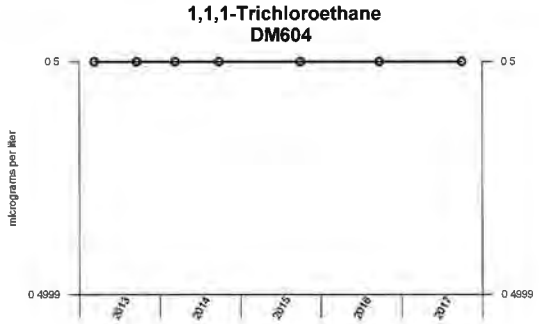
● - Measured Value
○ - Undetected (Displayed at RL)

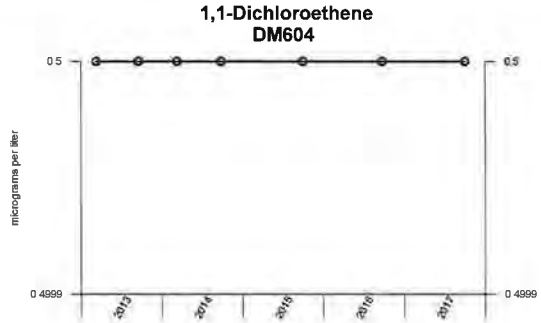
CLEAR CREEK ASSOCIATES

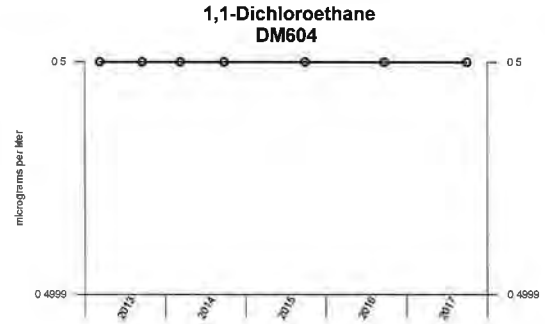
Project Name: MI52 OU1 Effectiveness Report

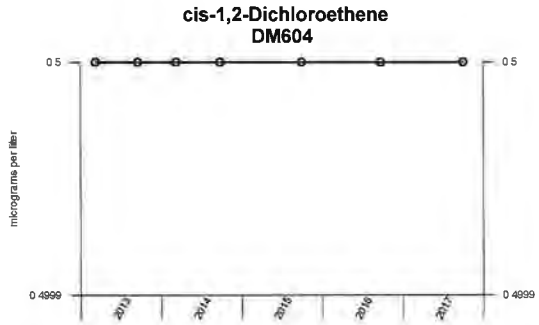
Job No: CC18.1000.00-12 | Date: March 2018

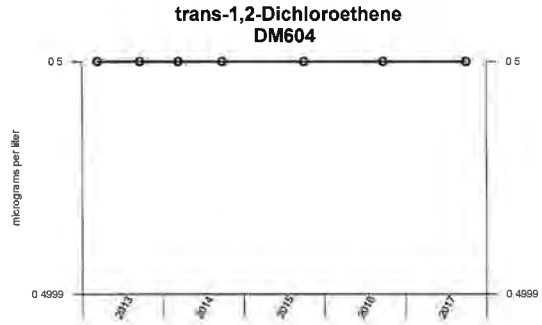
Time-Series Graphs
DM603-245
MI52 OU1 Effectiveness Report
Phoenix, Arizona

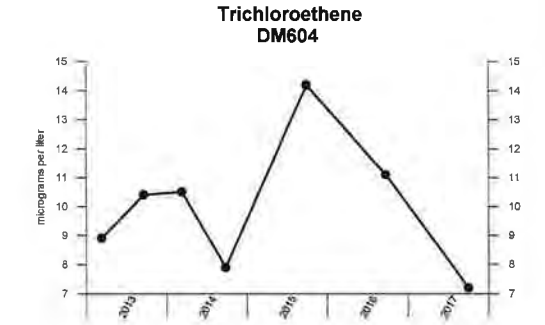


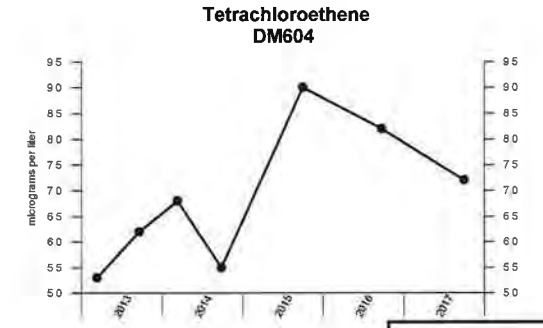


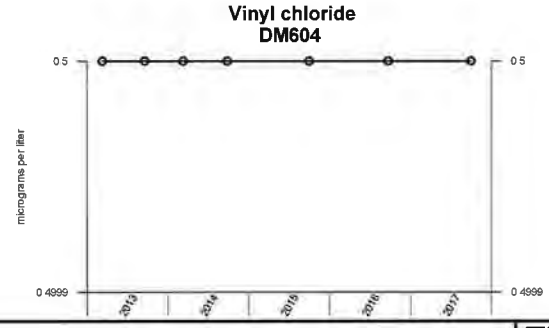


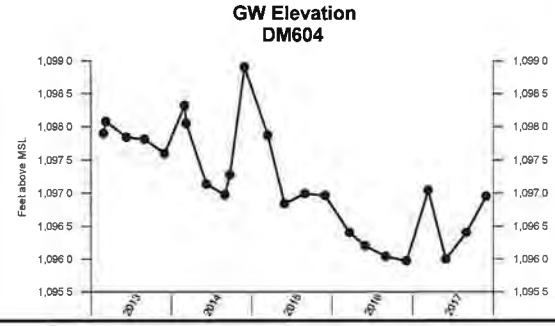












EXPLANATION

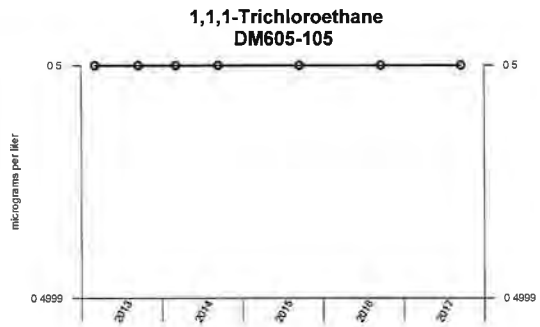
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

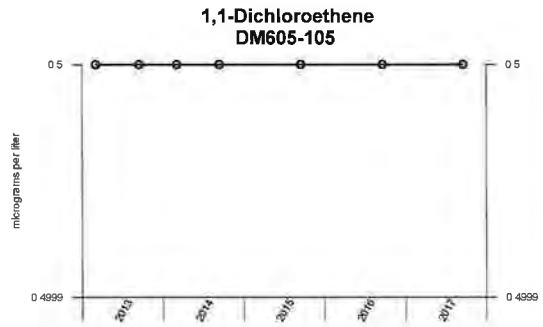
CLEAR CREEK ASSOCIATES

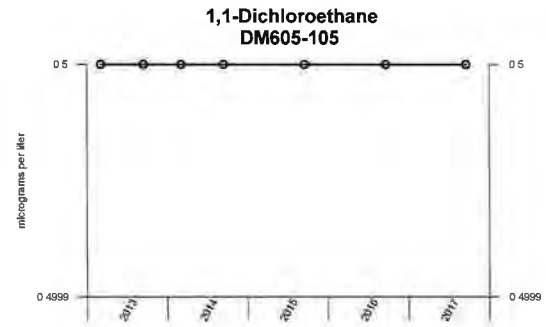
Project Name: MI52 OU1 Effectiveness Report

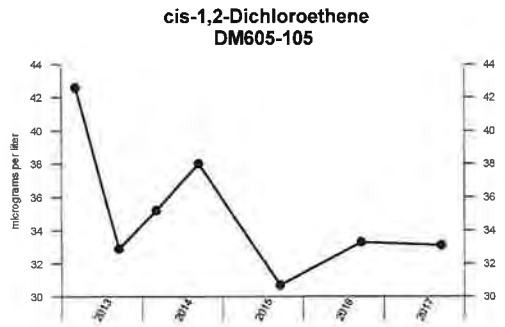
Job No: CC18.1000.00-12 | Date: March 2018

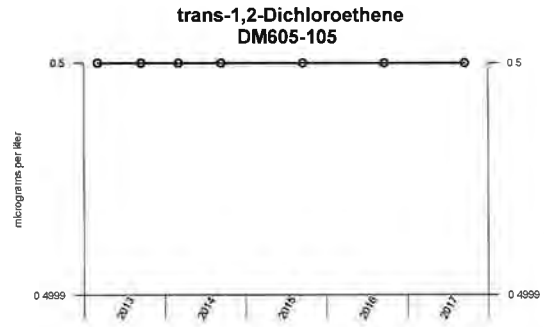
Time-Series Graphs
DM604
MI52 OU1 Effectiveness Report
Phoenix, Arizona

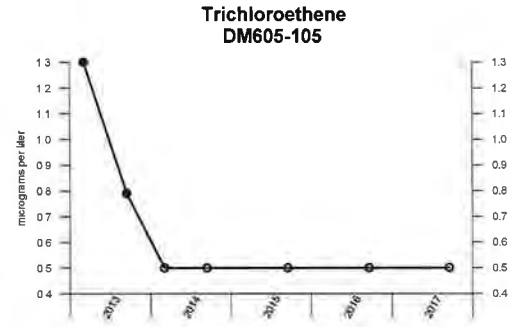


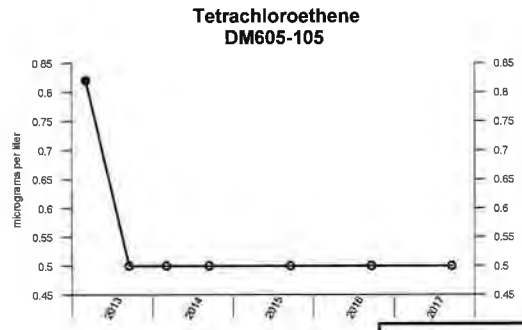


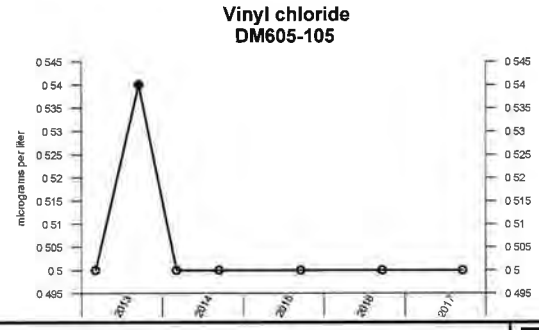


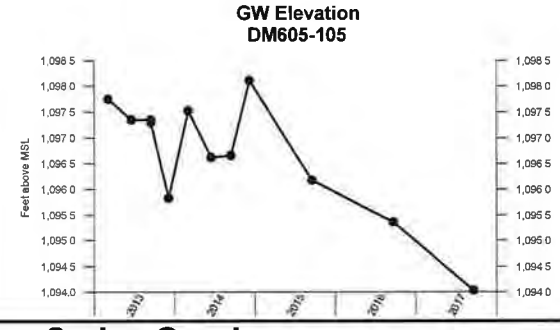












EXPLANATION

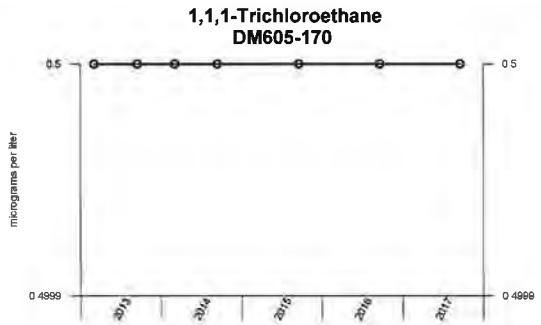
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

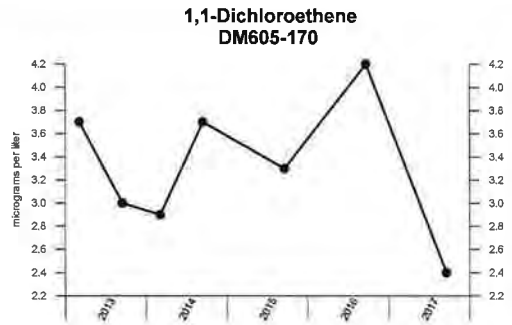
CLEAR CREEK ASSOCIATES

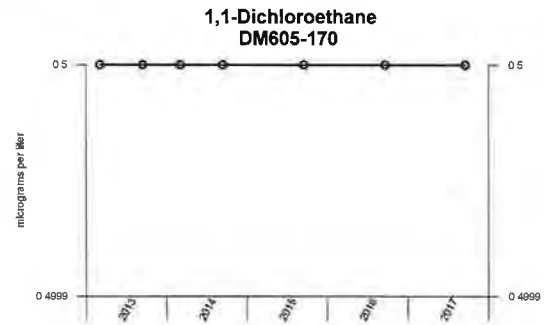
Project Name: MI52 OU1 Effectiveness Report

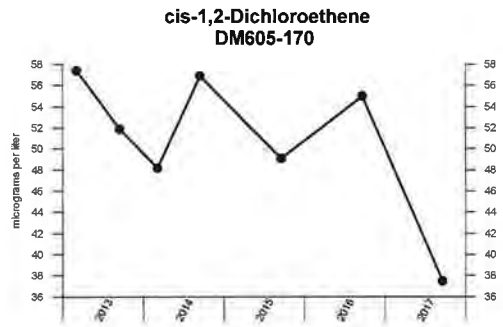
Job No: CC18.1000.00-12 | Date: March 2018

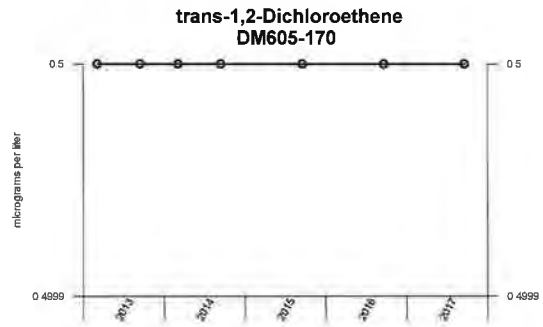
Time-Series Graphs
DM605-105
MI52 OU1 Effectiveness Report
Phoenix, Arizona

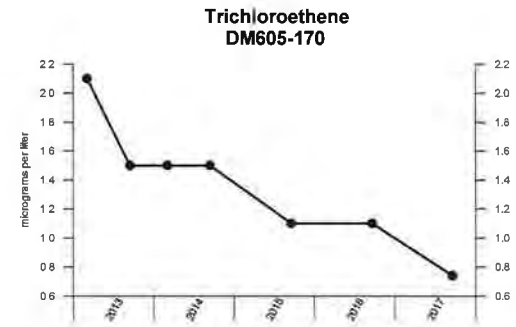


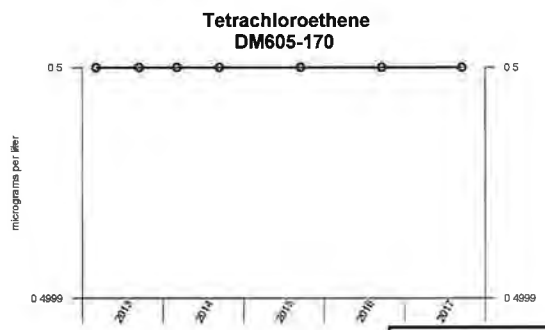


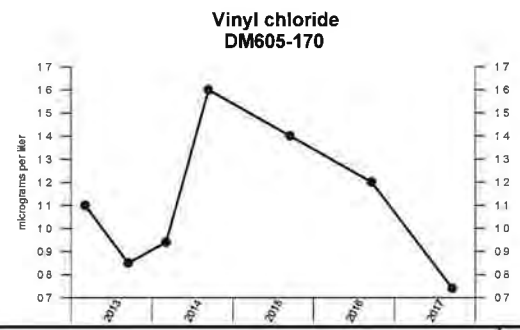


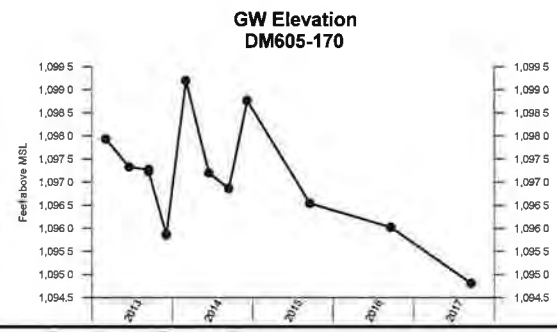












EXPLANATION

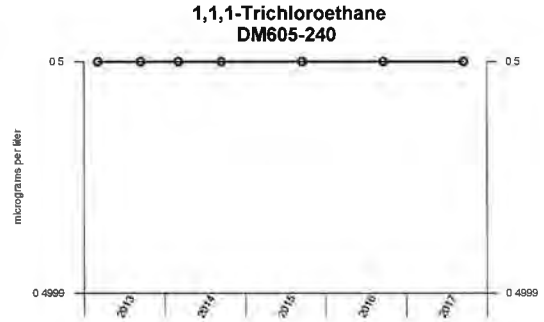
● - Measured Value
○ - Undetected (Displayed at RL)

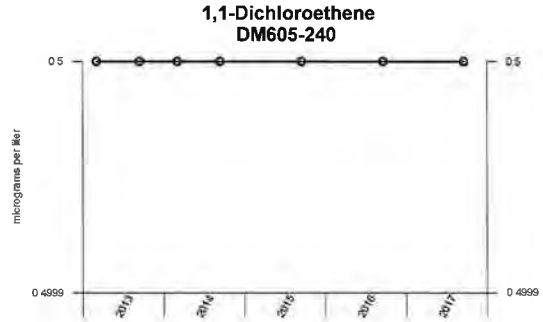
CLEAR CREEK ASSOCIATES

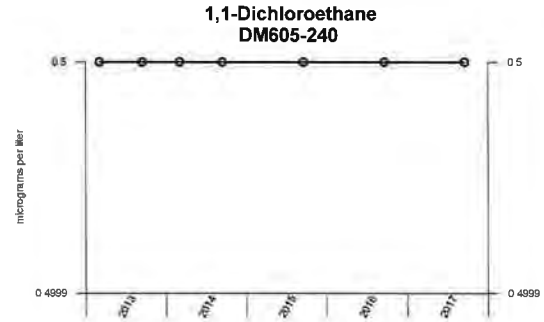
Project Name: MI52 OU1 Effectiveness Report

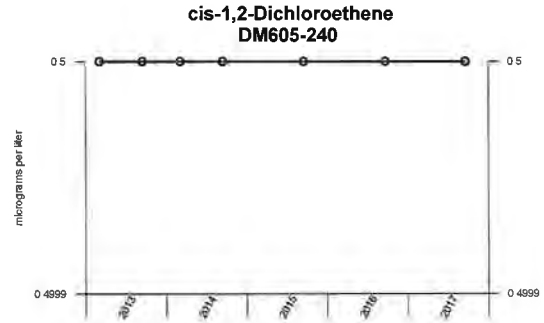
Job No: CC18.1000.00-12 | Date: March 2018

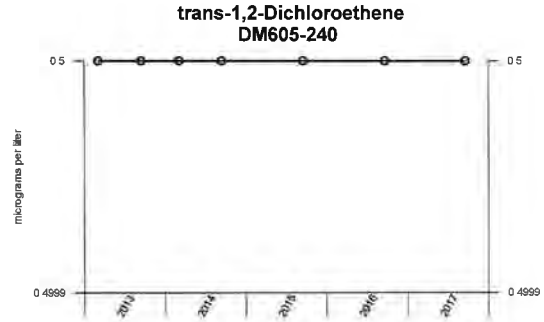
Time-Series Graphs
DM605-170
MI52 OU1 Effectiveness Report
Phoenix, Arizona

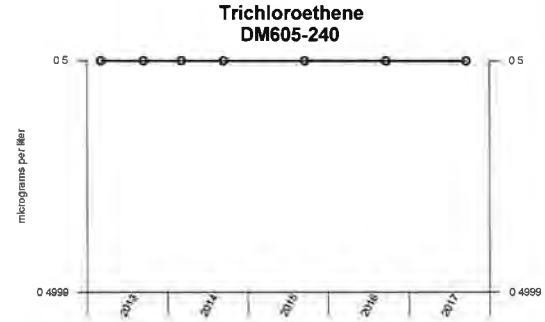


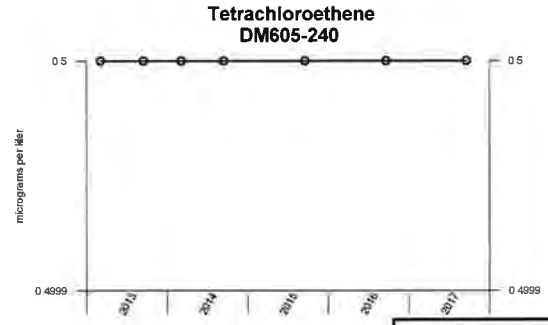


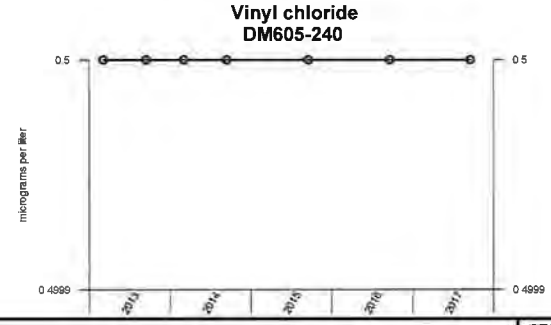


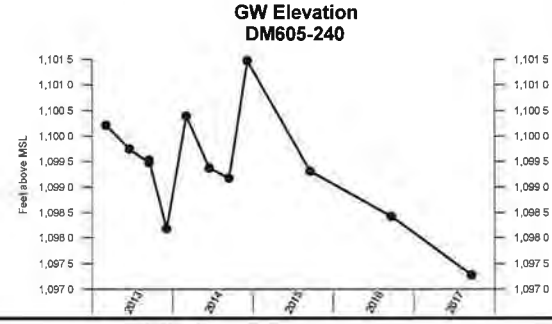












EXPLANATION

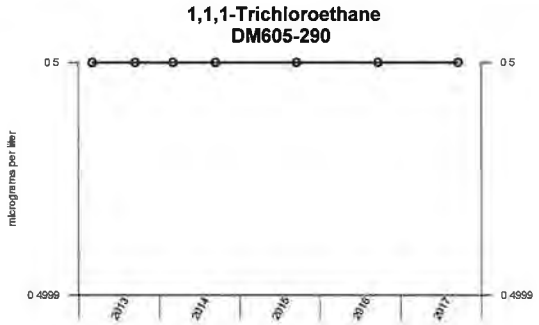
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

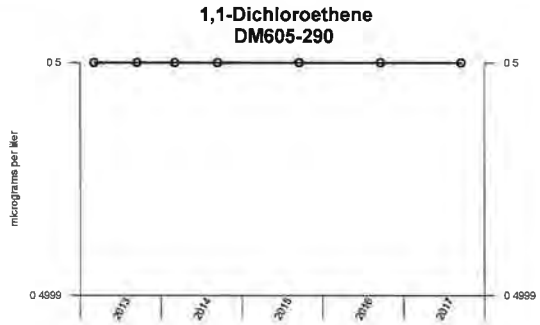
CLEAR CREEK ASSOCIATES

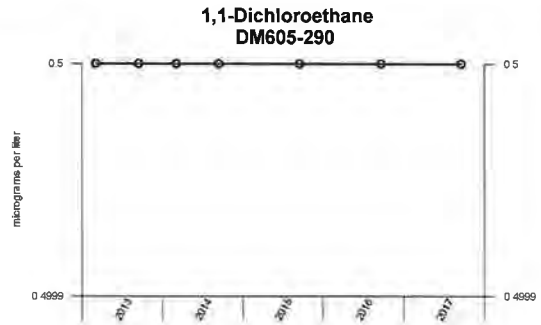
Project Name: MI52 OU1 Effectiveness Report

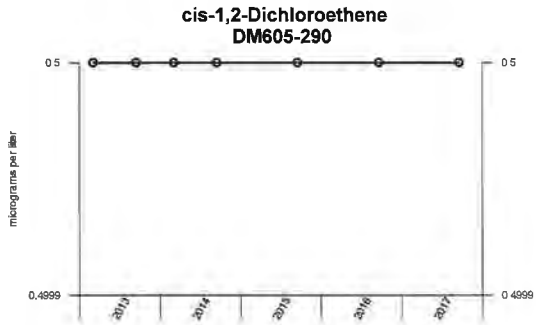
Job No: CC18.1000.00-12 | Date: March 2018

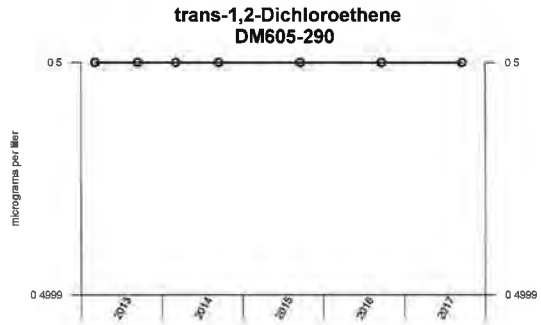
Time-Series Graphs
DM605-240
MI52 OU1 Effectiveness Report
Phoenix, Arizona

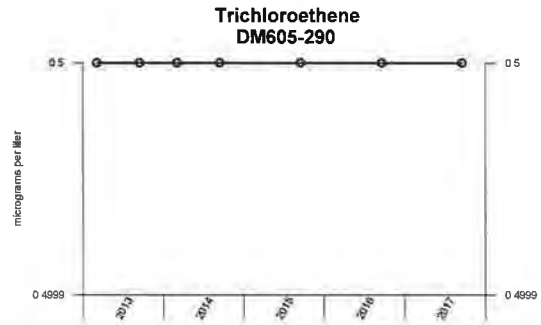


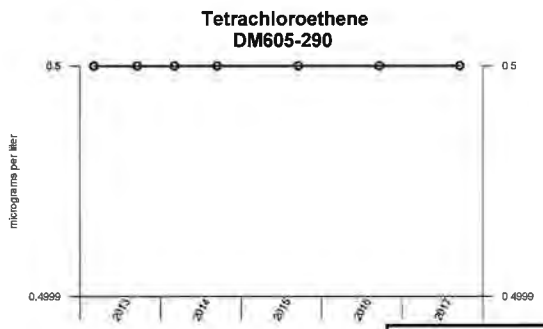


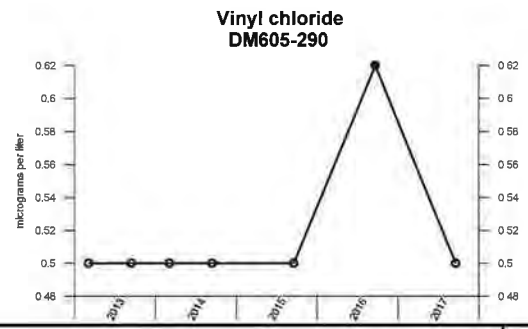


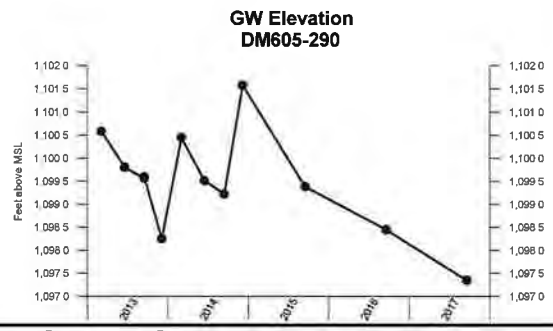












EXPLANATION

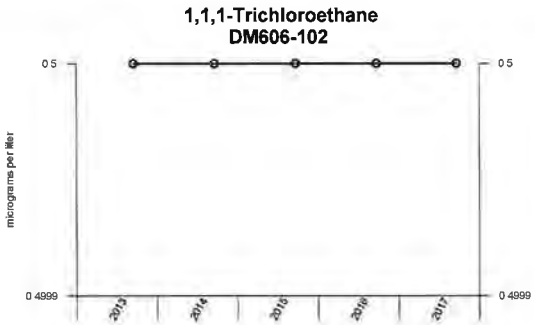
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

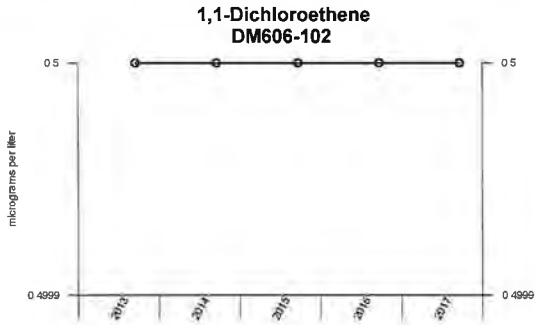
CLEAR CREEK ASSOCIATES

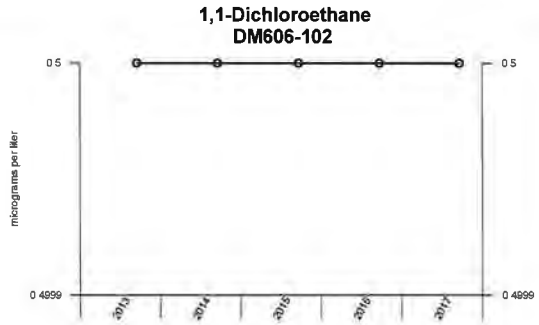
Project Name: MI52 OU1 Effectiveness Report

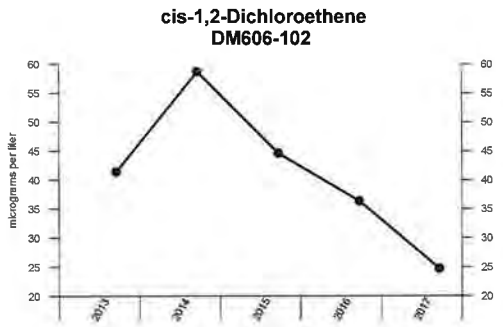
Job No: CC18.1000.00-12 | Date: March 2018

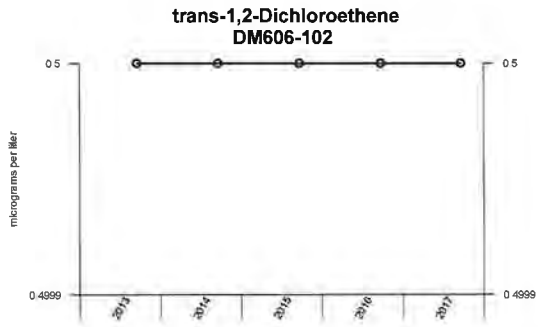
Time-Series Graphs
DM605-290
MI52 OU1 Effectiveness Report
Phoenix, Arizona

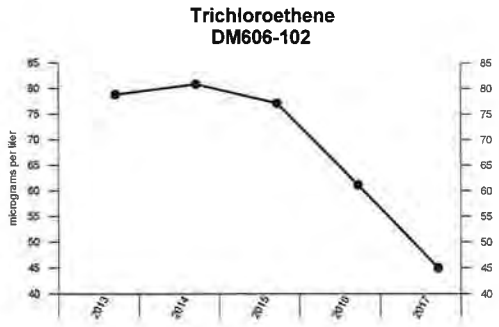


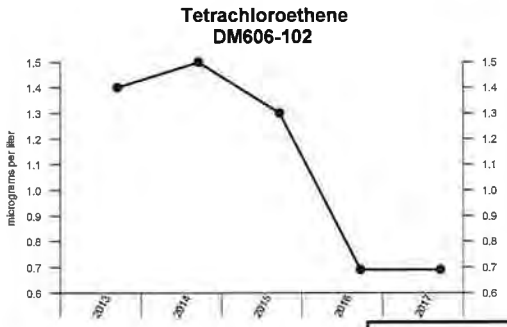


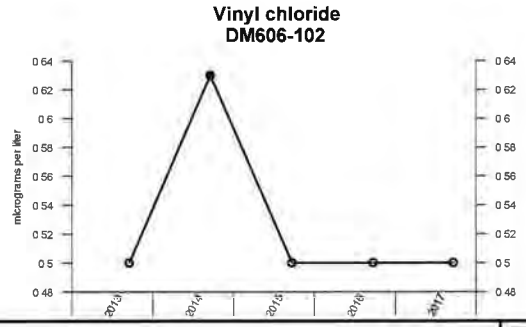


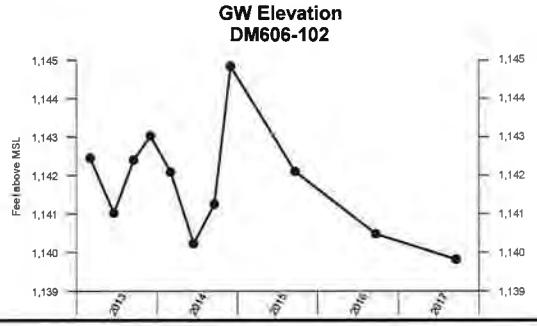












EXPLANATION

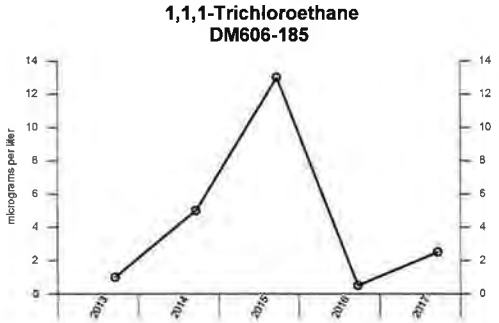
● - Measured Value
○ - Undetected (Displayed at RL)

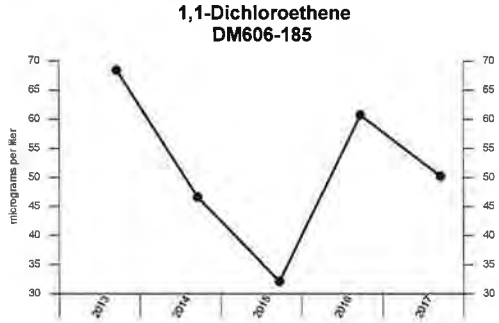
CLEAR CREEK ASSOCIATES

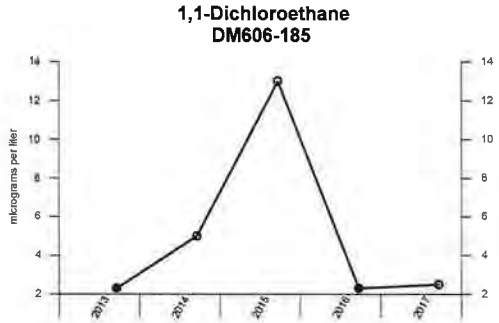
Project Name: MI52 OU1 Effectiveness Report

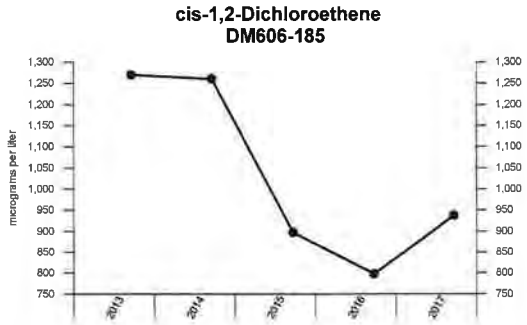
Job No: CC18.1000.00-12 | Date: March 2018

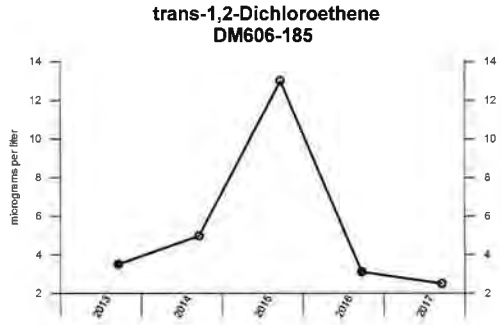
Time-Series Graphs
DM606-102
MI52 OU1 Effectiveness Report
Phoenix, Arizona

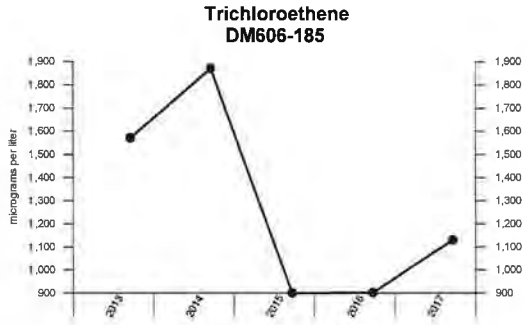


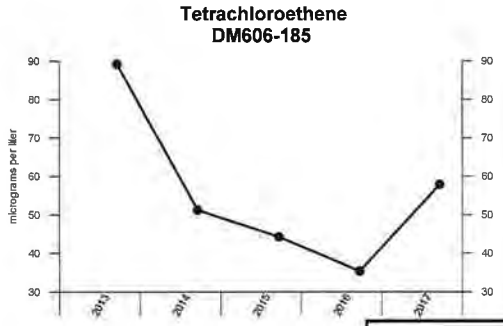


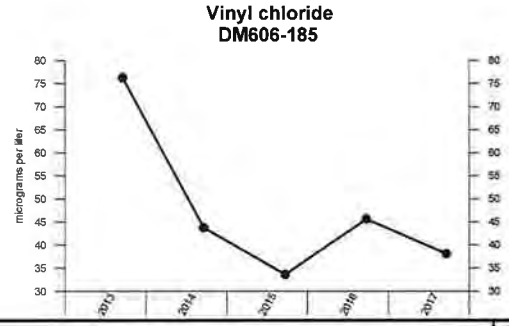


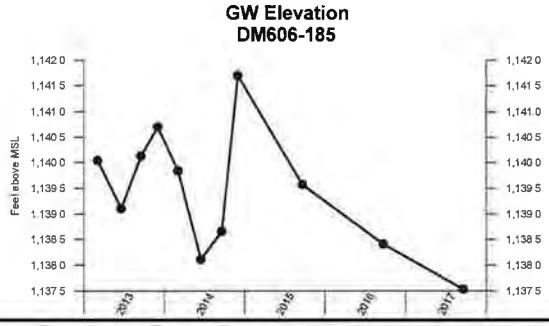












EXPLANATION

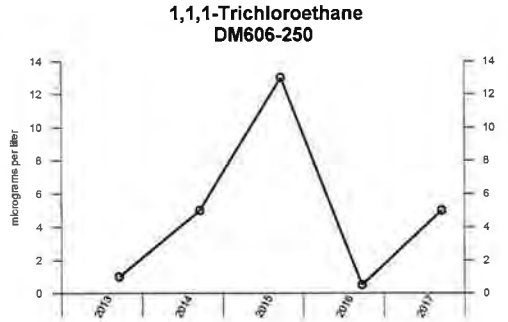
● - Measured Value
○ - Undetected (Displayed at RL)

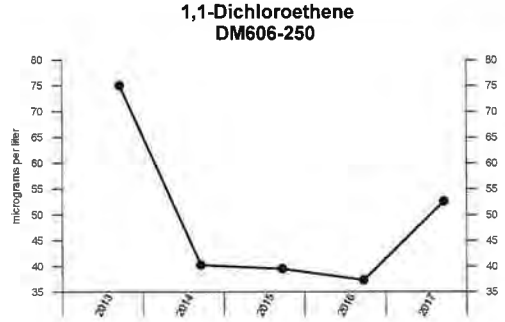
CLEAR CREEK ASSOCIATES

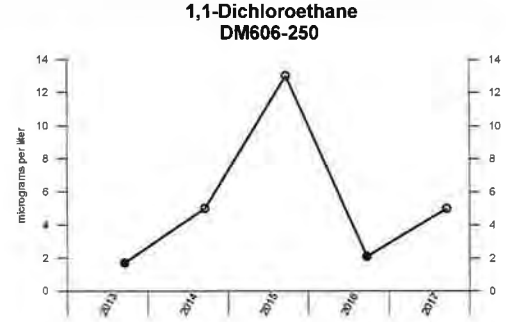
Project Name: MI52 OU1 Effectiveness Report

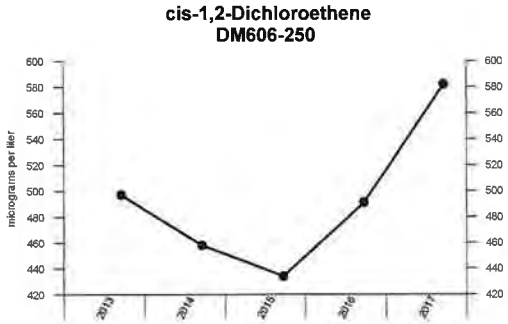
Job No: CC18.1000.00-12 | Date: March 2018

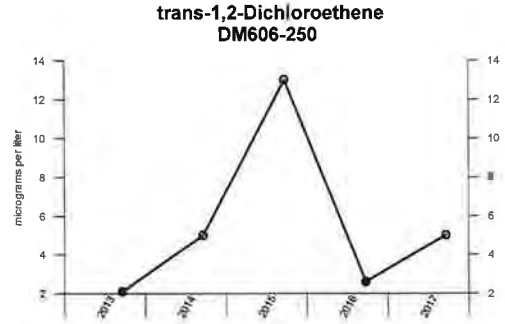
Time-Series Graphs
DM606-185
MI52 OU1 Effectiveness Report
Phoenix, Arizona

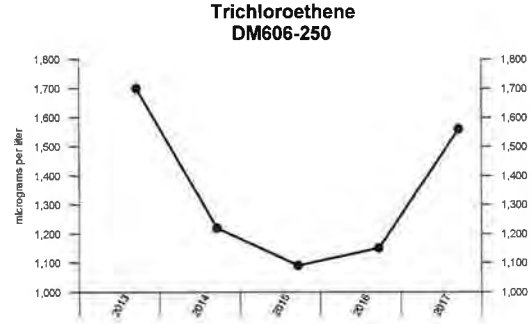


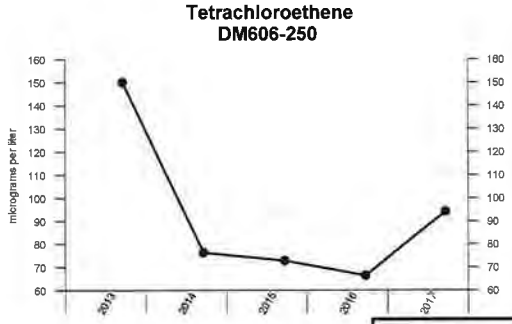


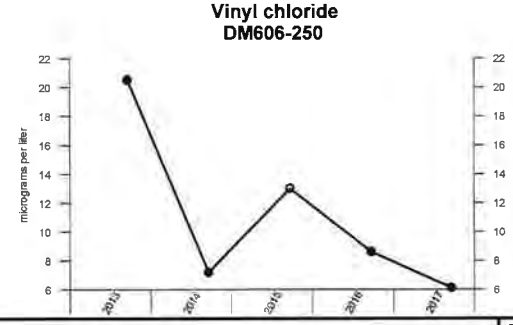


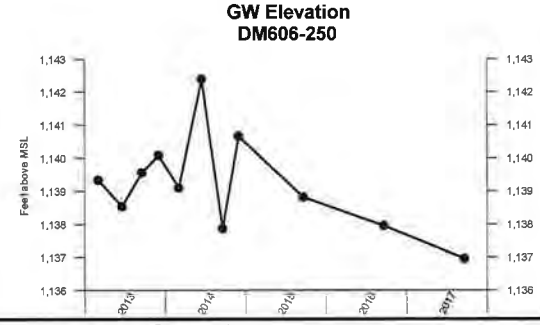












EXPLANATION

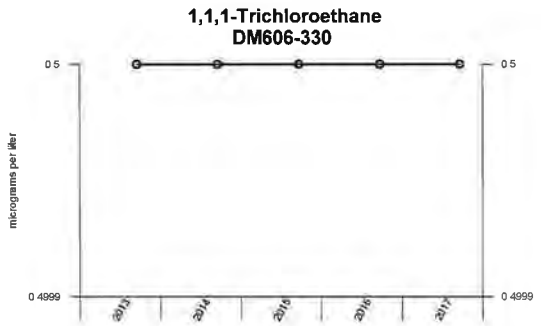
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

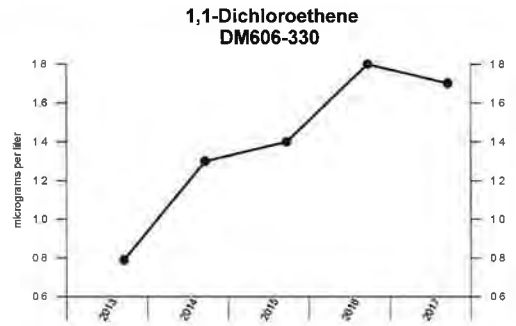
CLEAR CREEK ASSOCIATES

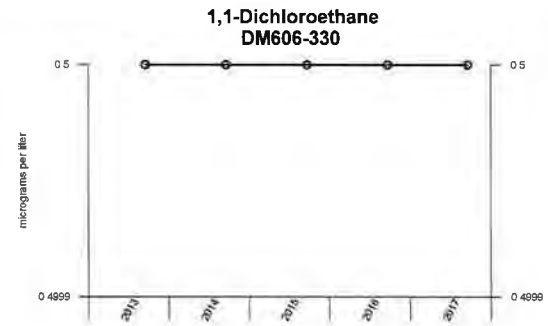
Project Name: MI52 OU1 Effectiveness Report

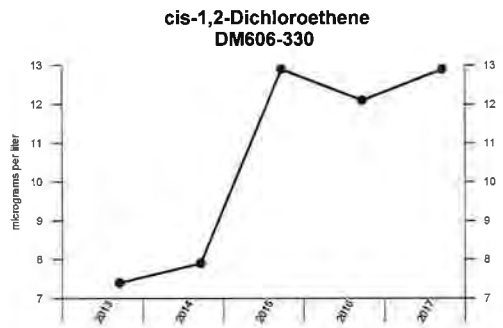
Job No: CC18.1000.00-12 | Date: March 2018

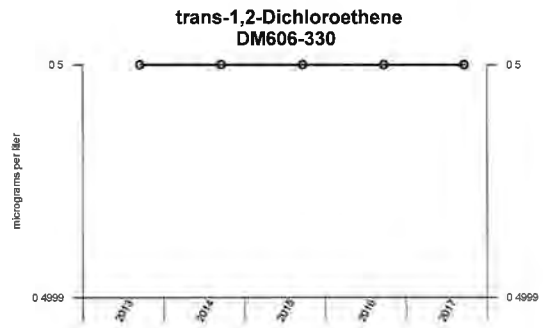
Time-Series Graphs
DM606-250
MI52 OU1 Effectiveness Report
Phoenix, Arizona

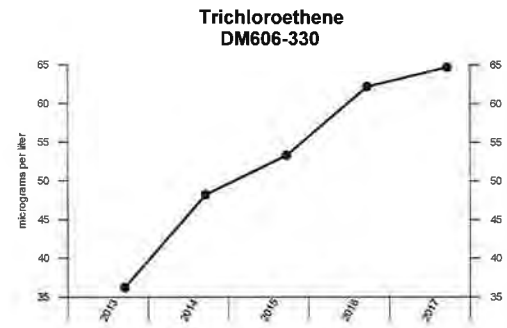


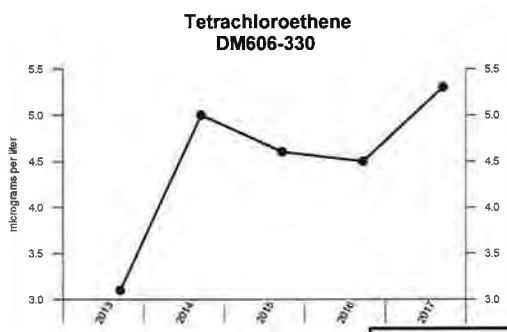


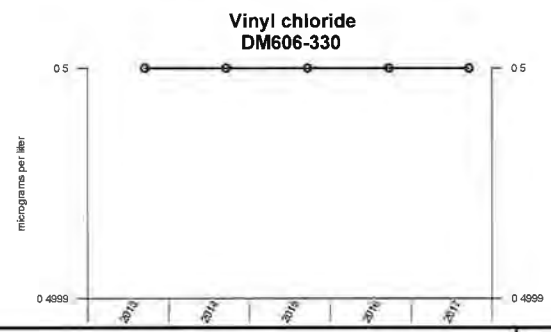


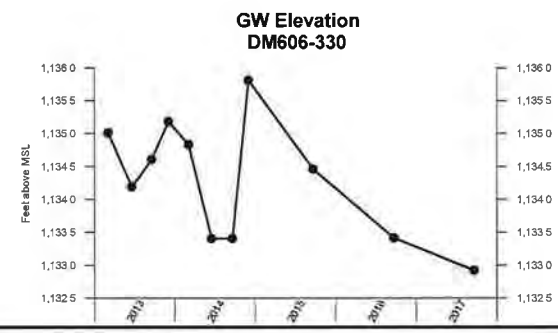












EXPLANATION

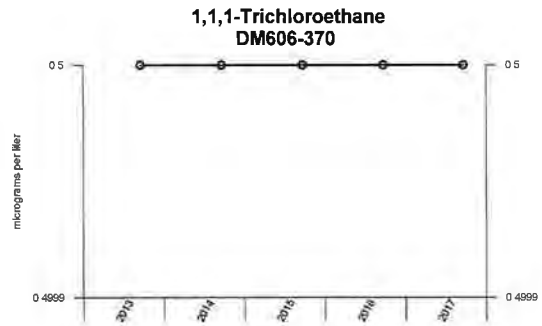
● - Measured Value
○ - Undetected (Displayed at RL)

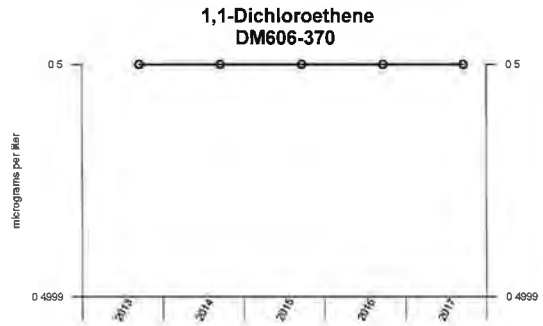
CLEAR CREEK ASSOCIATES

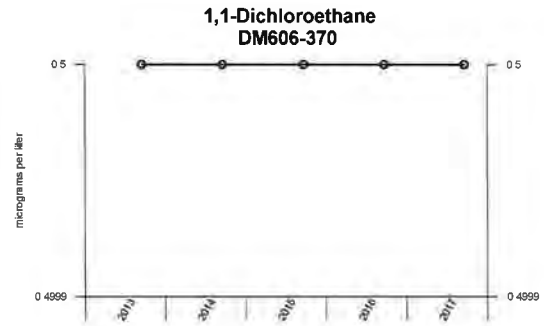
Project Name: MI52 OU1 Effectiveness Report

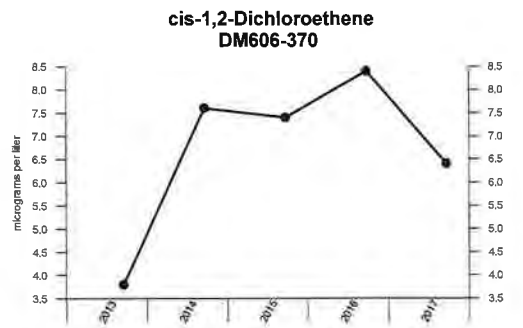
Job No: CC18.1000.00-12 | Date: March 2018

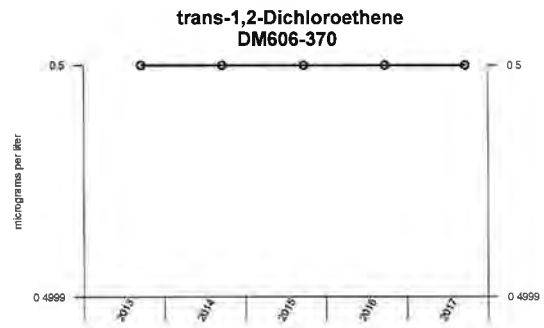
Time-Series Graphs
DM606-330
MI52 OU1 Effectiveness Report
Phoenix, Arizona

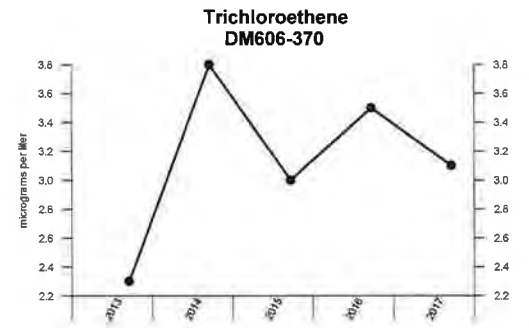


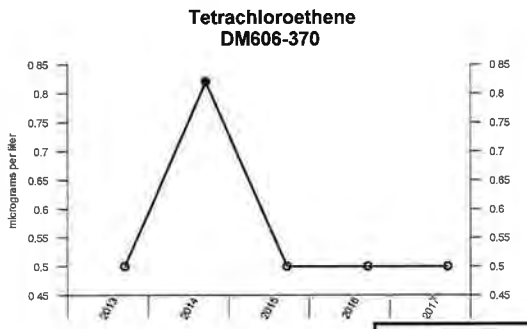


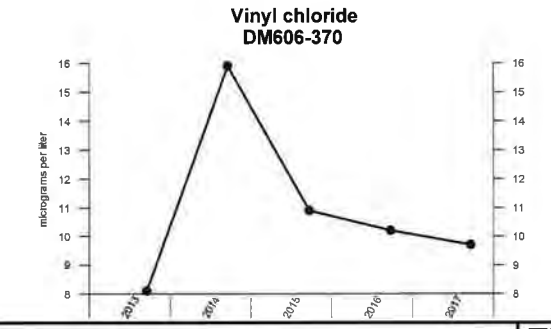


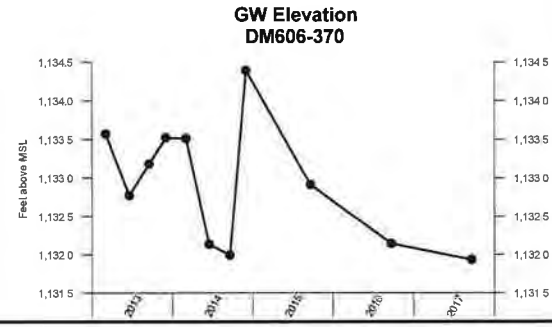












EXPLANATION

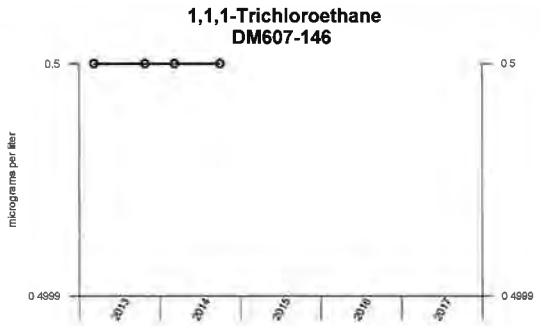
● - Measured Value
○ - Undetected (Displayed at RL)

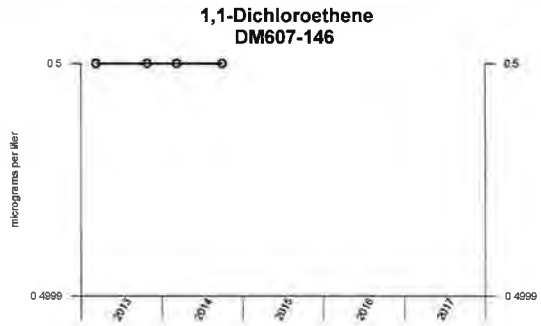
CLEAR CREEK ASSOCIATES

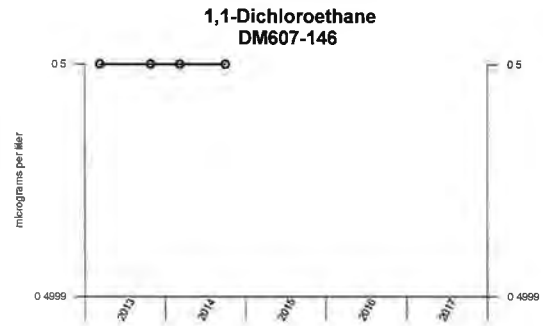
Project Name: MI52 OU1 Effectiveness Report

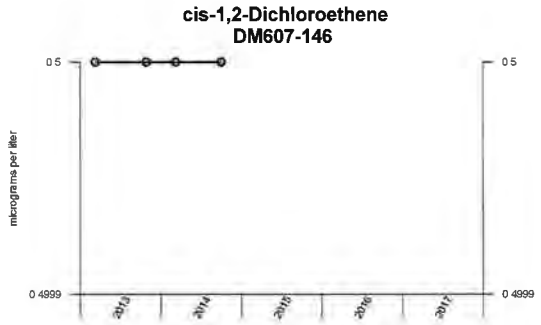
Job No: CC18.1000.00-12 | Date: March 2018

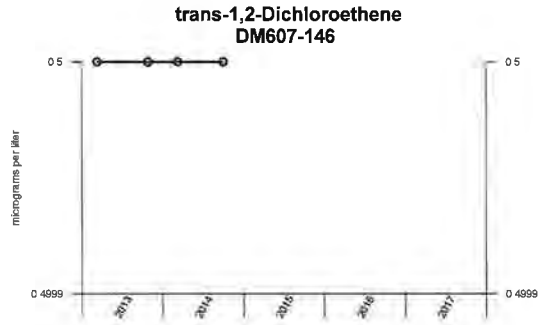
Time-Series Graphs
DM606-370
MI52 OU1 Effectiveness Report
Phoenix, Arizona

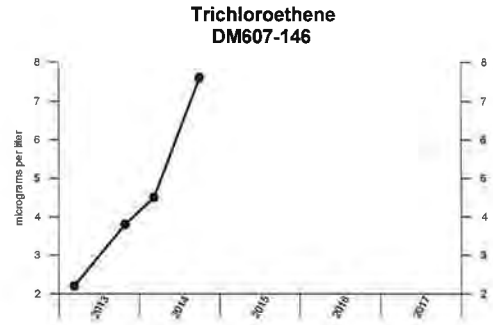


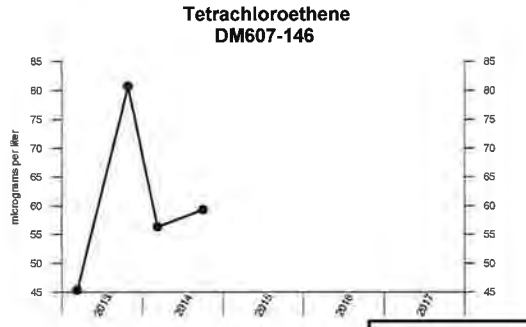


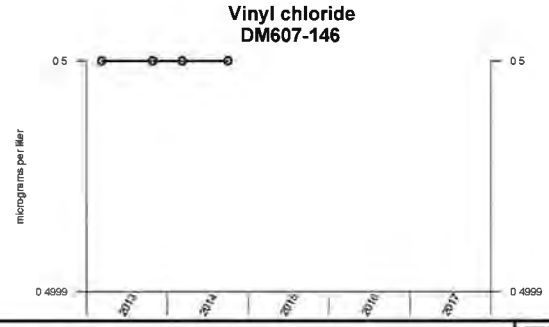


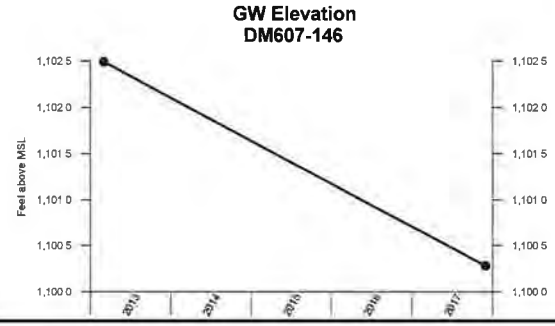












EXPLANATION

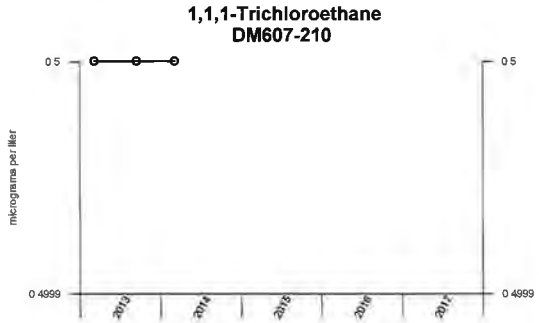
● - Measured Value
○ - Undetected (Displayed at RL)

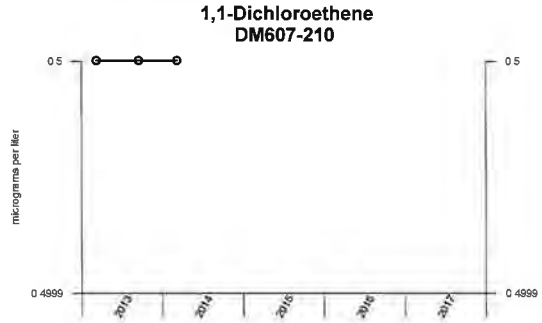
CLEAR CREEK ASSOCIATES

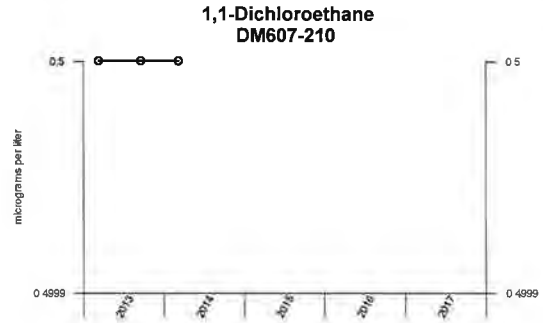
Project Name: MI52 OU1 Effectiveness Report

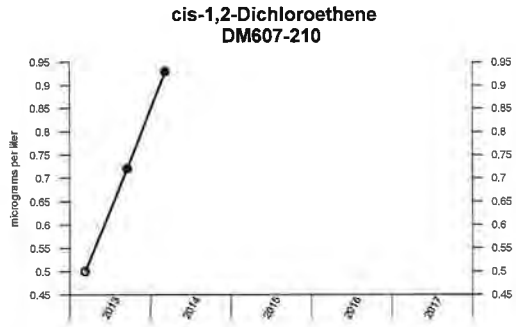
Job No: CC18.1000.00-12 | Date: March 2018

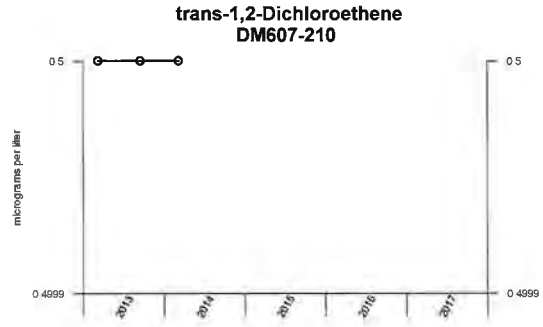
Time-Series Graphs
DM607-146
MI52 OU1 Effectiveness Report
Phoenix, Arizona

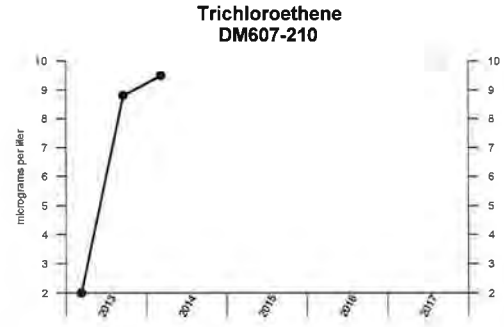


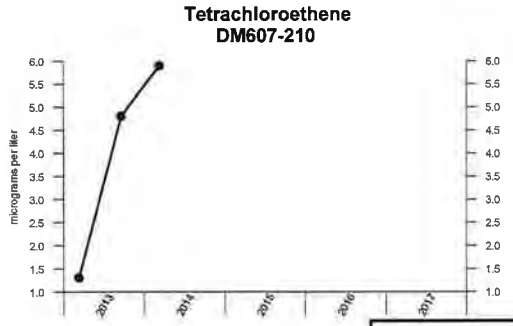


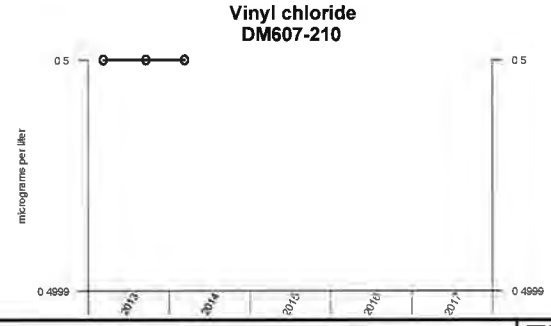


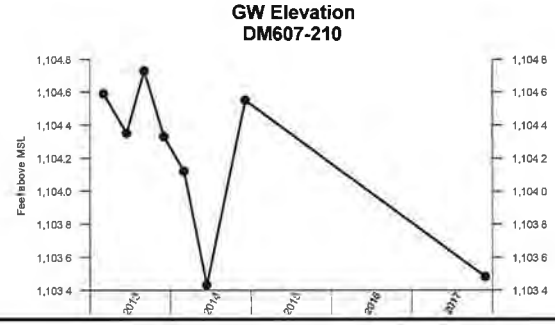












EXPLANATION

● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
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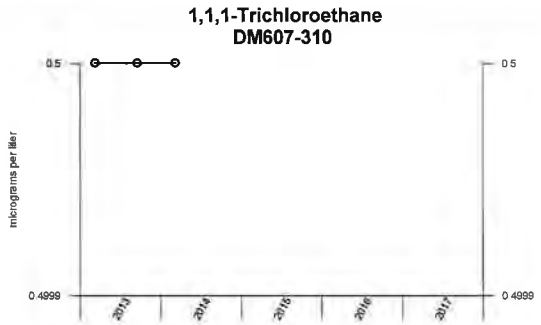
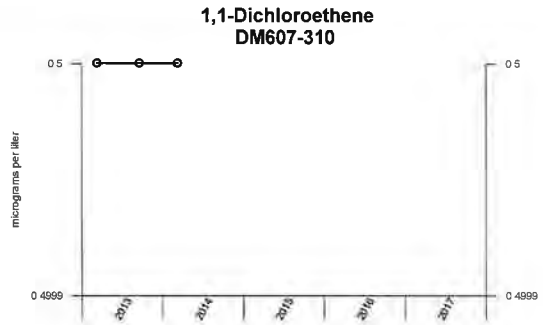
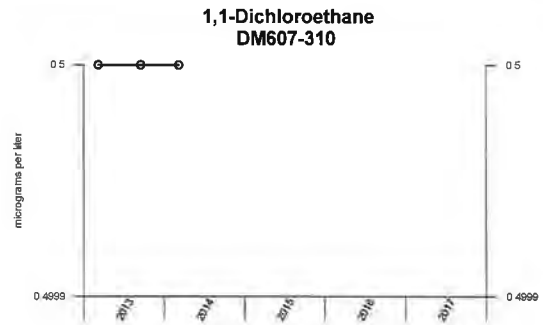
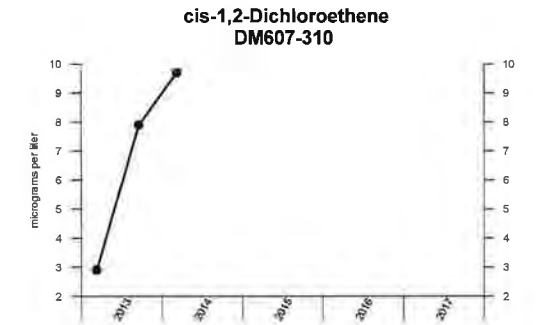
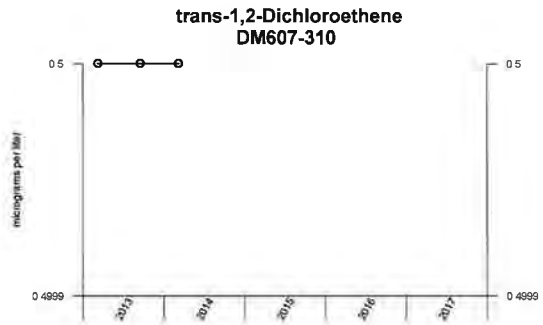
MI52 OU1 Effectiveness Report
Phoenix, Arizona

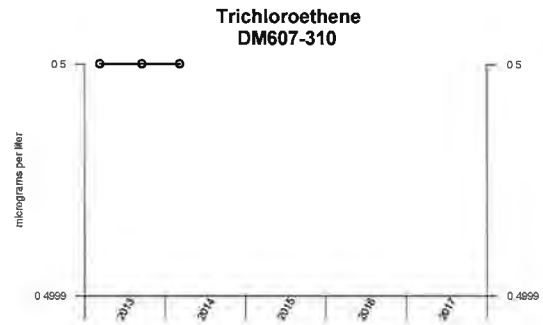


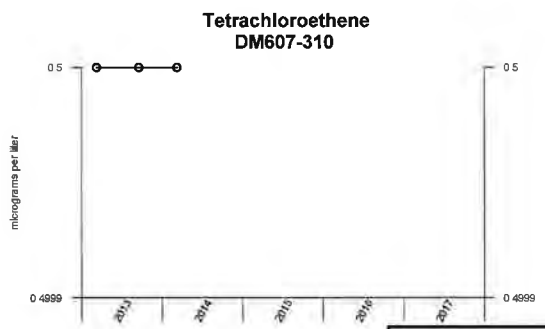


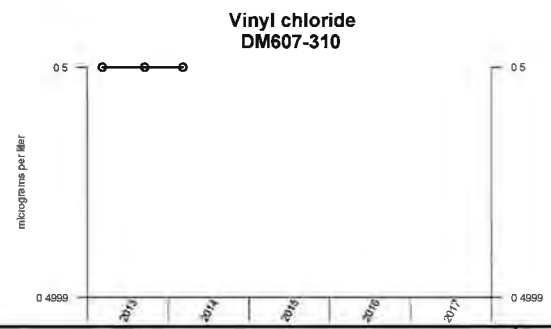


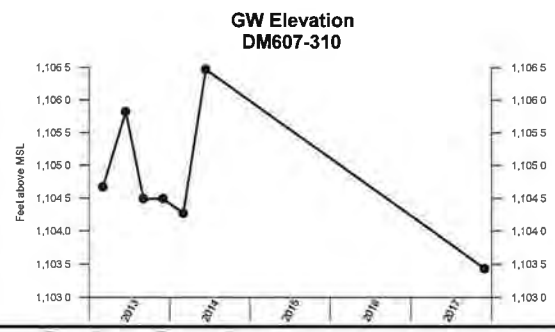












EXPLANATION

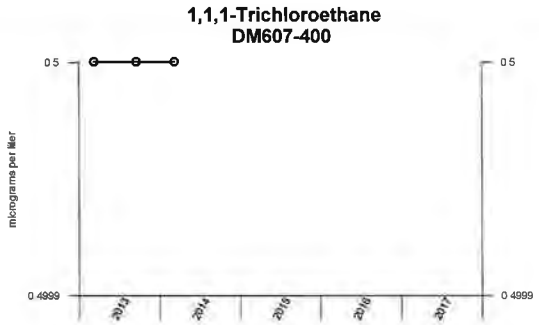
● - Measured Value
○ - Undetected (Displayed at RL)

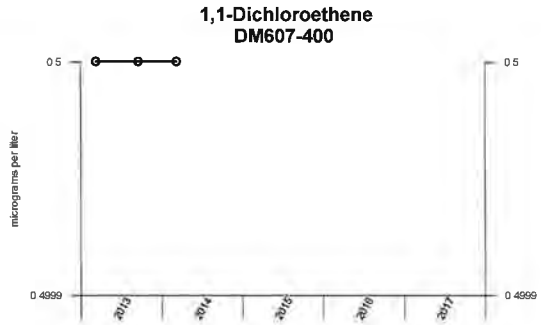
CLEAR CREEK ASSOCIATES

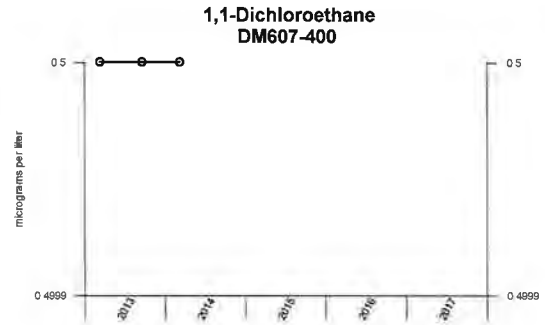
Project Name: MI52 OU1 Effectiveness Report

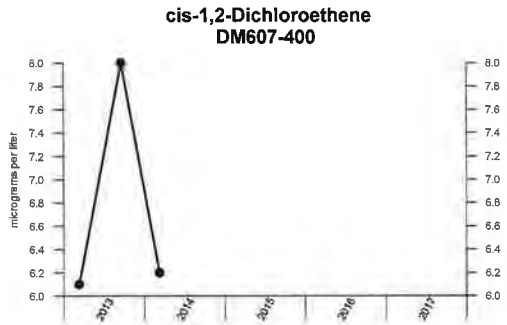
Job No: CC18.1000.00-12 | Date: March 2018

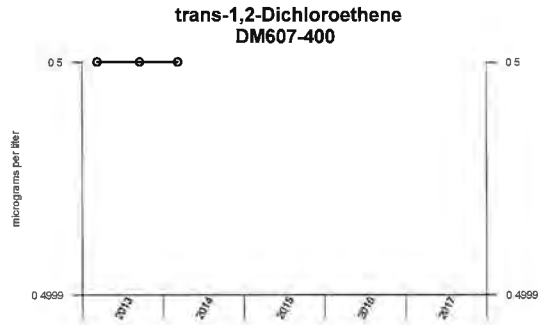
Time-Series Graphs
DM607-310
MI52 OU1 Effectiveness Report
Phoenix, Arizona

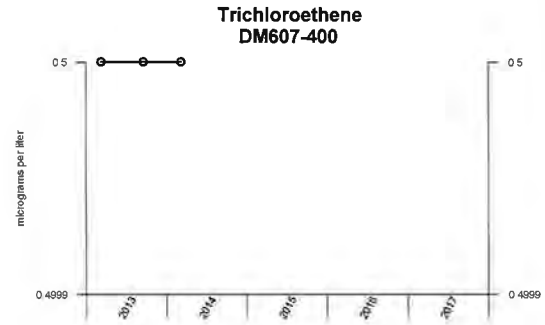


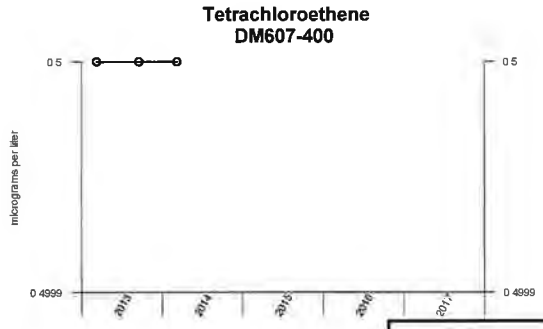


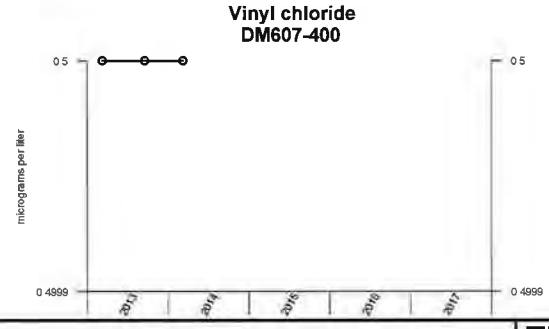


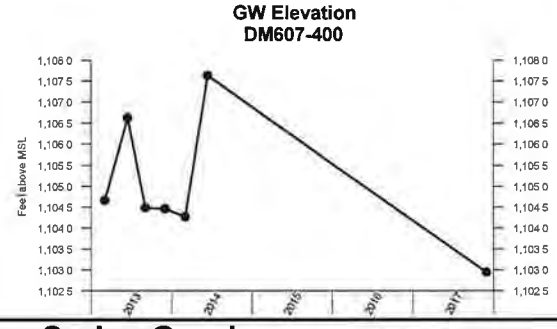












EXPLANATION

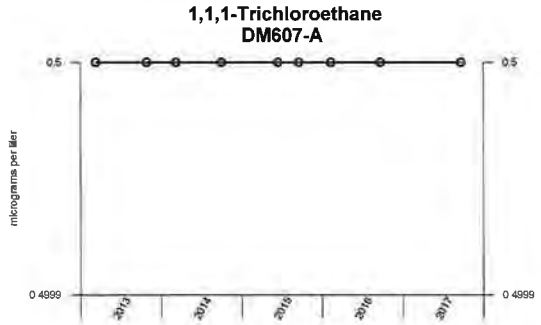
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

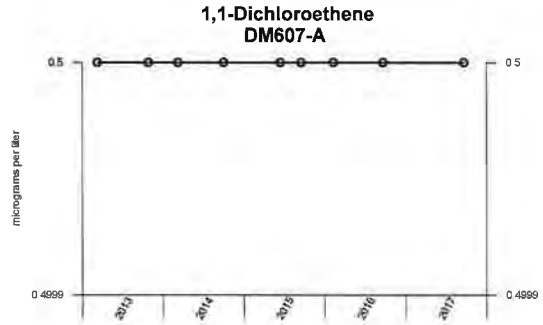
CLEAR CREEK ASSOCIATES

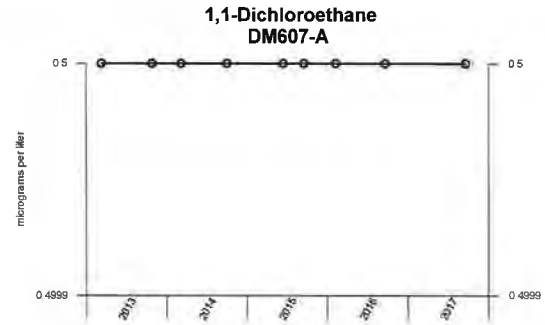
Project Name: MI52 OU1 Effectiveness Report

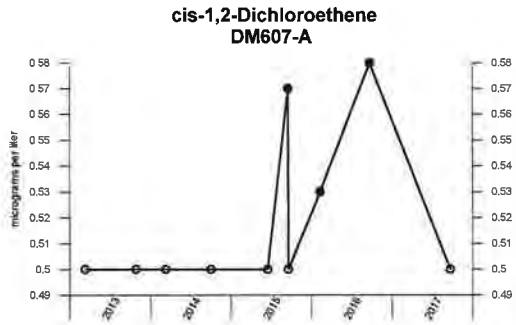
Job No: CC18.1000.00-12 | Date: March 2018

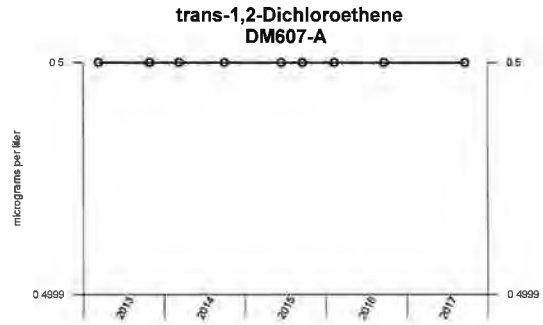
Time-Series Graphs
DM607-400
MI52 OU1 Effectiveness Report
Phoenix, Arizona

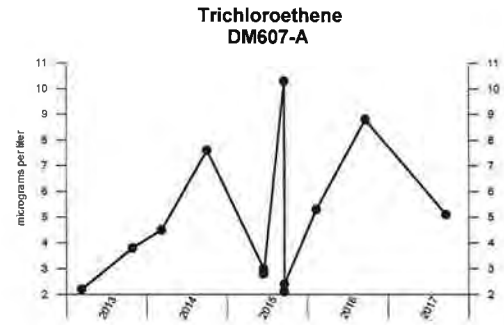


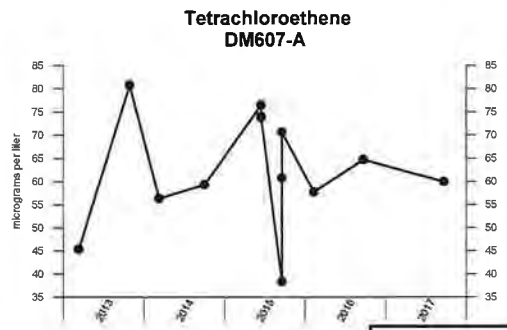


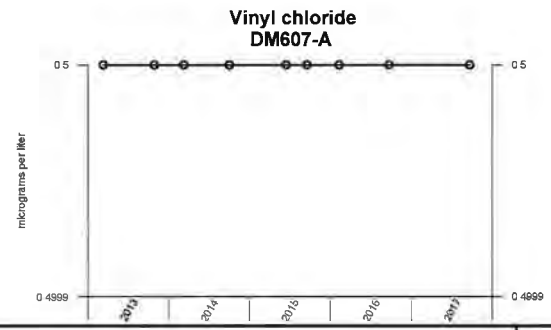


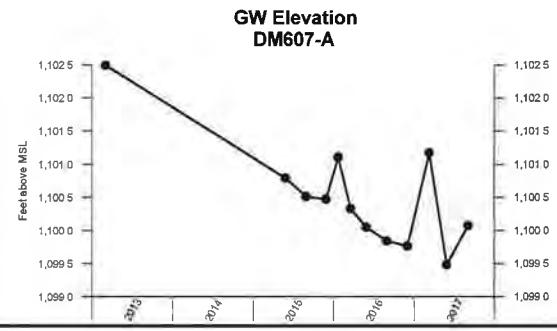












EXPLANATION

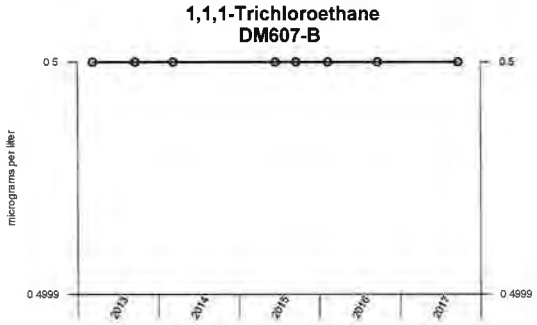
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

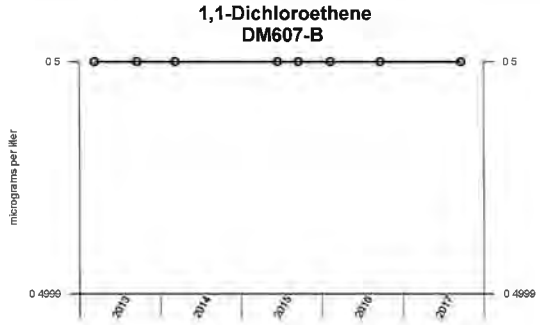
CLEAR CREEK ASSOCIATES

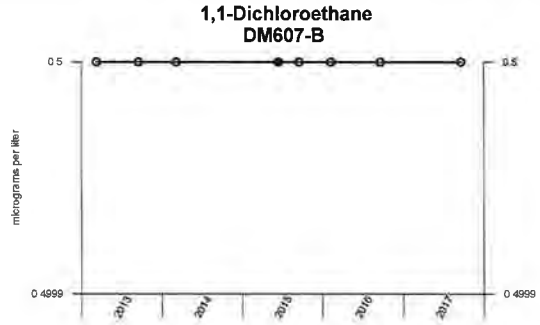
Project Name: MI52 OU1 Effectiveness Report

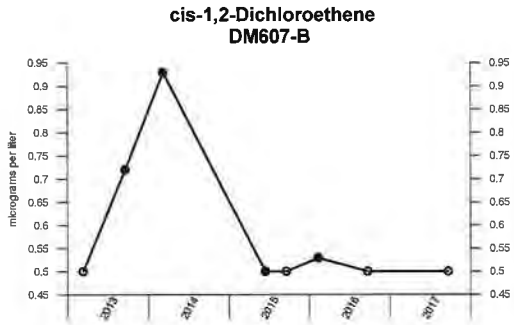
Job No: CC18.1000.00-12 | Date: March 2018

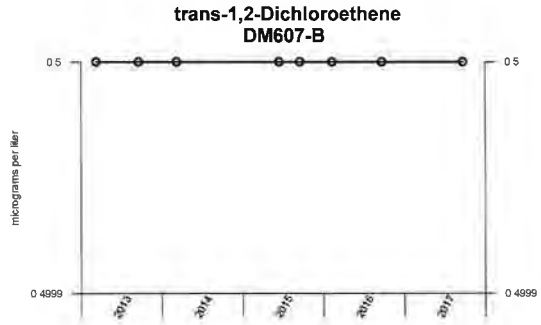
Time-Series Graphs
DM607-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

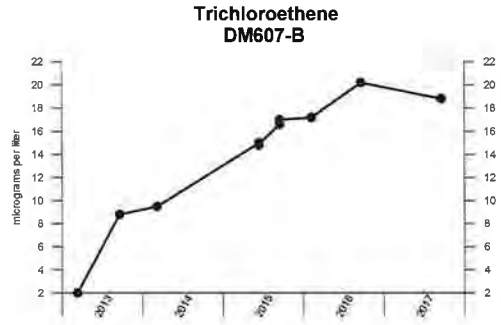


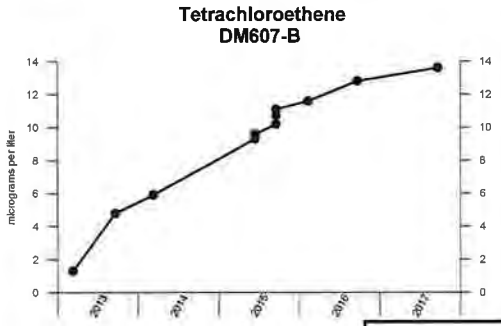


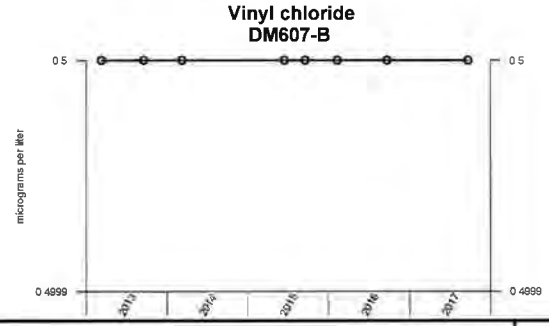


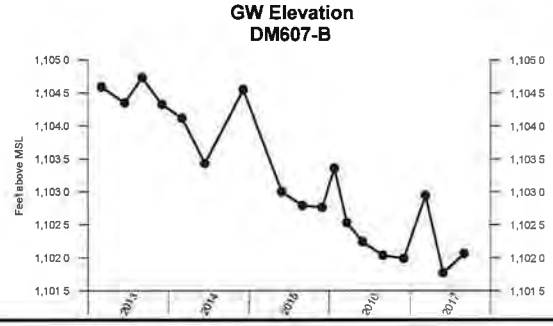












EXPLANATION

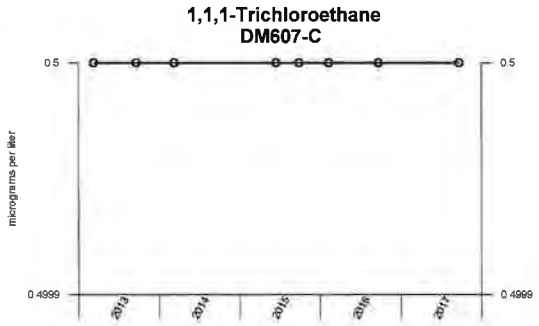
● - Measured Value
○ - Undetected (Displayed at RL)

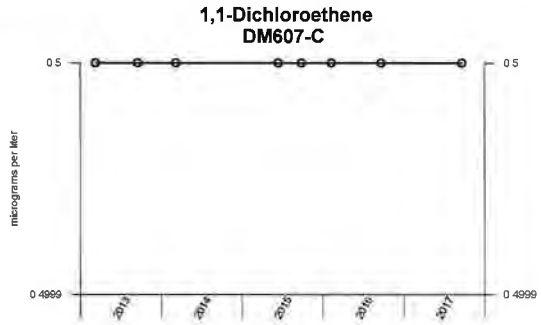
CLEAR CREEK ASSOCIATES

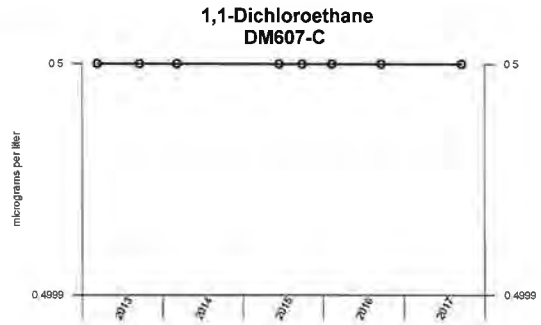
Project Name: MI52 OU1 Effectiveness Report

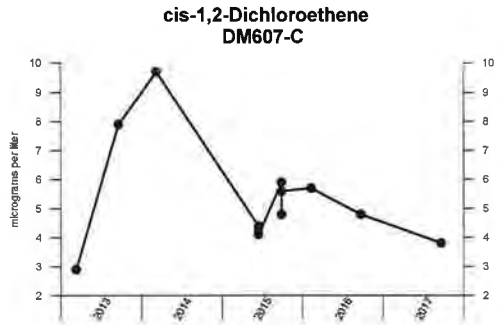
Job No: CC18.1000.00-12 | Date: March 2018

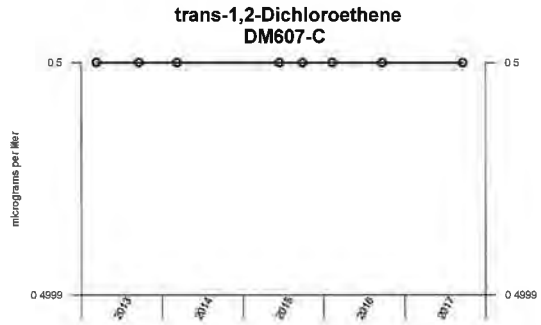
Time-Series Graphs
DM607-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

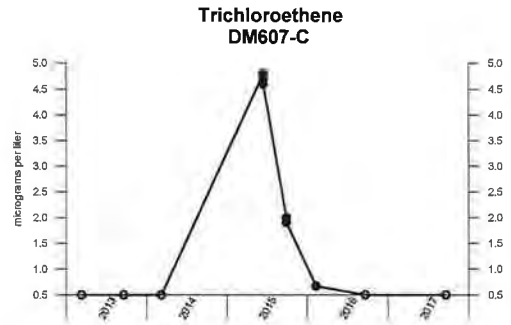


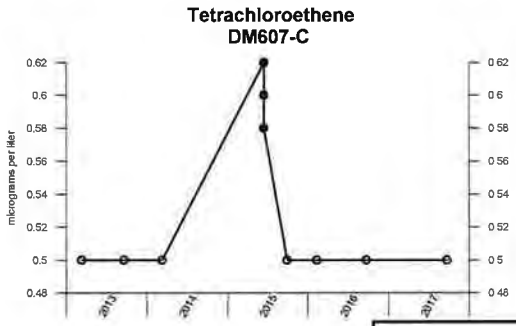


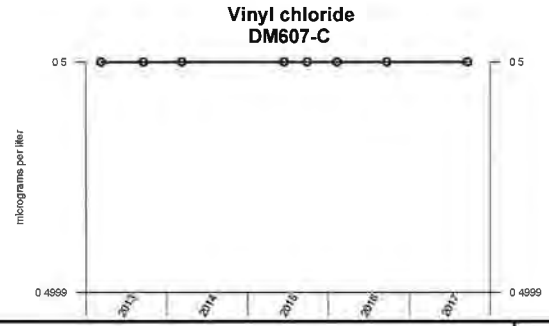


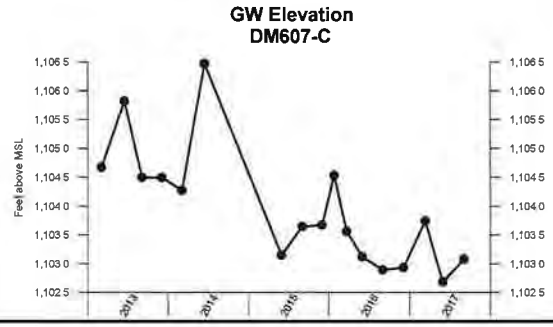












EXPLANATION

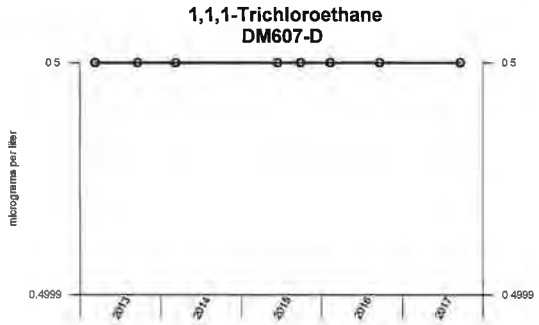
● - Measured Value
○ - Undetected (Displayed at RL)

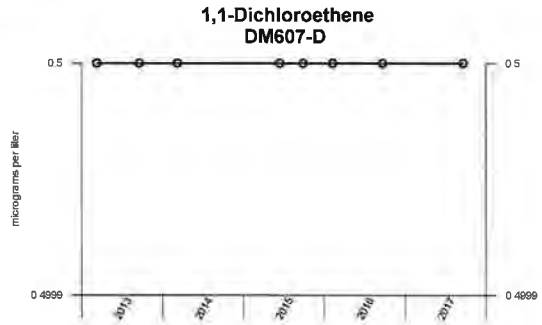
CLEAR CREEK ASSOCIATES

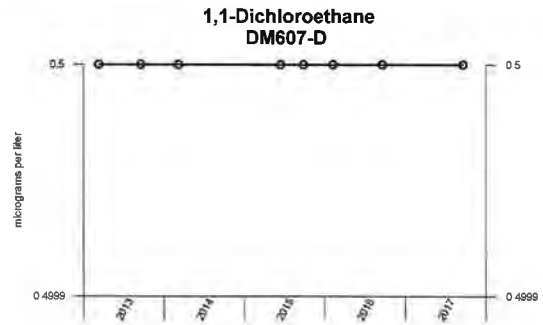
Project Name: MI52 OU1 Effectiveness Report

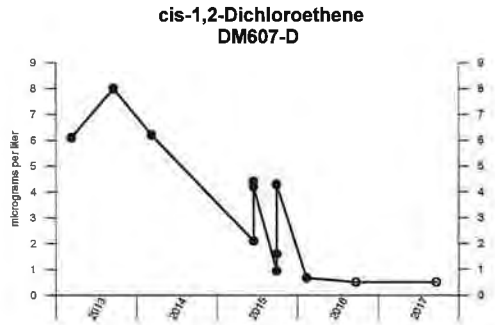
Job No: CC18.1000.00-12 | Date: March 2018

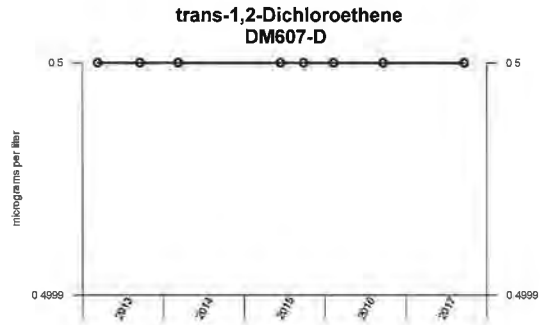
Time-Series Graphs
DM607-C
MI52 OU1 Effectiveness Report
Phoenix, Arizona

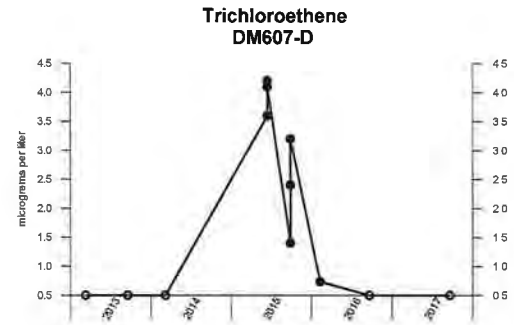


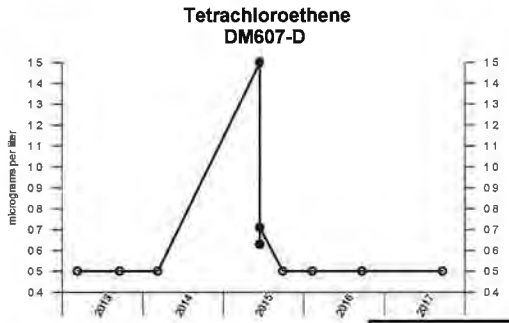


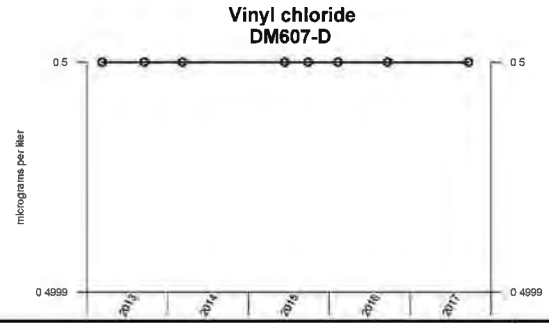


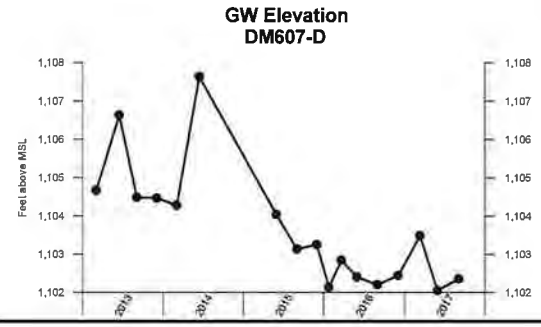












EXPLANATION

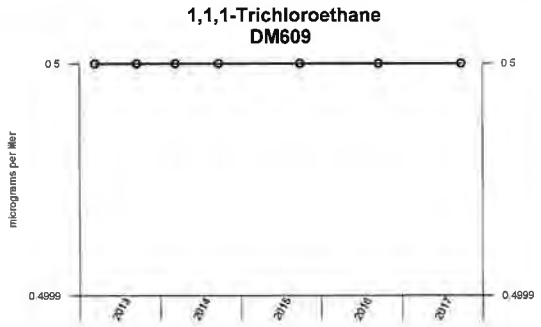
● - Measured Value
○ - Undetected (Displayed at RL)

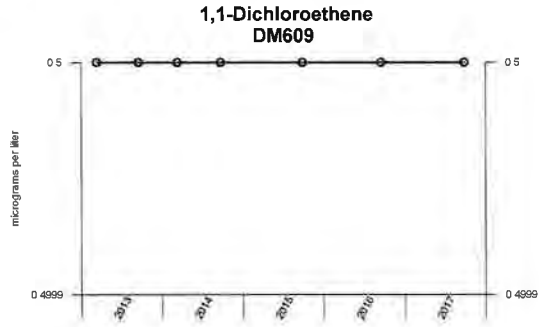
CLEAR CREEK ASSOCIATES

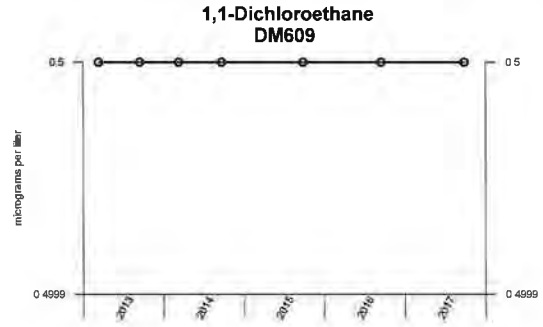
Project Name: MI52 OU1 Effectiveness Report

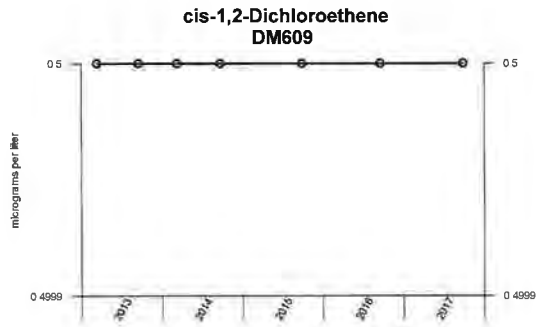
Job No: CC18.1000.00-12 | Date: March 2018

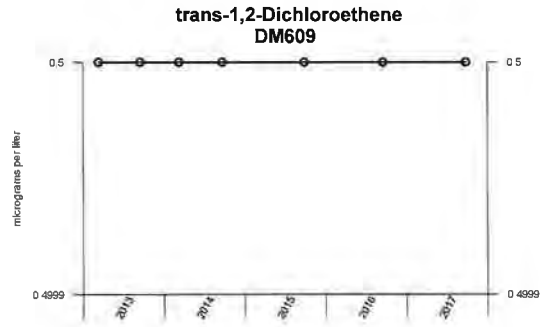
Time-Series Graphs
DM607-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona

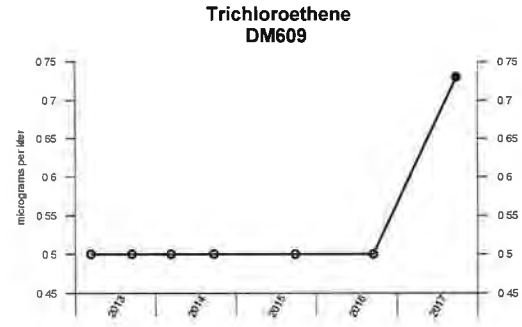


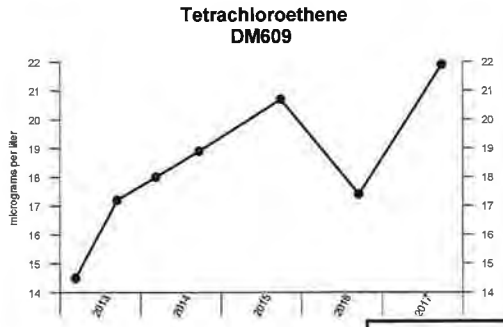


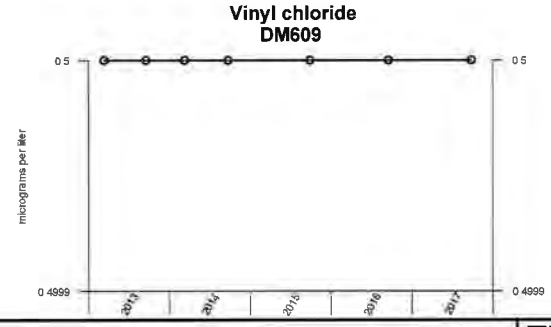


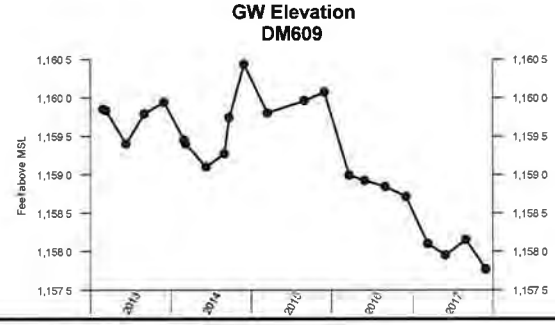












EXPLANATION

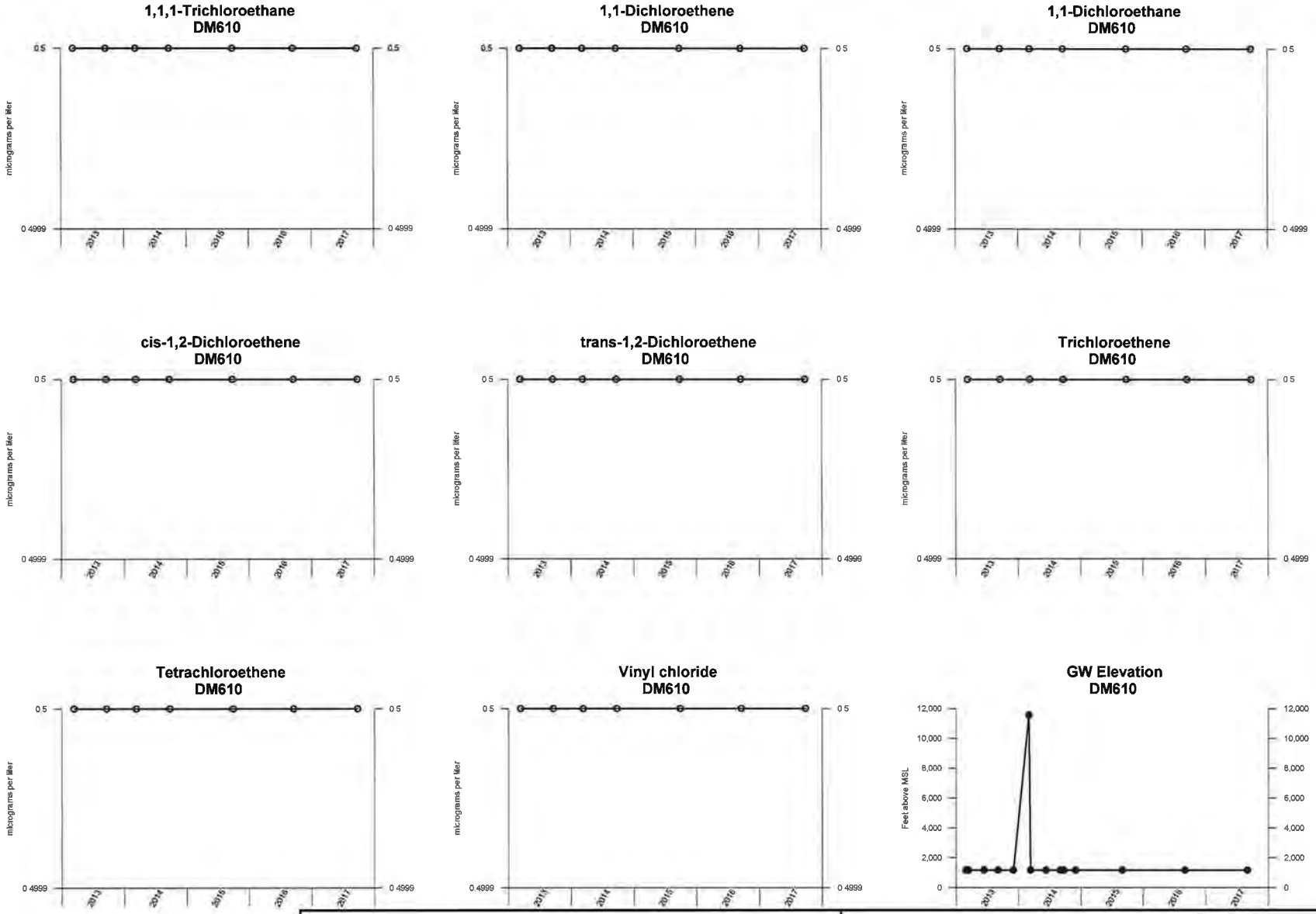
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM609
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

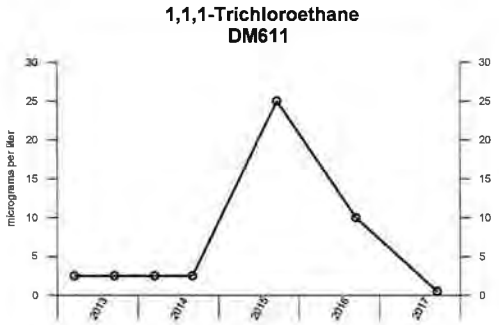
● - Measured Value
○ - Undetected (Displayed at RL)

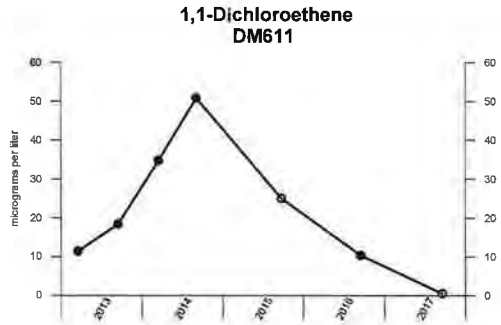
CLEAR CREEK ASSOCIATES

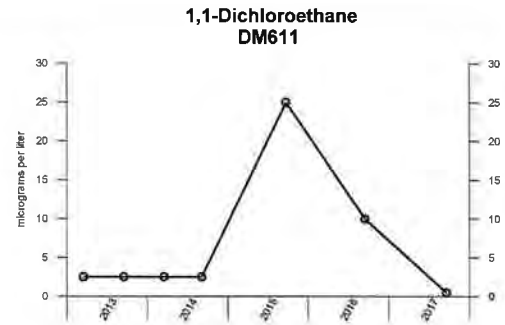
Project Name: MI52 OU1 Effectiveness Report

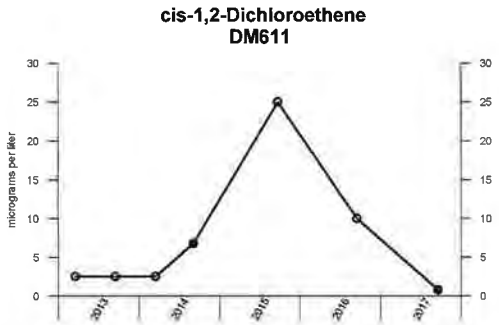
Job No: CC18.1000.00-12 | Date: March 2018

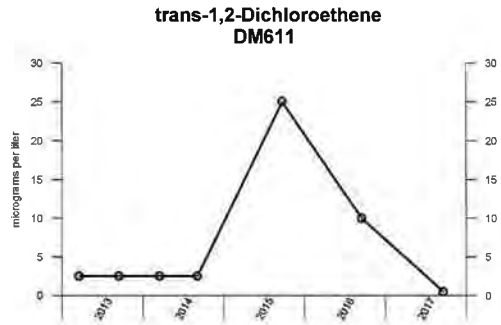
Time-Series Graphs
DM610
MI52 OU1 Effectiveness Report
Phoenix, Arizona

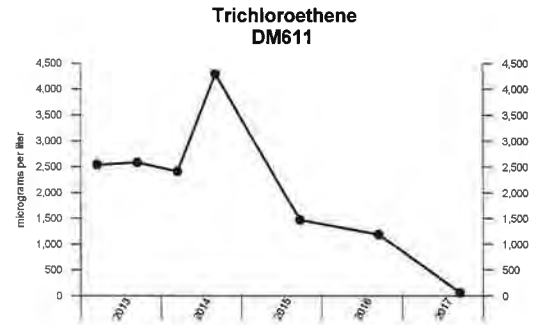


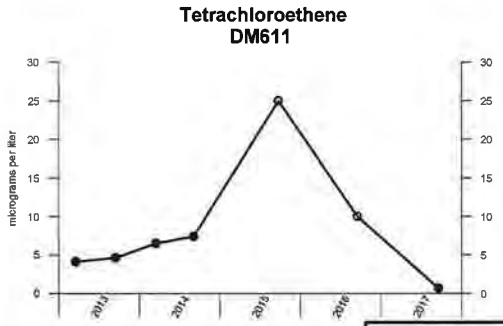


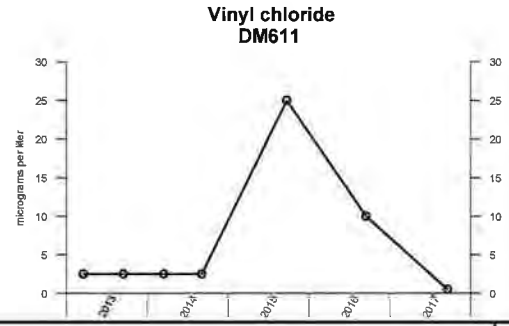


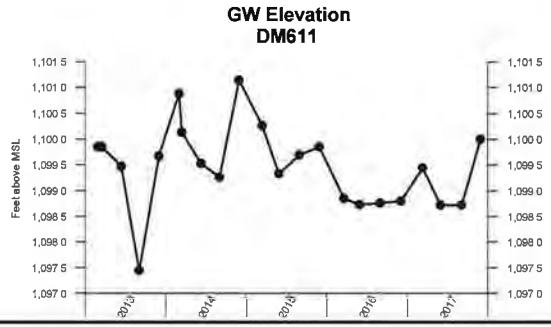












EXPLANATION

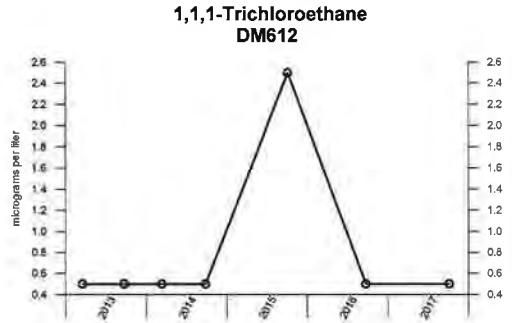
● - Measured Value
○ - Undetected (Displayed at RL)

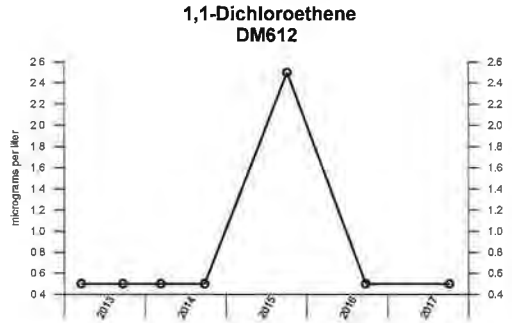
CLEAR CREEK ASSOCIATES

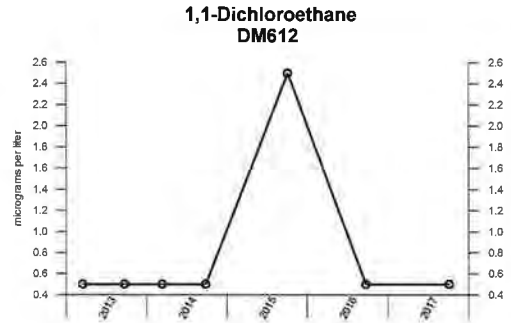
Project Name: MI52 OU1 Effectiveness Report

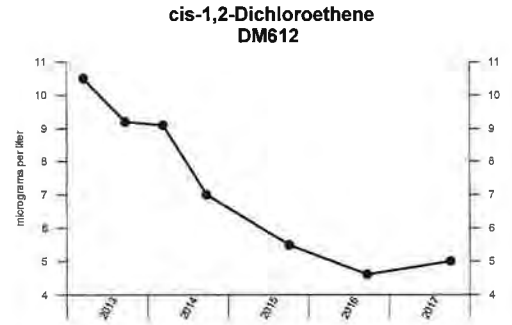
Job No: CC18.1000.00-12 | Date: March 2018

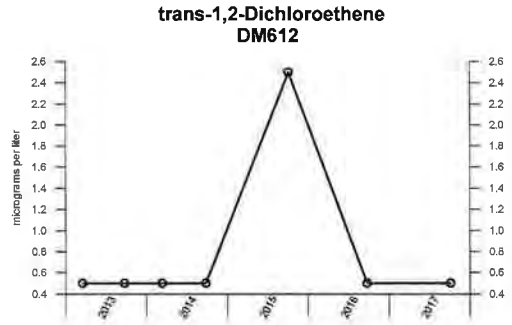
Time-Series Graphs
DM611
MI52 OU1 Effectiveness Report
Phoenix, Arizona

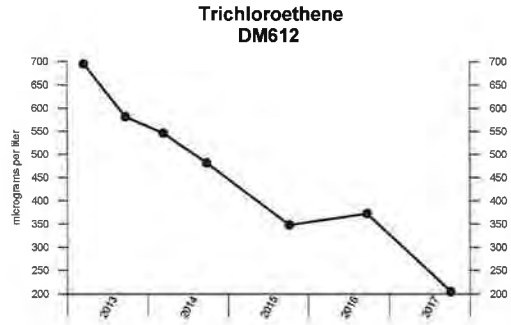


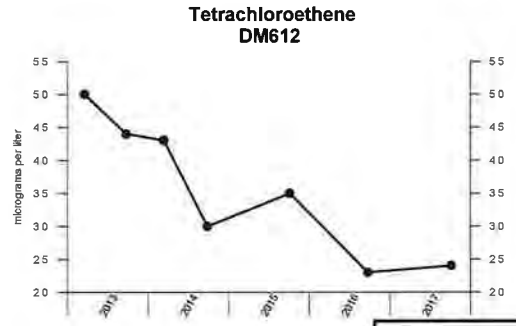


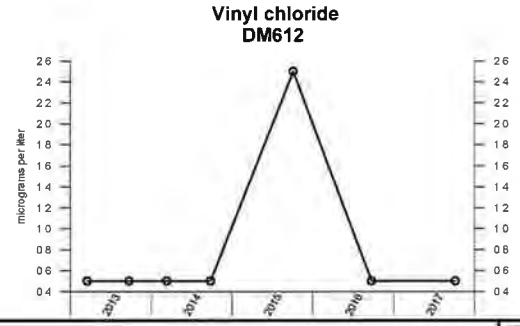


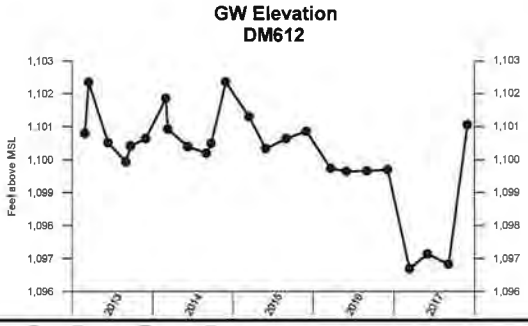












EXPLANATION

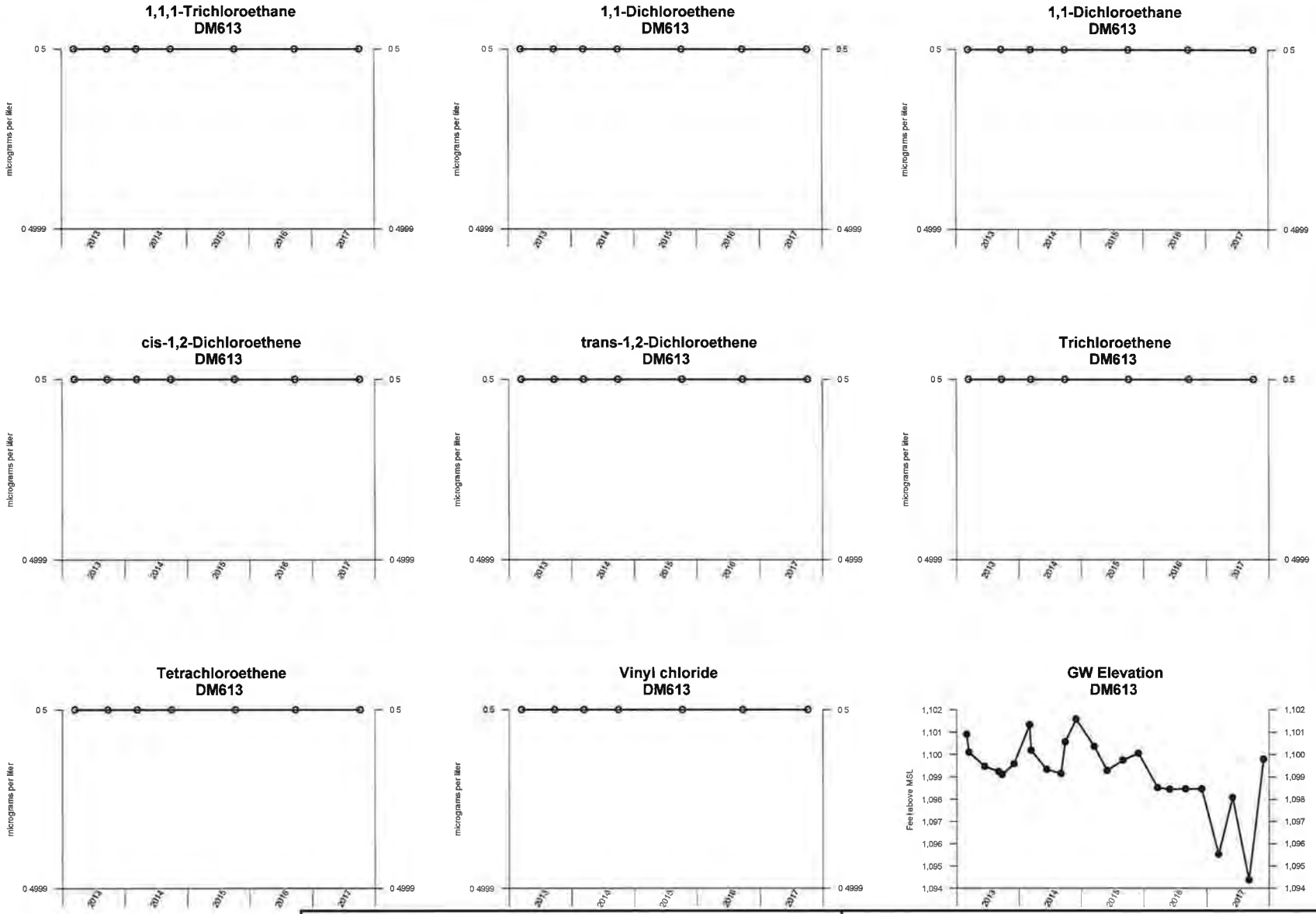
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM612
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

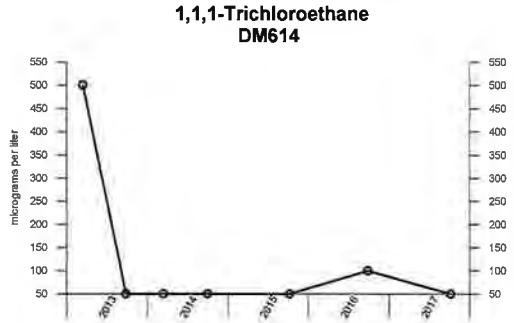
● - Measured Value
○ - Undetected (Displayed at RL)

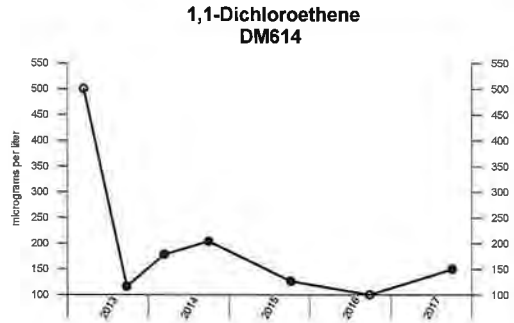
CLEAR CREEK ASSOCIATES

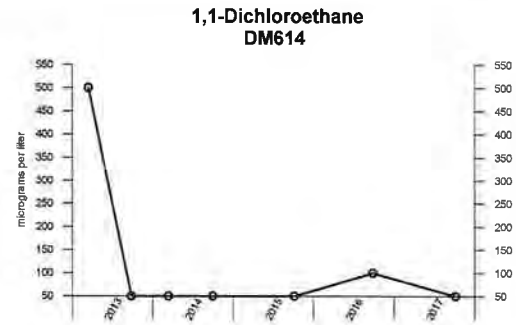
Project Name: MI52 OU1 Effectiveness Report

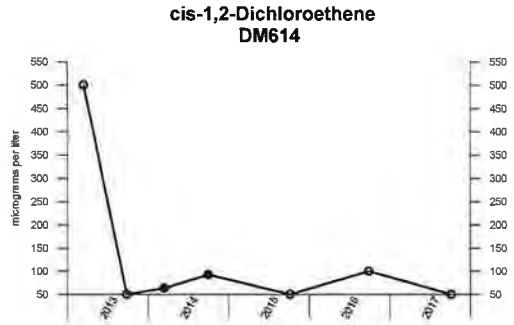
Job No: CC18.1000.00-12 | Date: March 2018

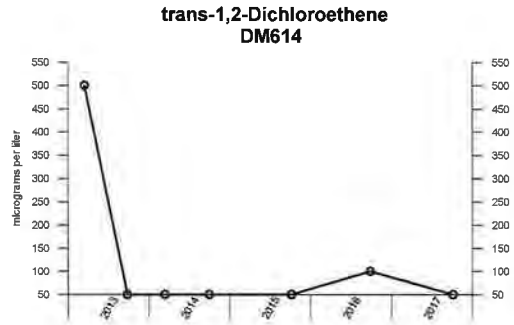
Time-Series Graphs
DM613
MI52 OU1 Effectiveness Report
Phoenix, Arizona

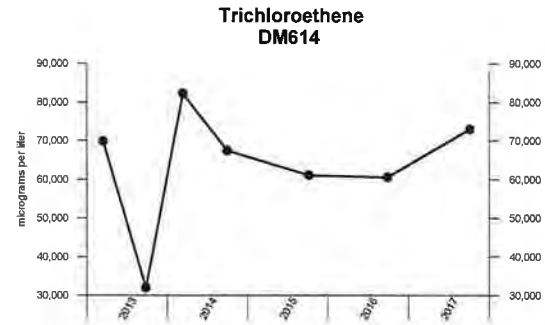


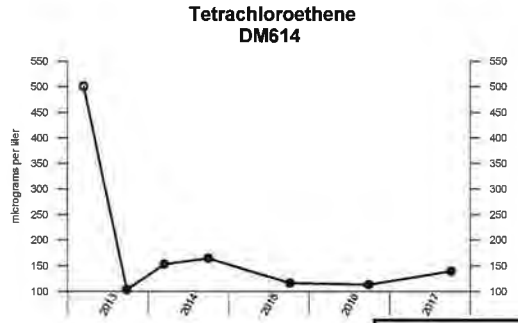


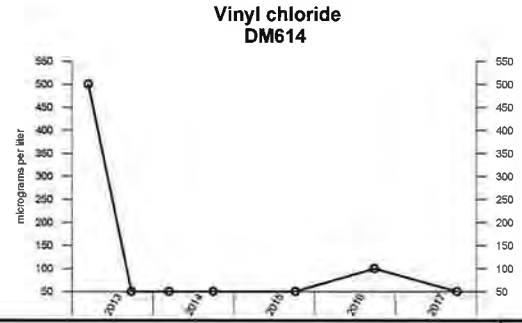


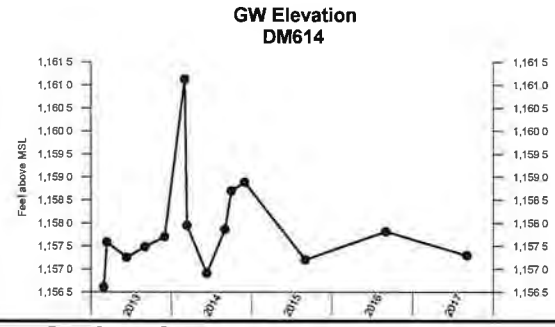












EXPLANATION

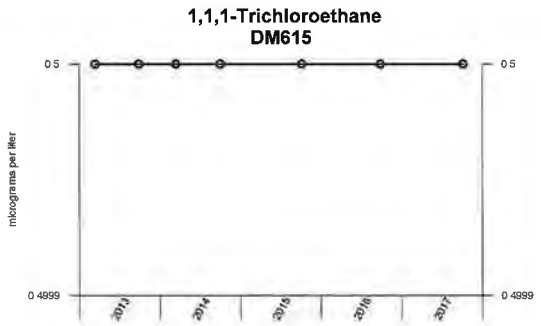
● - Measured Value
○ - Undetected (Displayed at RL)

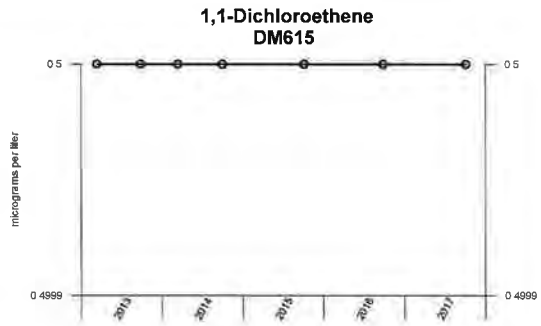
CLEAR CREEK ASSOCIATES

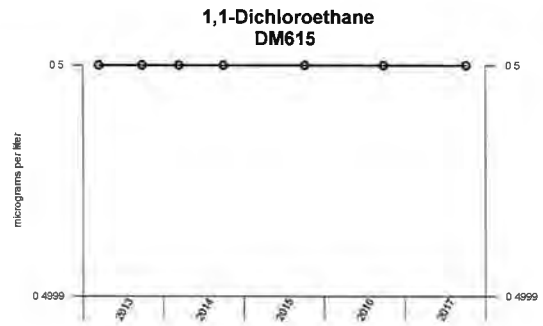
Project Name: MI52 OU1 Effectiveness Report

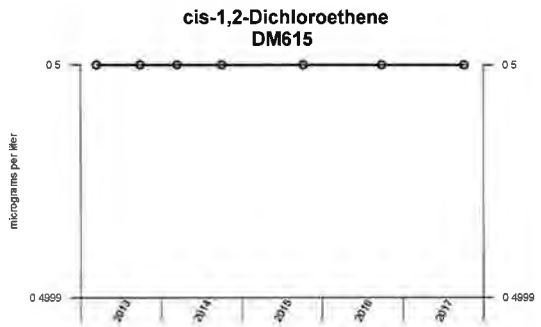
Job No: CC18.1000.00-12 | Date: March 2018

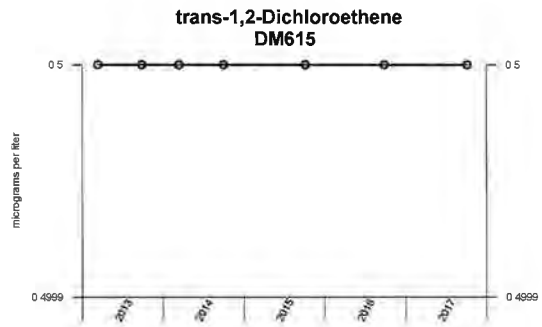
Time-Series Graphs
DM614
MI52 OU1 Effectiveness Report
Phoenix, Arizona

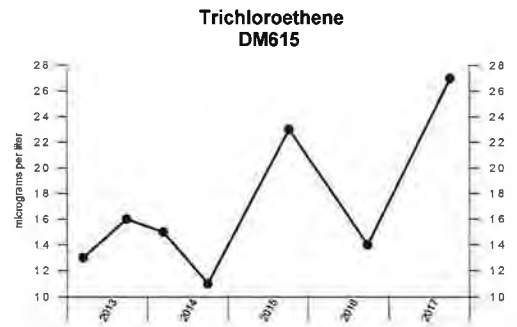


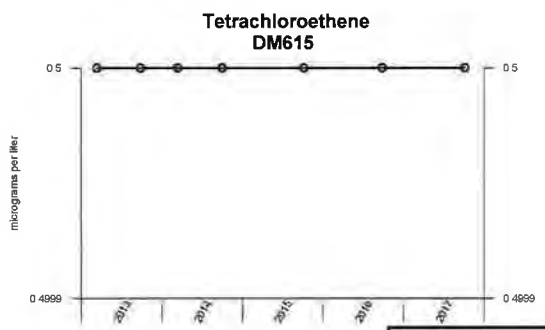


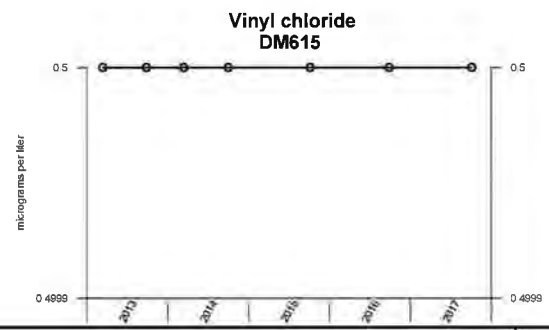


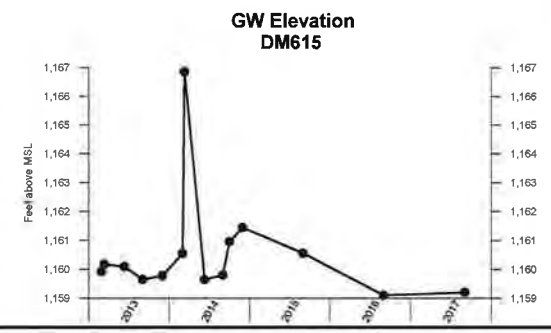












EXPLANATION

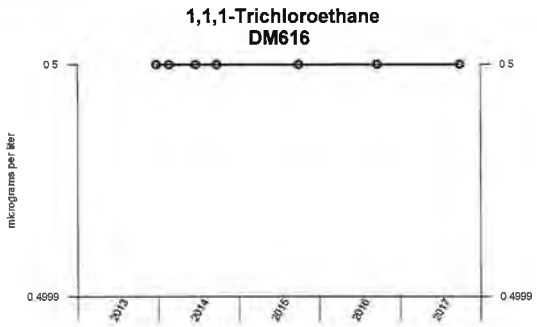
● - Measured Value
○ - Undetected (Displayed at RL)

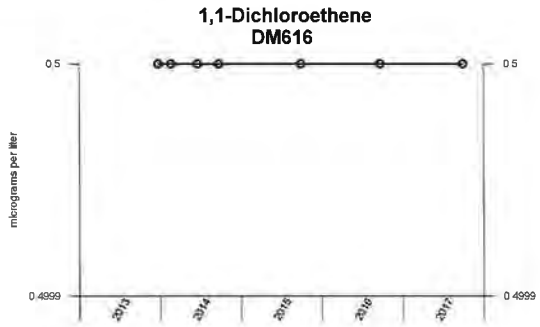
CLEAR CREEK ASSOCIATES

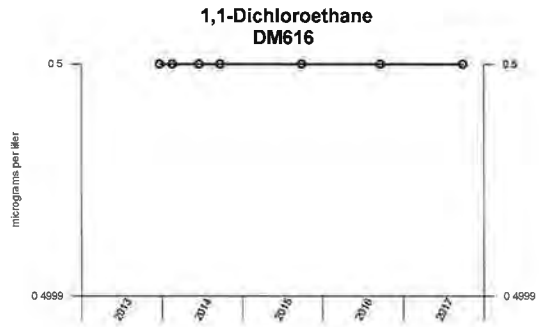
Project Name: MI52 OU1 Effectiveness Report

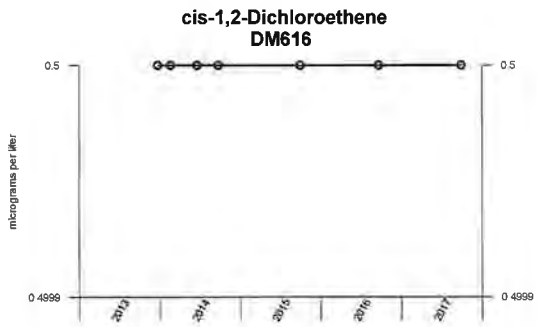
Job No: CC18.1000.00-12 | Date: March 2018

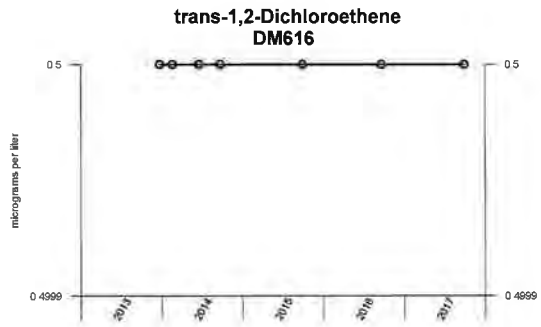
Time-Series Graphs
DM615
MI52 OU1 Effectiveness Report
Phoenix, Arizona

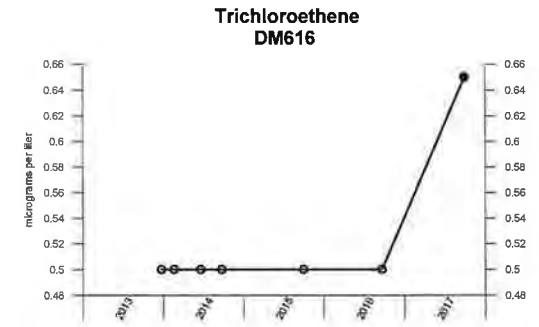


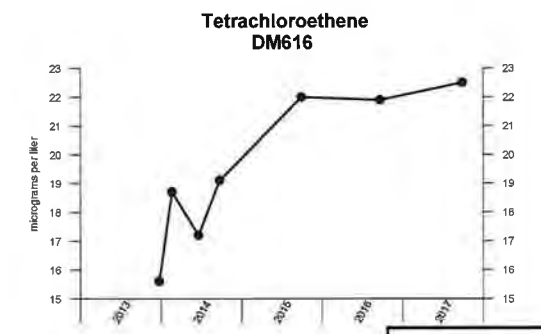


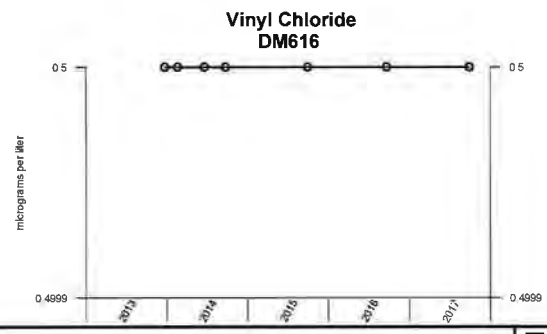


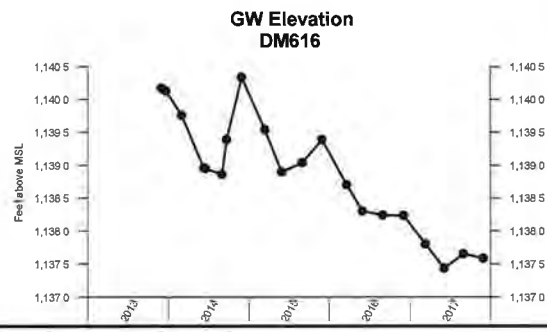












EXPLANATION

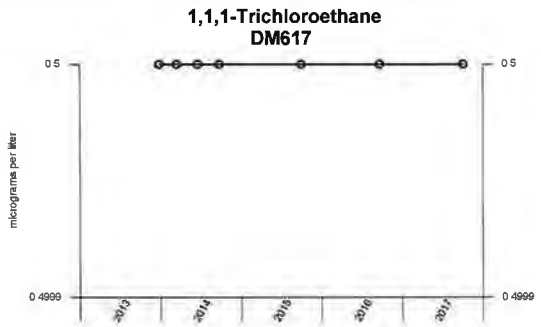
● - Measured Value
○ - Undetected (Displayed at RL)

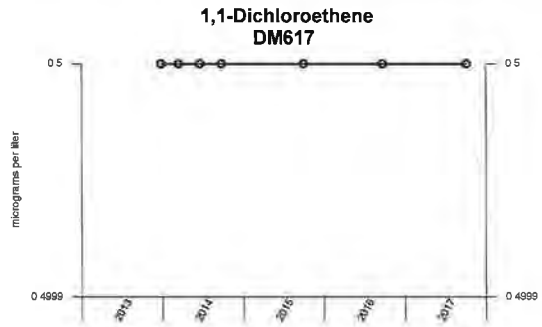
CLEAR CREEK ASSOCIATES

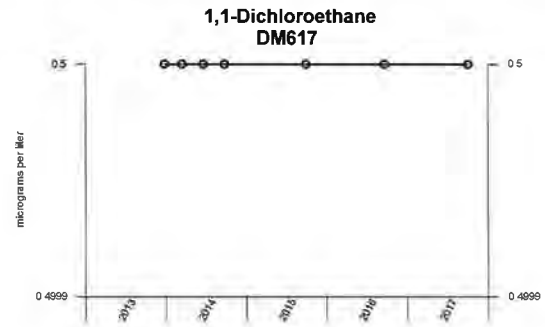
Project Name: MI52 OU1 Effectiveness Report

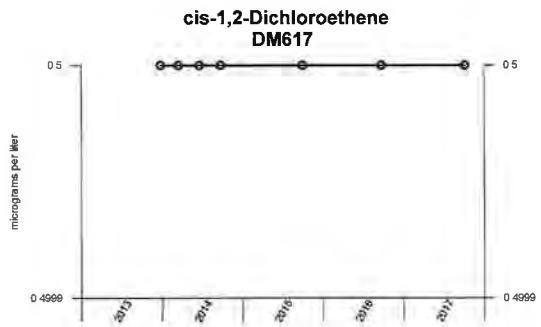
Job No: CC18.1000.00-12 | Date: March 2018

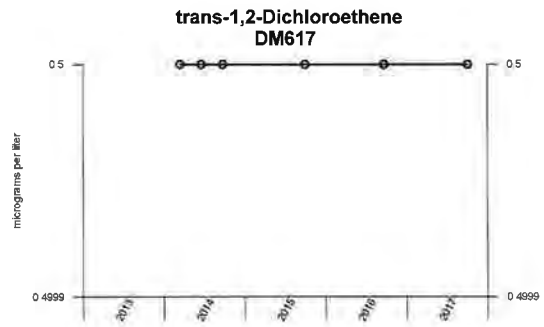
Time-Series Graphs
DM616
MI52 OU1 Effectiveness Report
Phoenix, Arizona

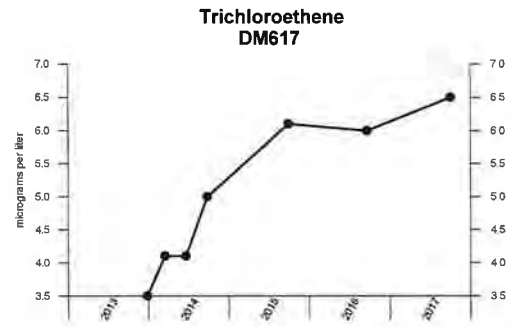


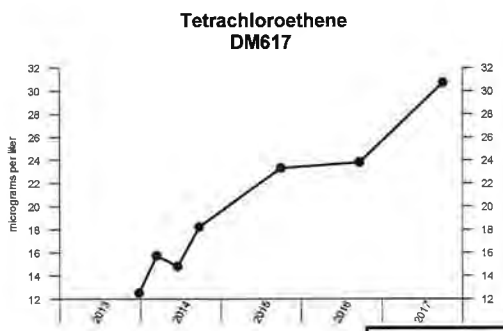


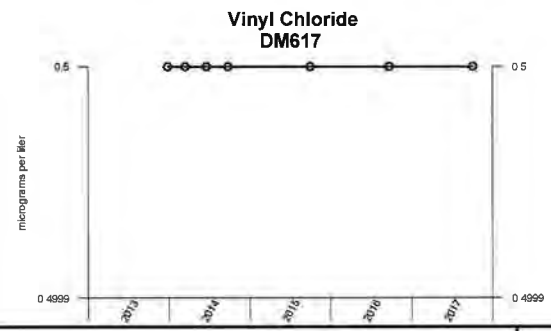


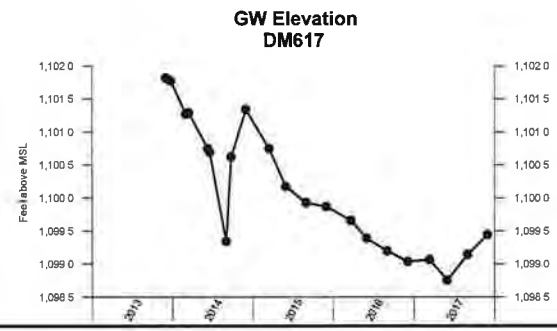












EXPLANATION

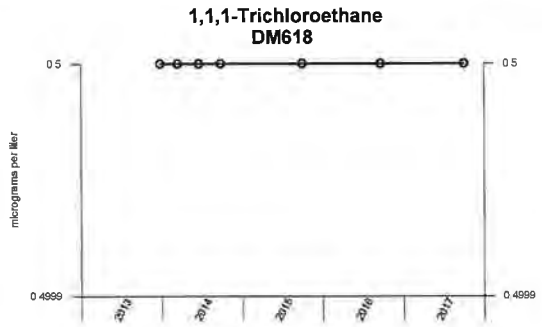
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

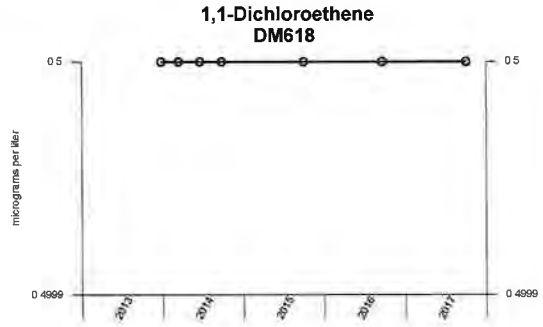
CLEAR CREEK ASSOCIATES

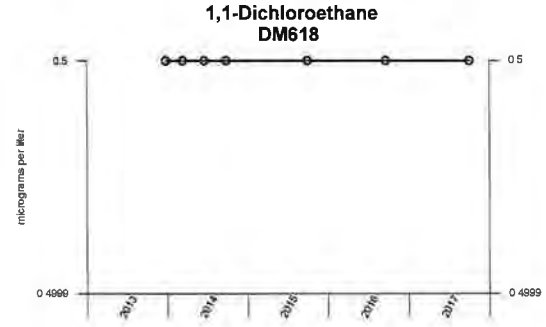
Project Name: MI52 OU1 Effectiveness Report

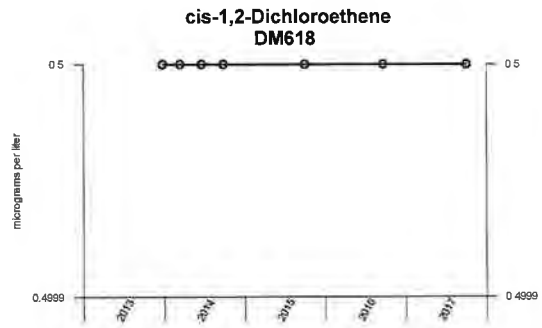
Job No: CC18.1000.00-12 | Date: March 2018

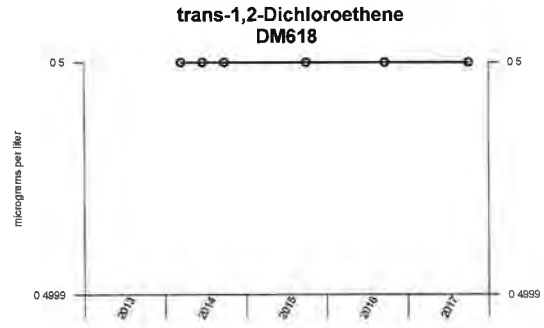
Time-Series Graphs
DM617
MI52 OU1 Effectiveness Report
Phoenix, Arizona

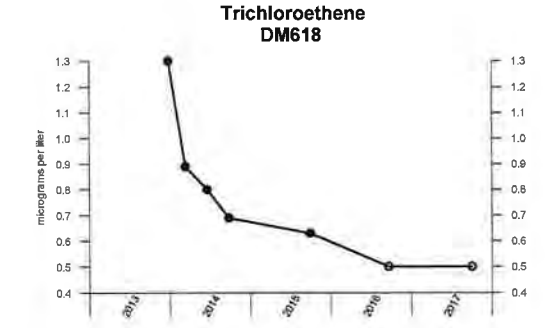


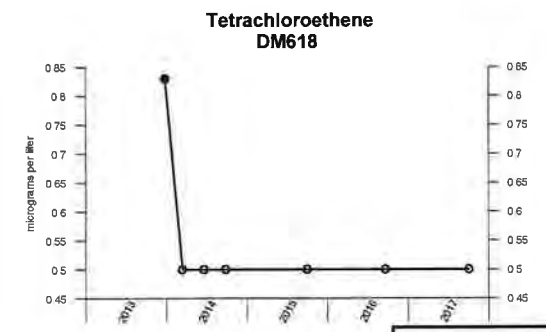


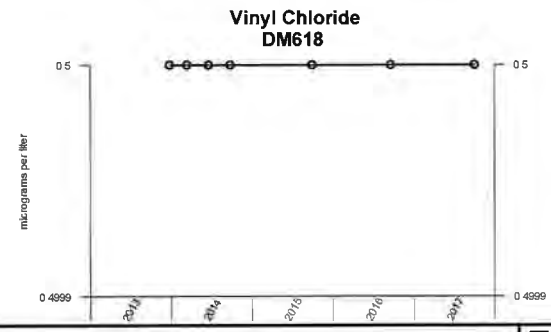


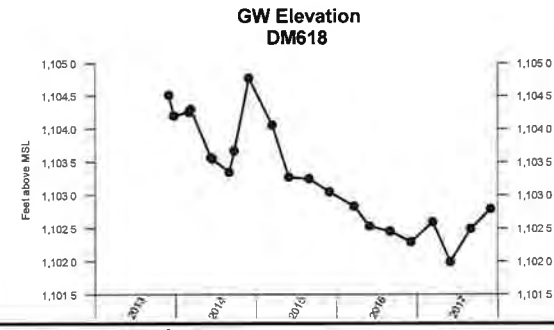












EXPLANATION

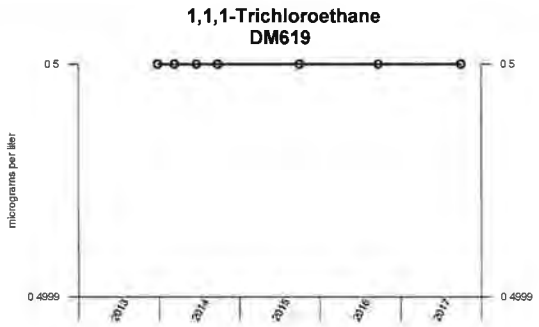
● - Measured Value
○ - Undetected (Displayed at RL)

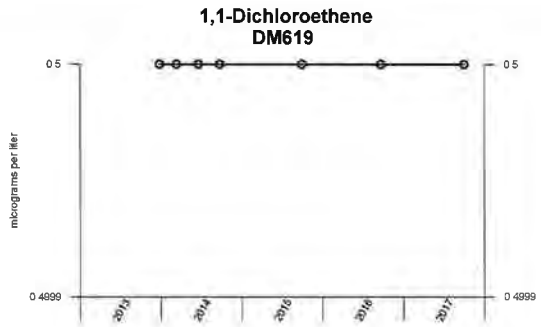
CLEAR CREEK ASSOCIATES

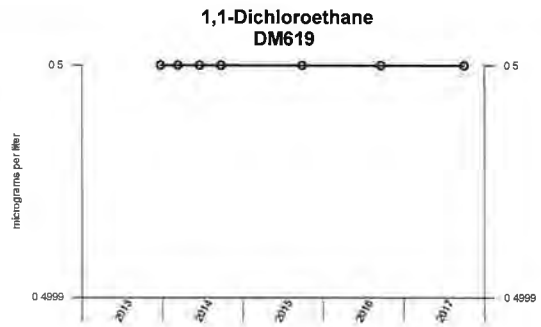
Project Name: MI52 OU1 Effectiveness Report

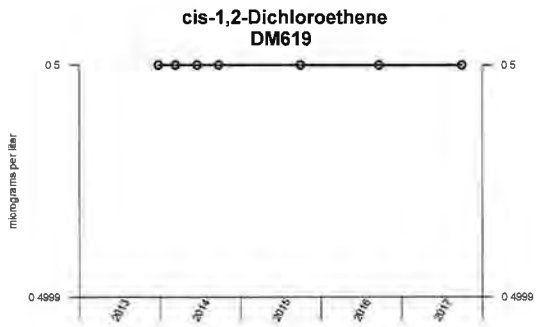
Job No: CC18.1000.00-12 | Date: March 2018

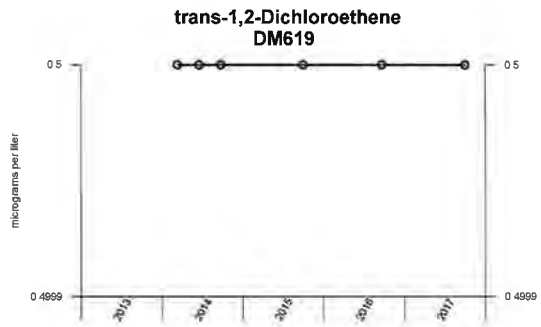
Time-Series Graphs
DM618
MI52 OU1 Effectiveness Report
Phoenix, Arizona

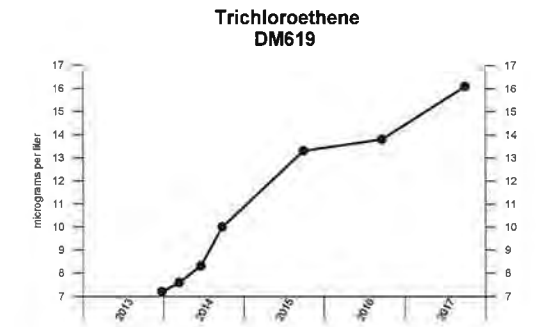


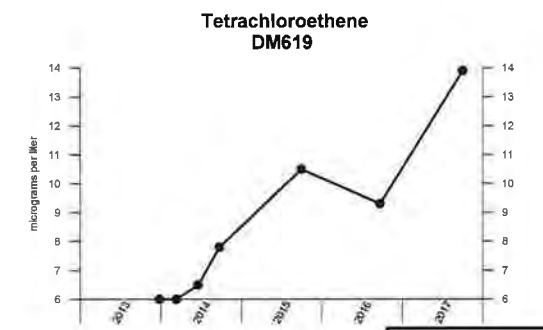


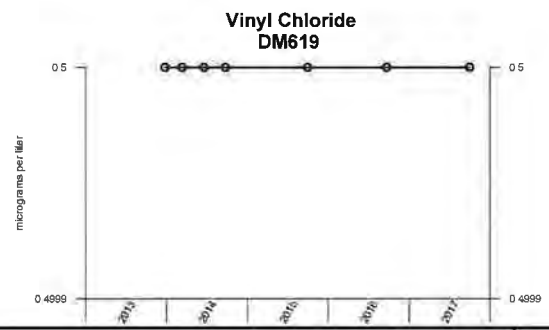


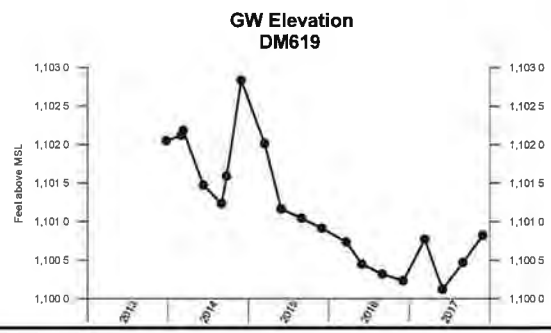












EXPLANATION

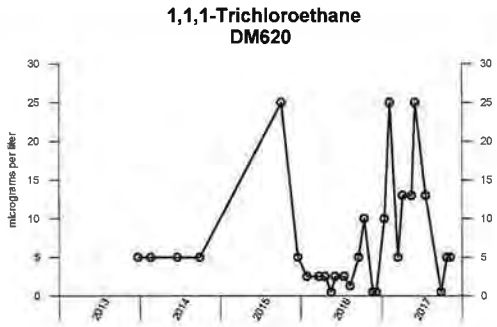
● - Measured Value
○ - Undetected (Displayed at RL)

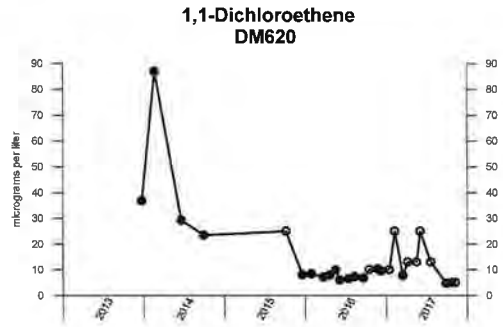
CLEAR CREEK ASSOCIATES

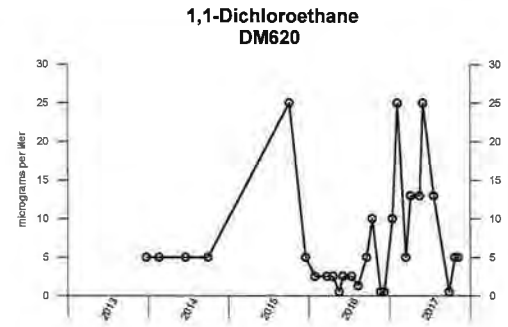
Project Name: MI52 OU1 Effectiveness Report

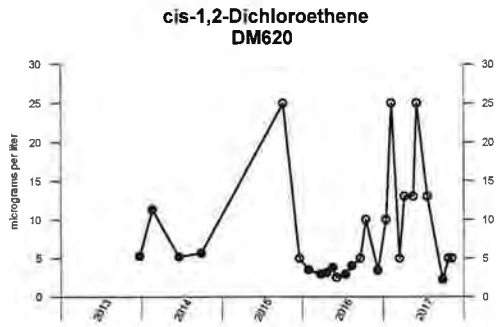
Job No: CC18.1000.00-12 | Date: March 2018

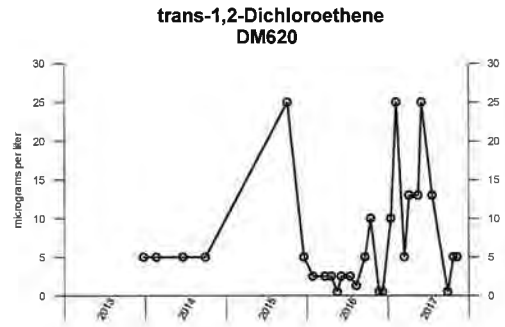
Time-Series Graphs
DM619
MI52 OU1 Effectiveness Report
Phoenix, Arizona

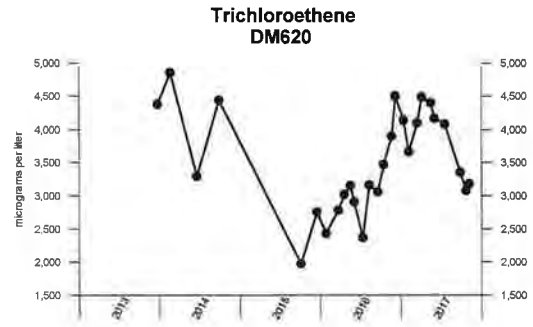


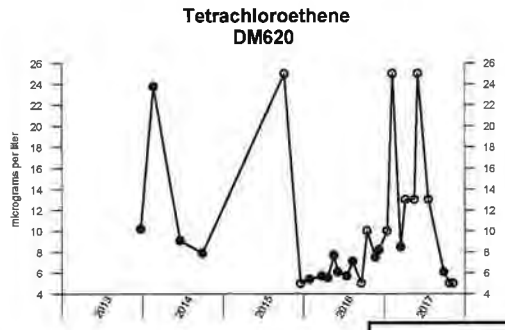


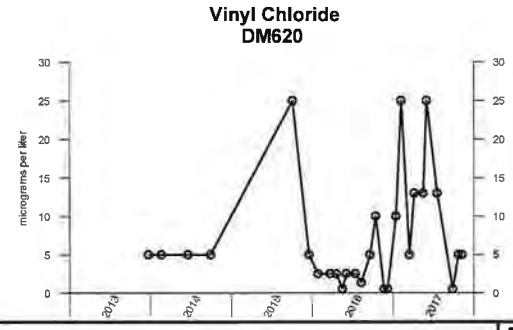


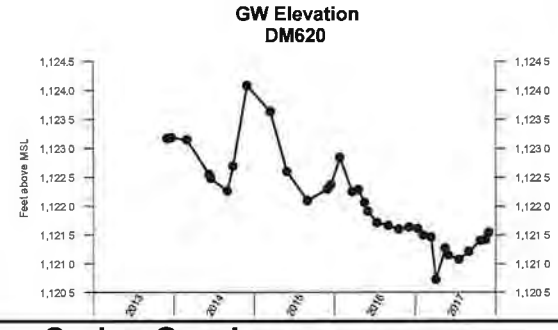












EXPLANATION

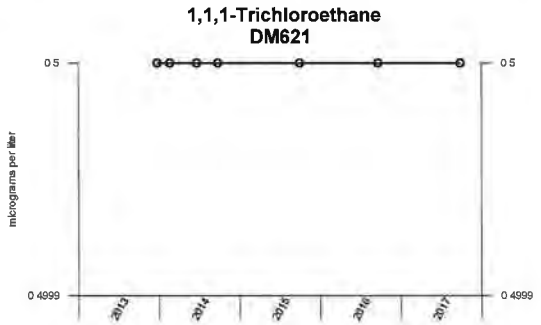
● - Measured Value
○ - Undetected (Displayed at RL)

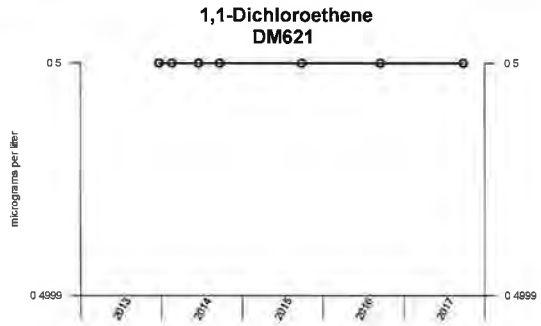
CLEAR CREEK ASSOCIATES

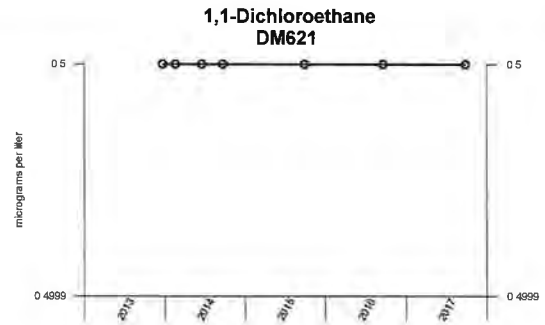
Project Name: MI52 OU1 Effectiveness Report

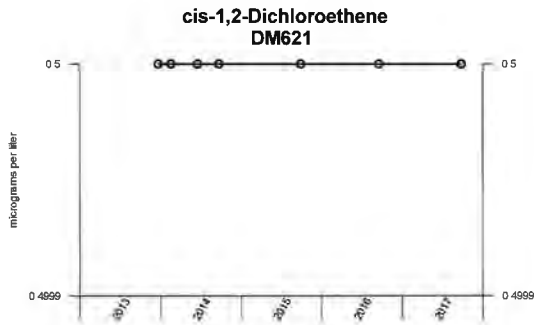
Job No: CC18.1000.00-12 | Date: March 2018

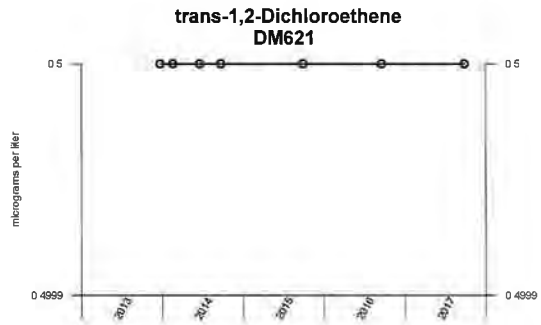
Time-Series Graphs
DM620
MI52 OU1 Effectiveness Report
Phoenix, Arizona

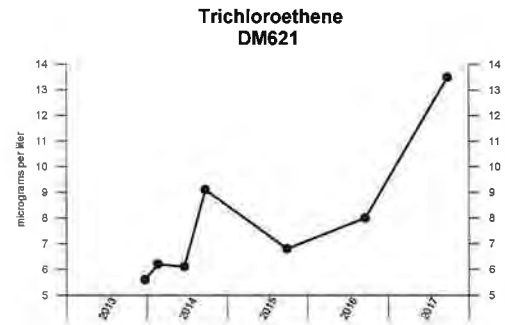


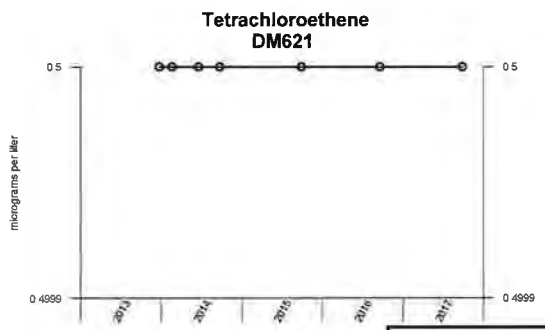


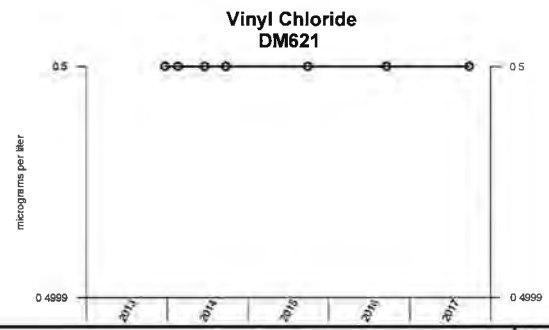


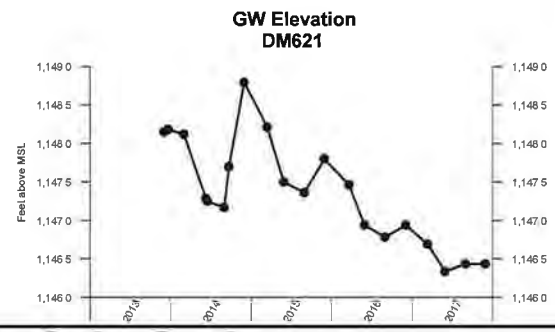












EXPLANATION

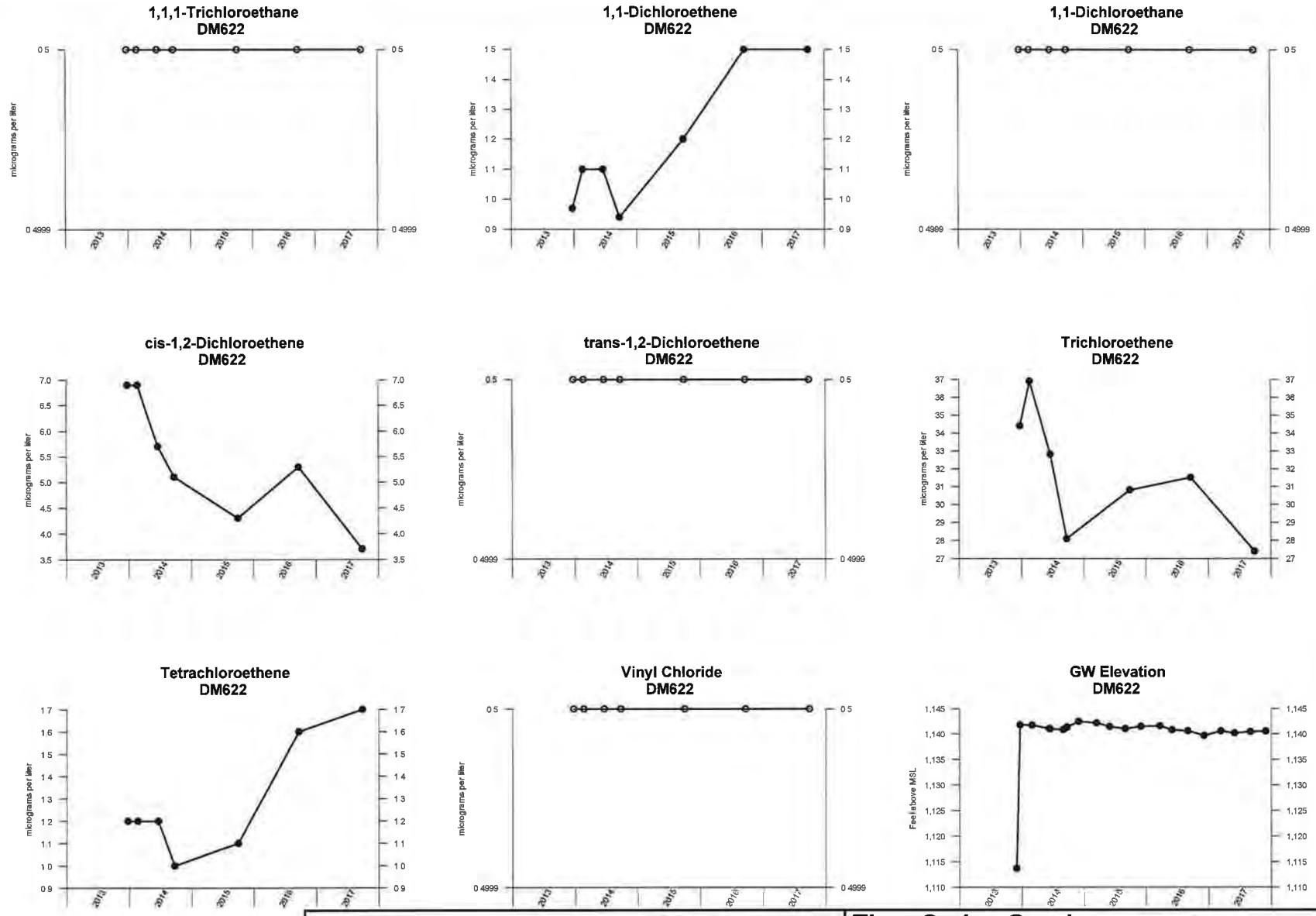
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM621
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

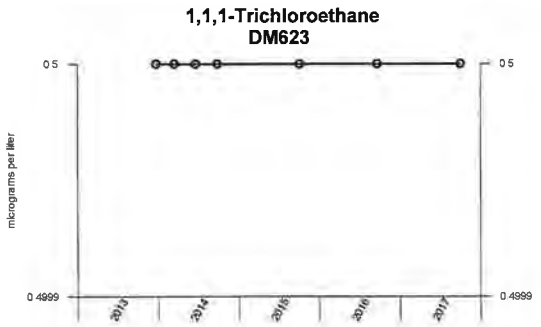
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

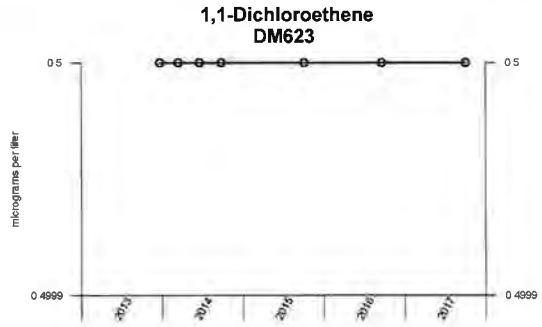
CLEAR CREEK ASSOCIATES

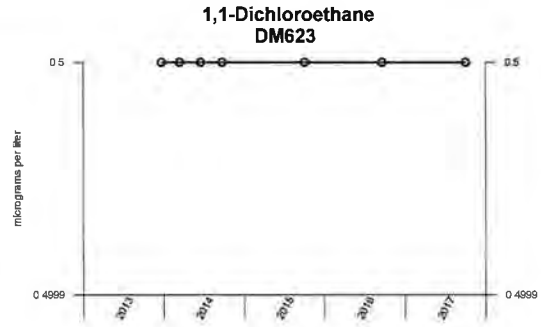
Project Name: MI52 OU1 Effectiveness Report

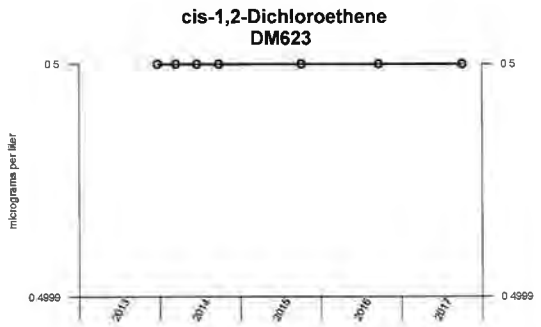
Job No: CC18.1000.00-12 | Date: March 2018

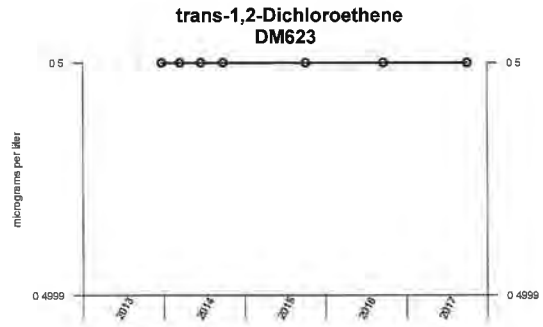
Time-Series Graphs
DM622
MI52 OU1 Effectiveness Report
Phoenix, Arizona

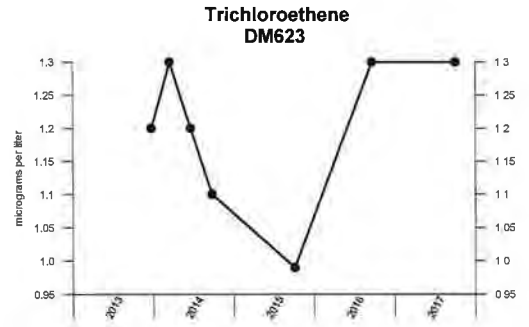


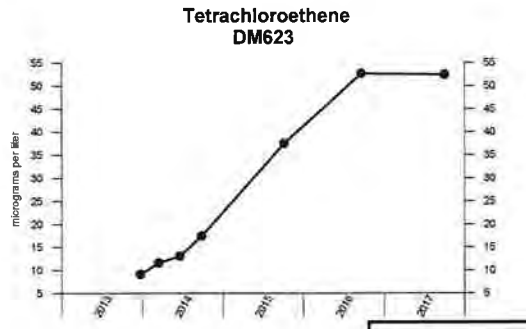


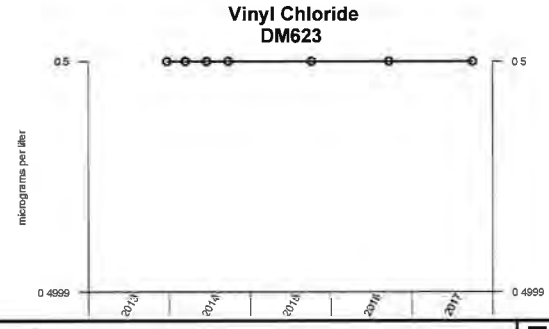


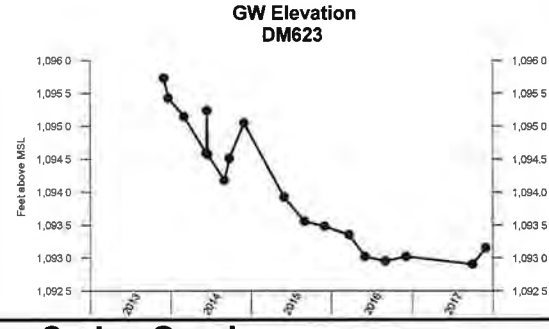












EXPLANATION

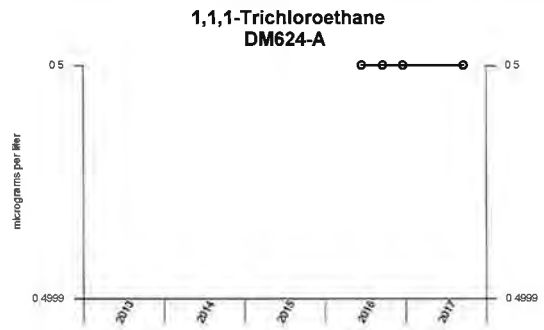
● - Measured Value
○ - Undetected (Displayed at RL)

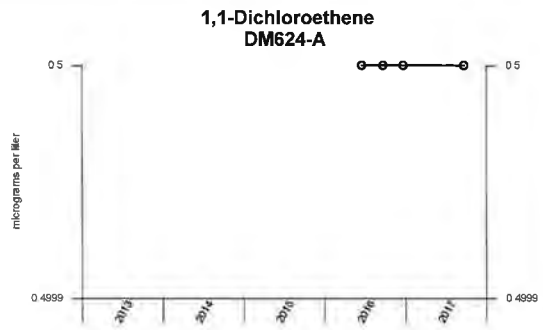
CLEAR CREEK ASSOCIATES

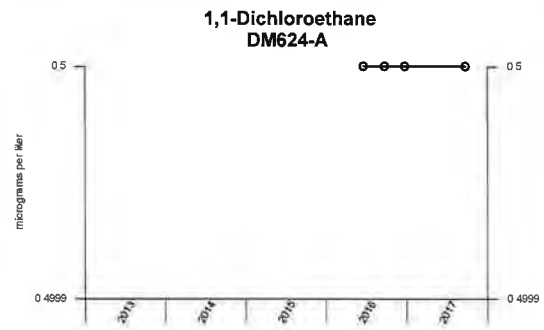
Project Name: MI52 OU1 Effectiveness Report

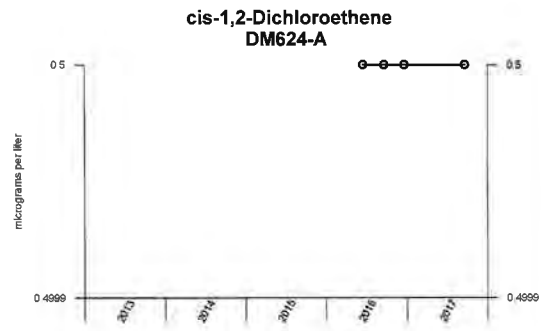
Job No: CC18.1000.00-12 | Date: March 2018

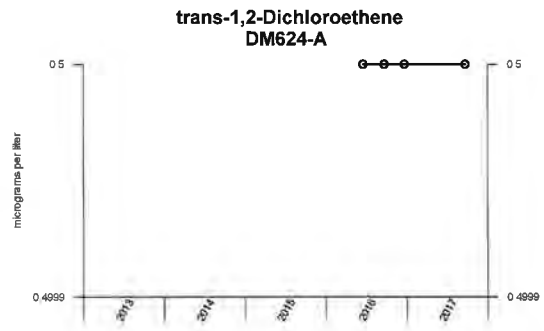
Time-Series Graphs
DM623
MI52 OU1 Effectiveness Report
Phoenix, Arizona

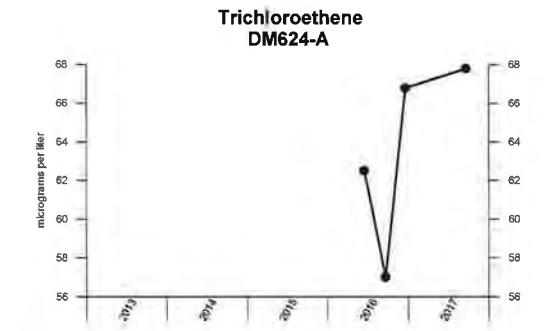


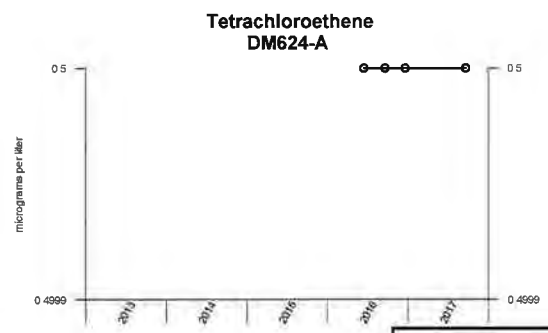


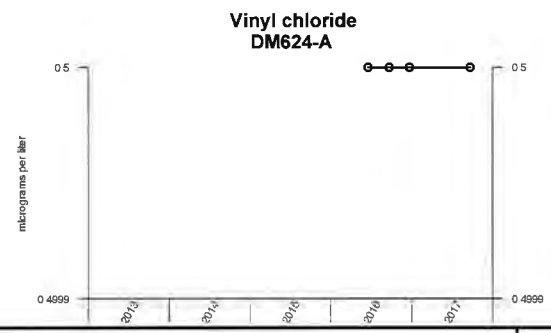


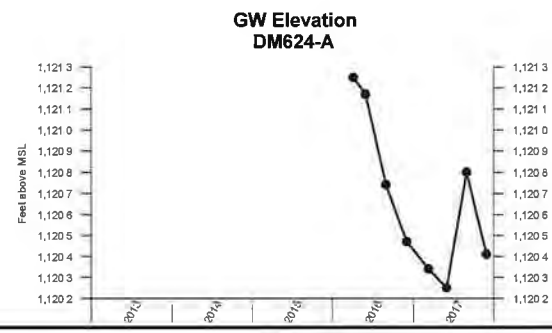












EXPLANATION

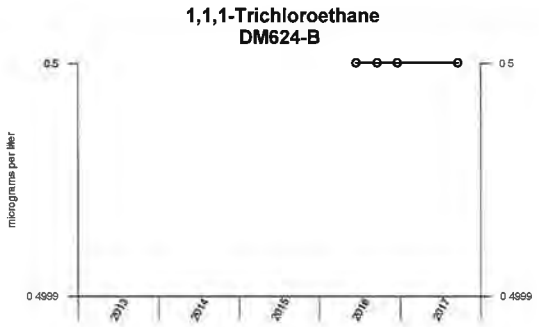
● - Measured Value
○ - Undetected (Displayed at RL)

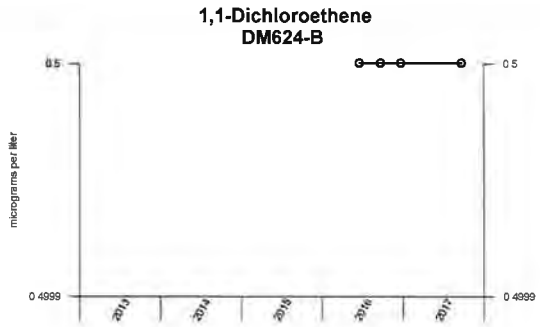
CLEAR CREEK ASSOCIATES

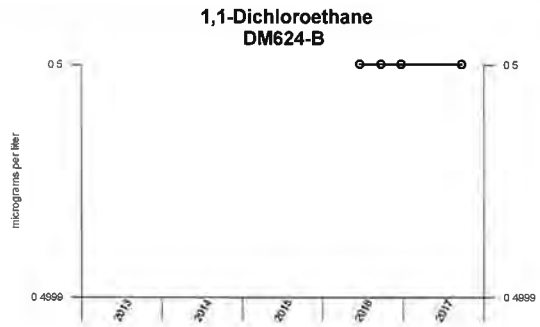
Project Name: MI52 OU1 Effectiveness Report

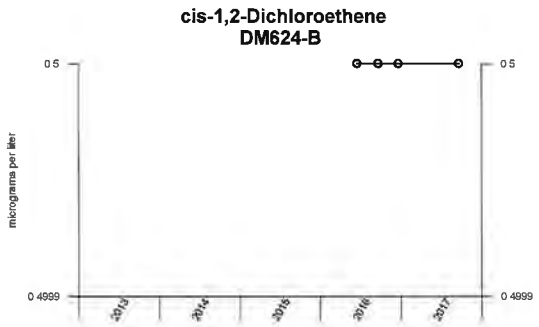
Job No: CC18.1000.00-12 | Date: March 2018

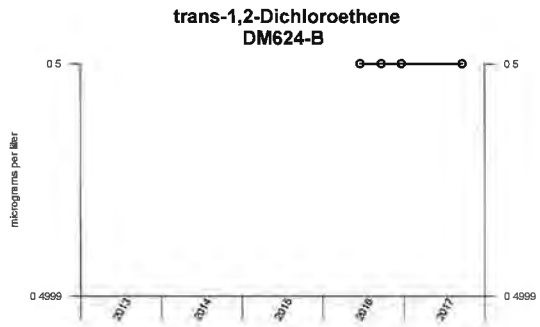
Time-Series Graphs
DM624-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

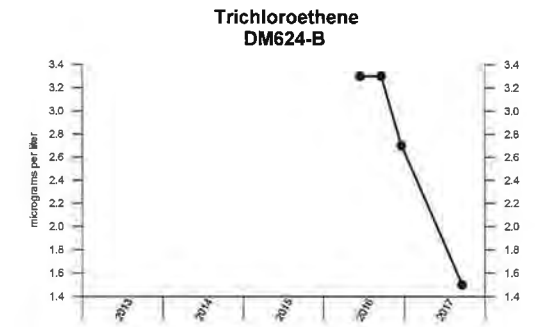


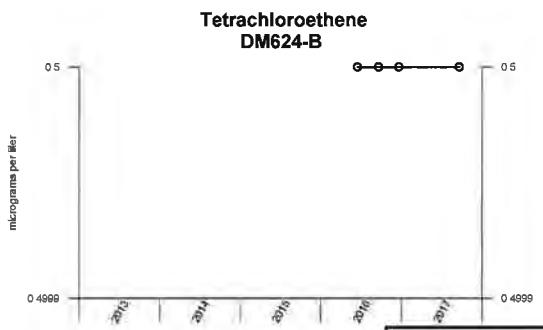


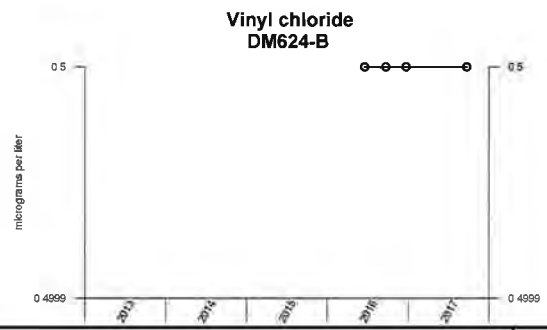


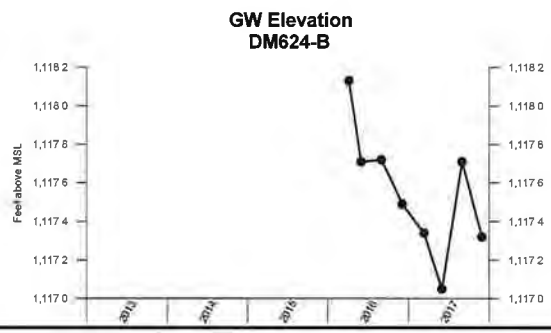












EXPLANATION

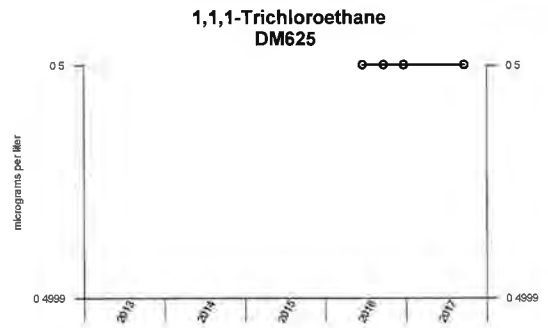
● - Measured Value
○ - Undetected (Displayed at RL)

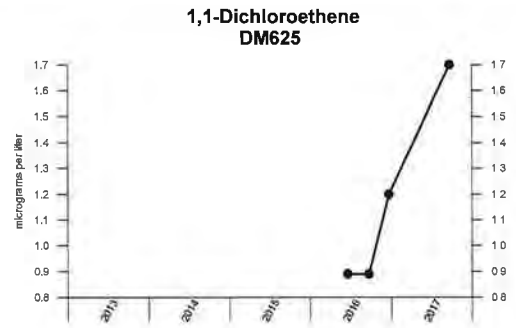
CLEAR CREEK ASSOCIATES

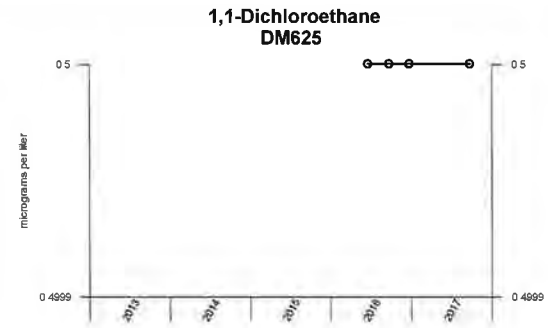
Project Name: MI52 OU1 Effectiveness Report

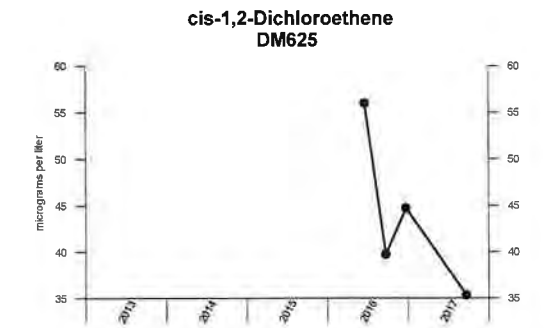
Job No: CC18.1000.00-12 | Date: March 2018

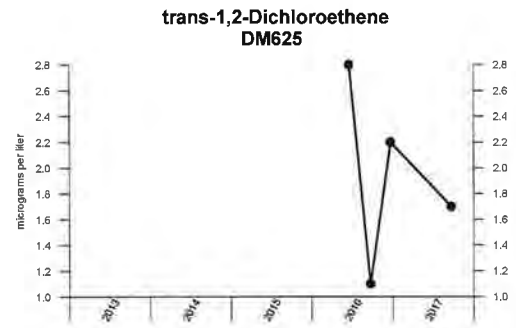
Time-Series Graphs
DM624-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

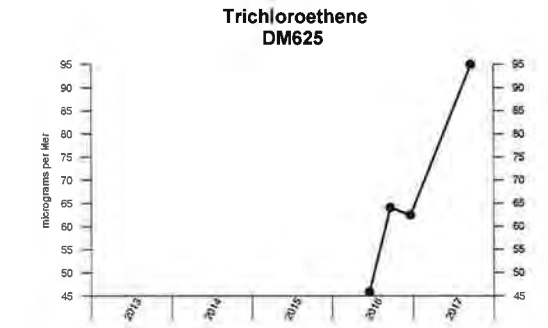


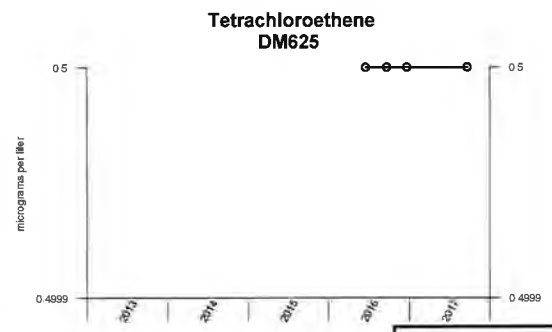


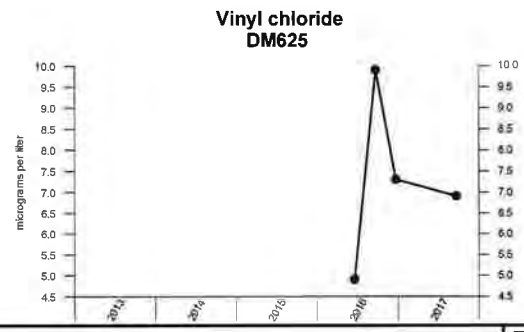


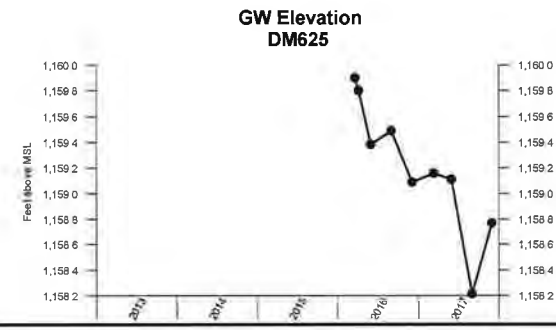












EXPLANATION

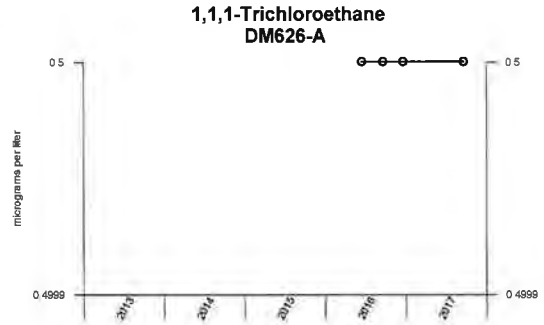
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

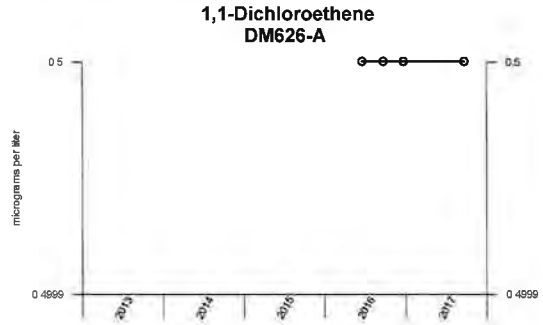
CLEAR CREEK ASSOCIATES

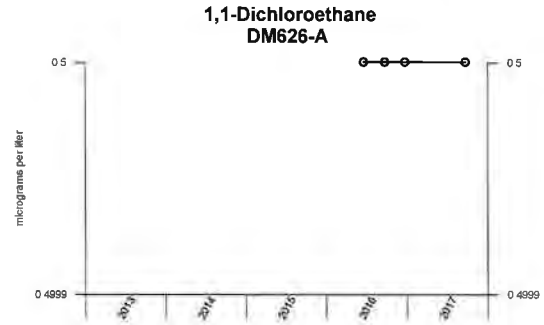
Project Name: MI52 OU1 Effectiveness Report

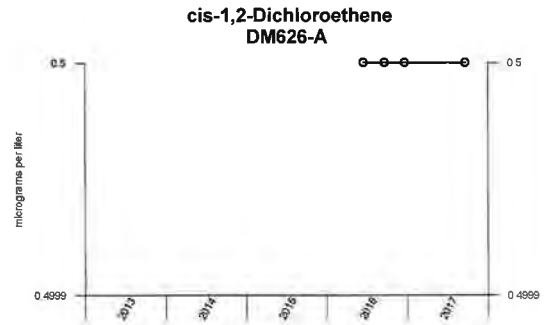
Job No: CC18.1000.00-12 | Date: March 2018

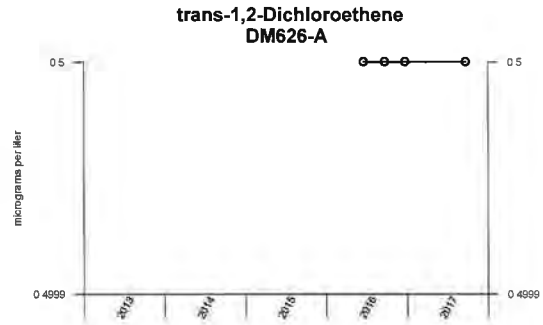
Time-Series Graphs
DM625
MI52 OU1 Effectiveness Report
Phoenix, Arizona

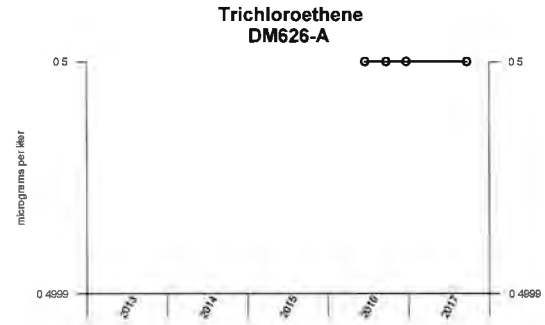


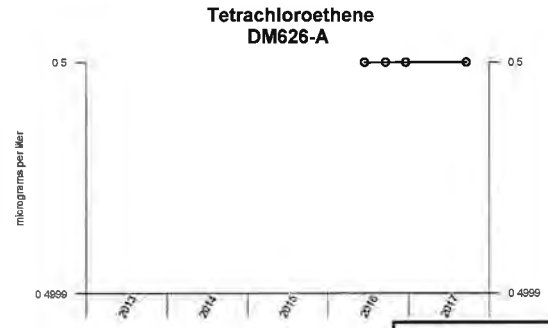


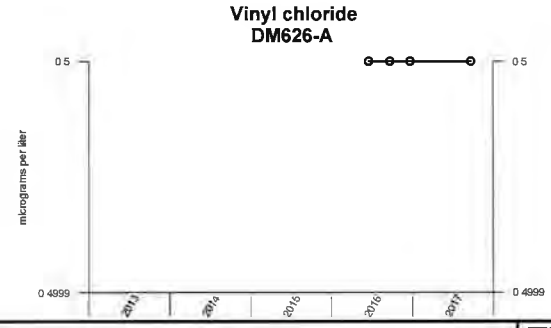


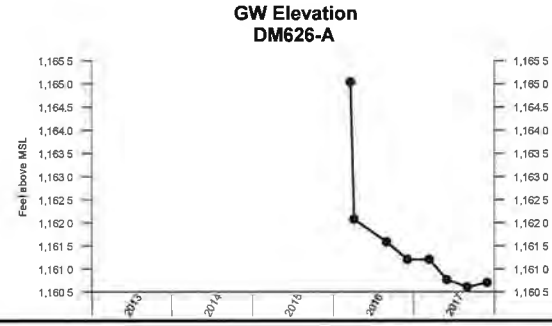












EXPLANATION

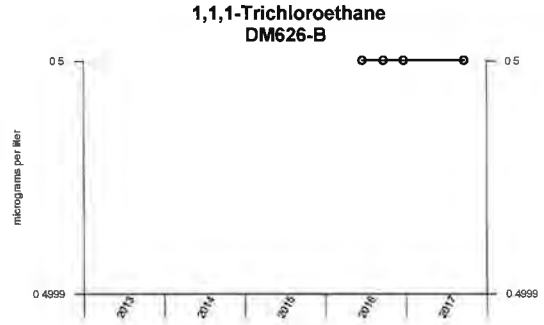
● - Measured Value
○ - Undetected (Displayed at RL)

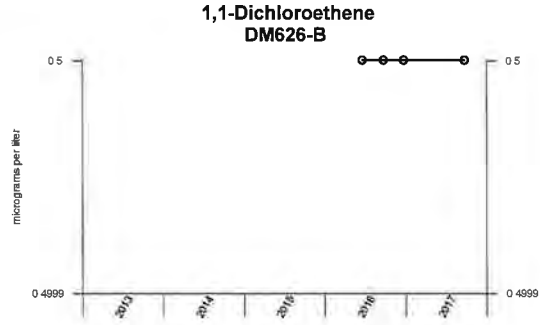
CLEAR CREEK ASSOCIATES

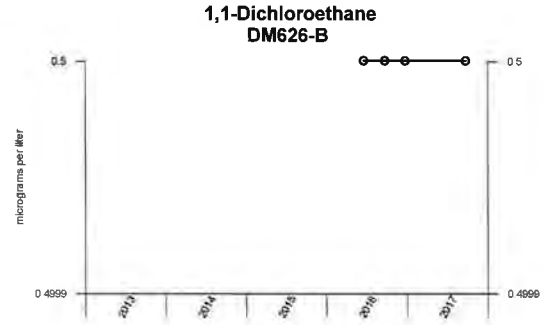
Project Name: MI52 OU1 Effectiveness Report

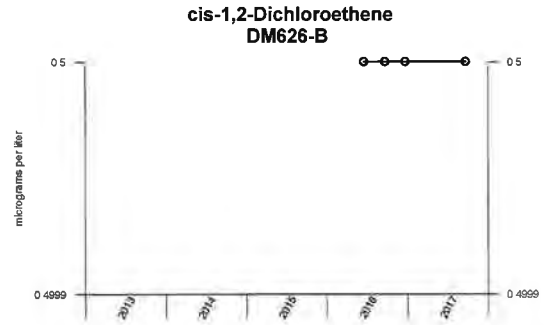
Job No: CC18.1000.00-12 | Date: March 2018

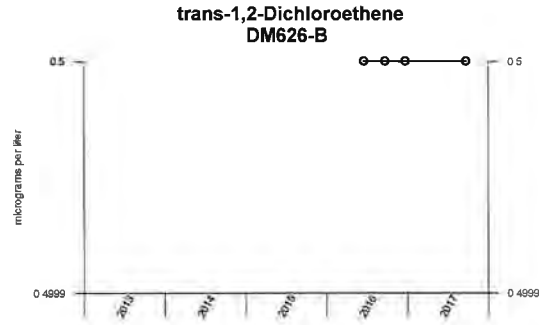
Time-Series Graphs
DM626-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

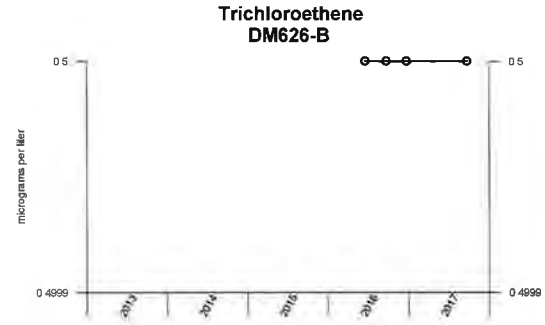


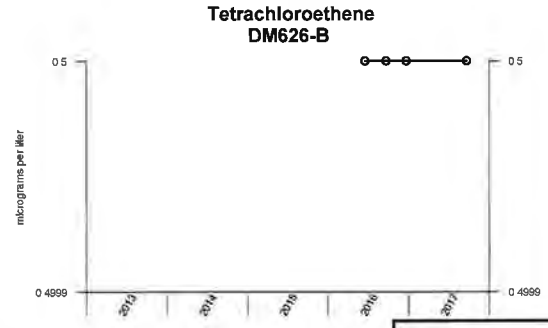


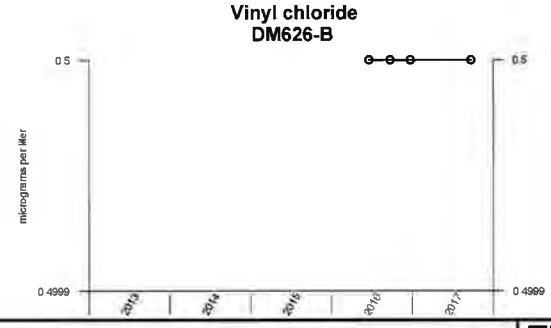


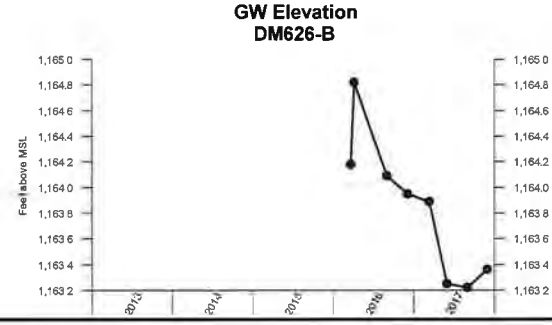












EXPLANATION

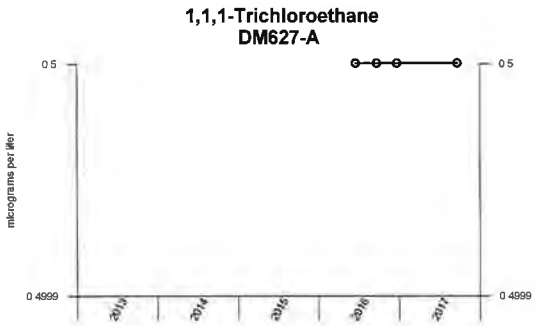
● - Measured Value
○ - Undetected (Displayed at RL)

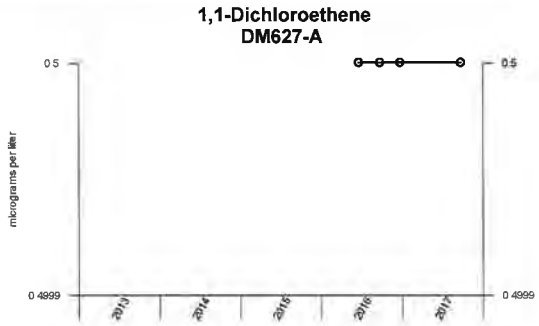
CLEAR CREEK ASSOCIATES

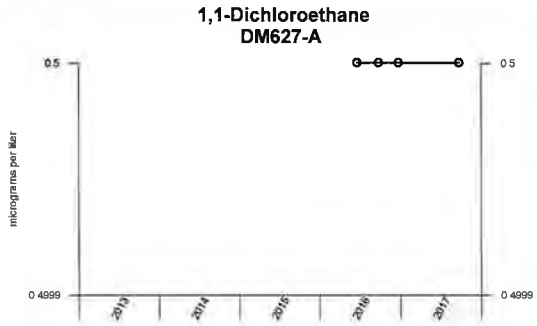
Project Name: MI52 OU1 Effectiveness Report

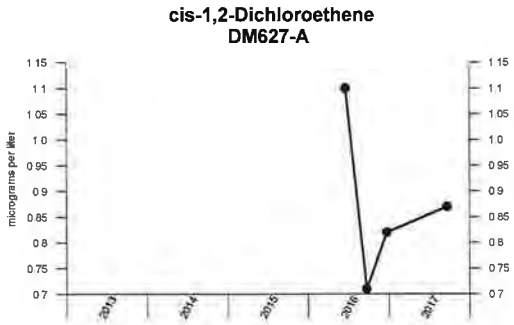
Job No: CC18.1000.00-12 | Date: March 2018

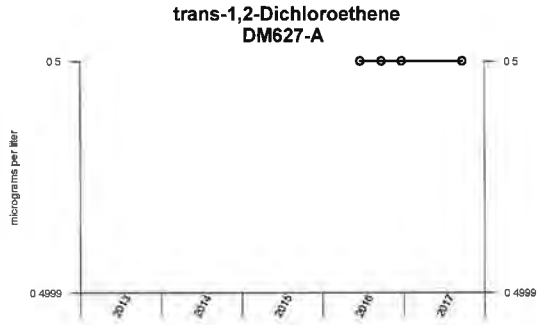
Time-Series Graphs
DM626-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

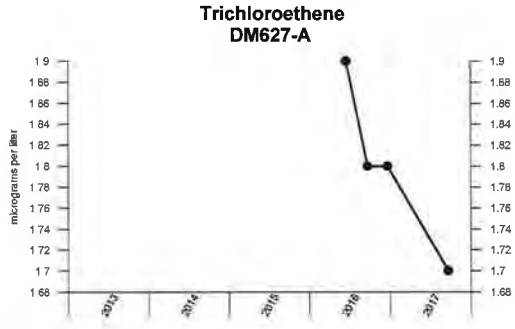


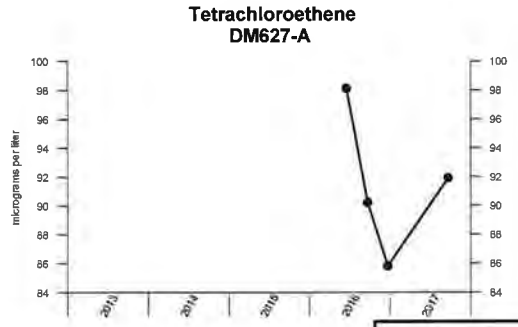


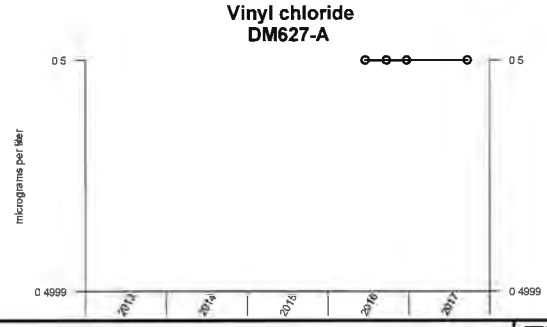


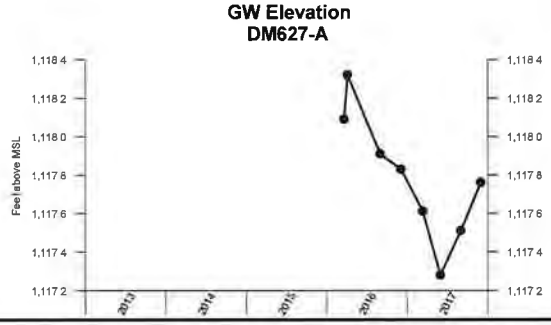












EXPLANATION

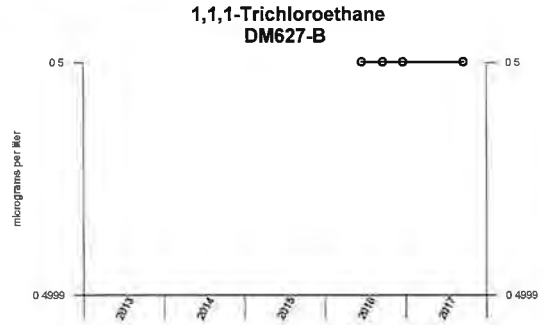
● - Measured Value
○ - Undetected (Displayed at RL)

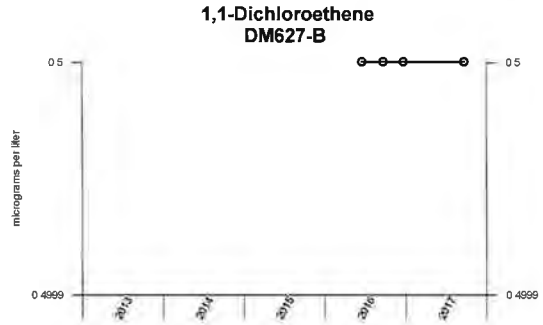
CLEAR CREEK ASSOCIATES

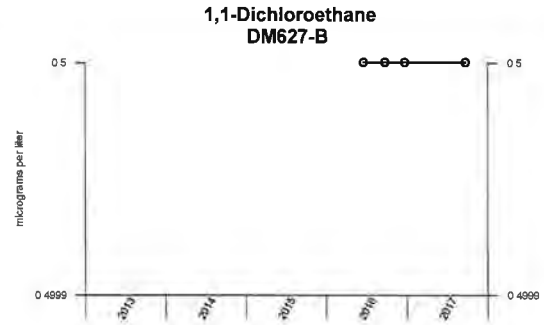
Project Name: MI52 OU1 Effectiveness Report

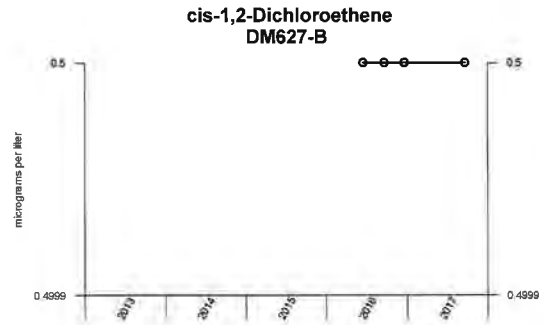
Job No: CC18.1000.00-12 | Date: March 2018

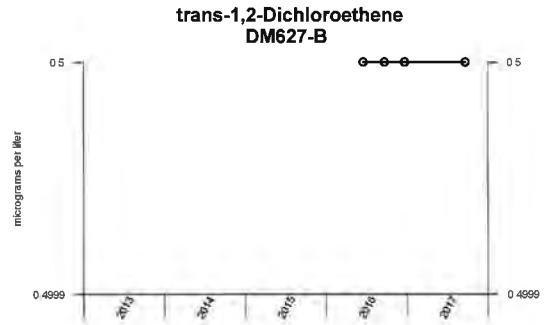
Time-Series Graphs
DM627-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

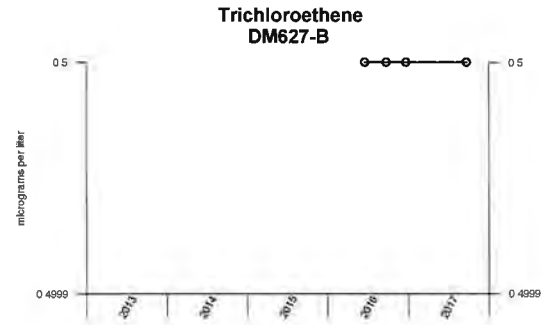


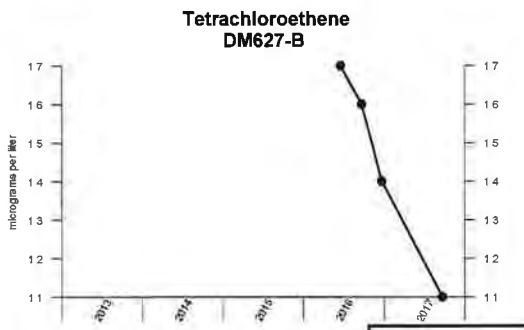


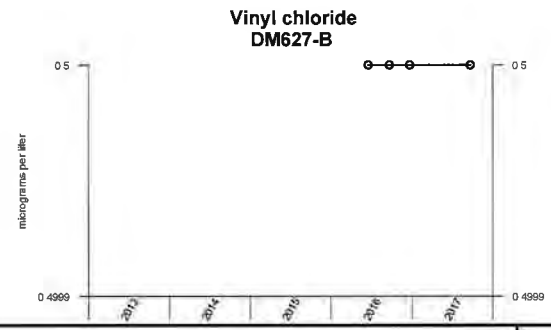


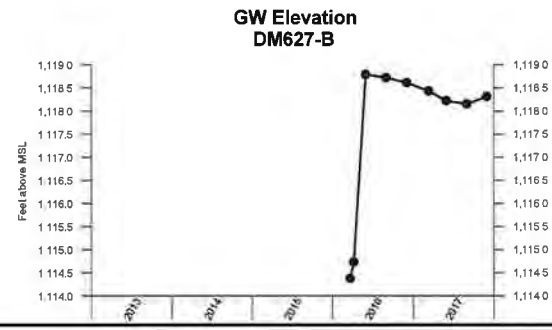












EXPLANATION

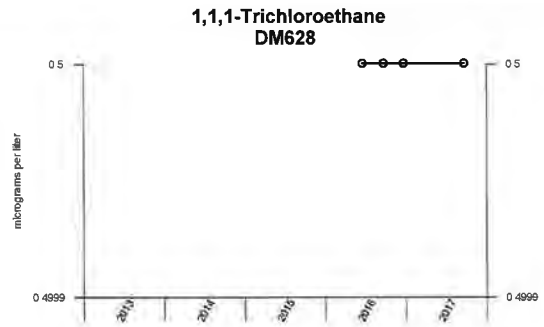
● - Measured Value
○ - Undetected (Displayed at RL)

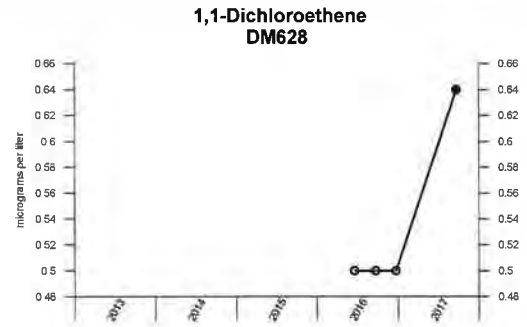
CLEAR CREEK ASSOCIATES

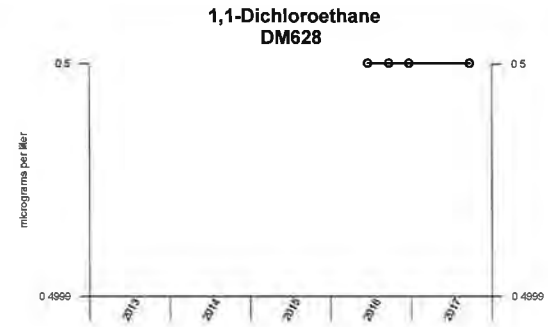
Project Name: MI52 OU1 Effectiveness Report

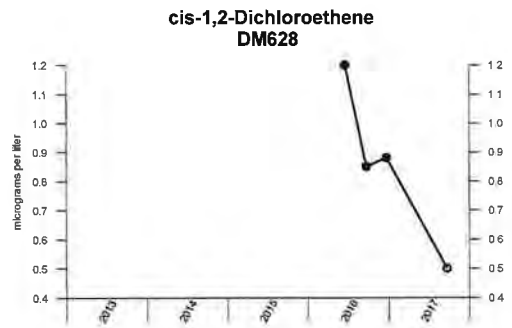
Job No: CC18.1000.00-12 | Date: March 2018

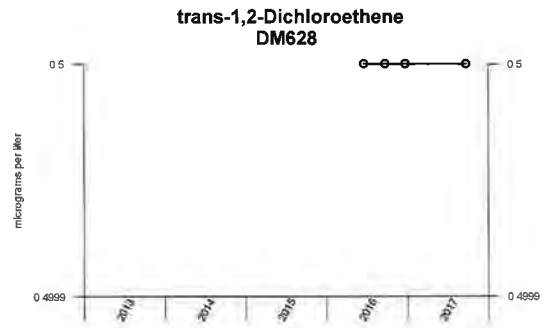
Time-Series Graphs
DM627-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

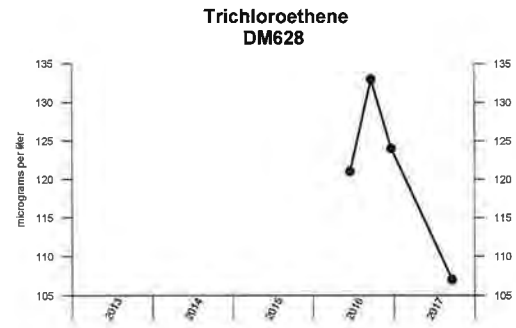


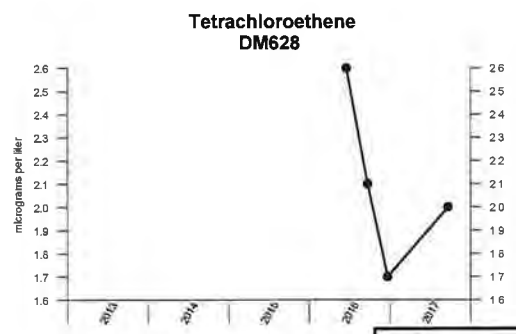


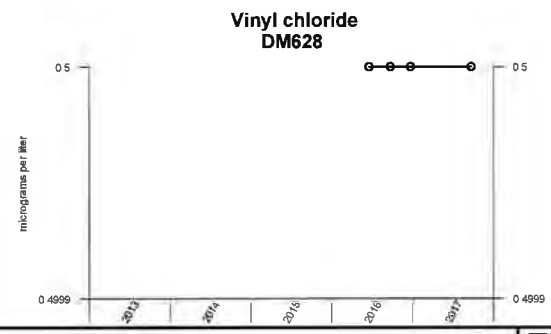


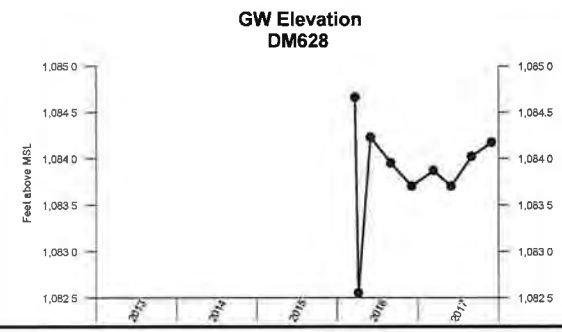












EXPLANATION

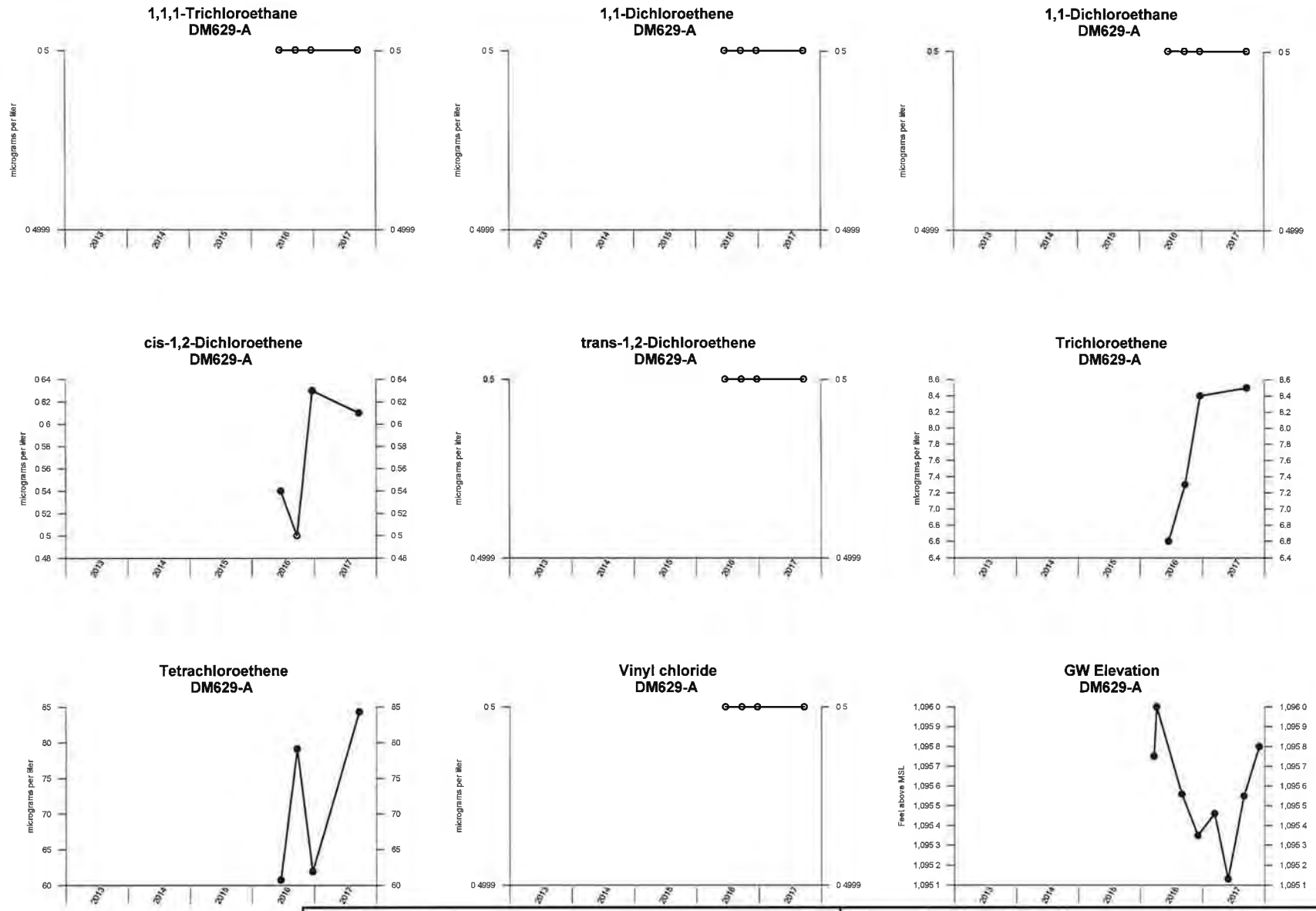
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM628
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

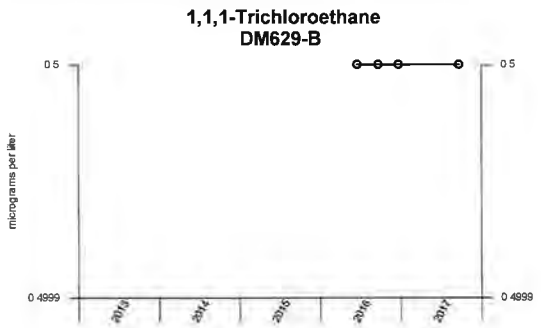
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

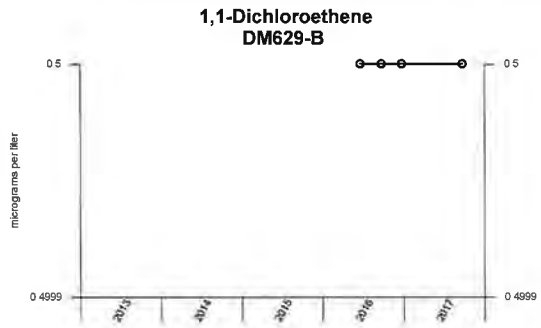
CLEAR CREEK ASSOCIATES

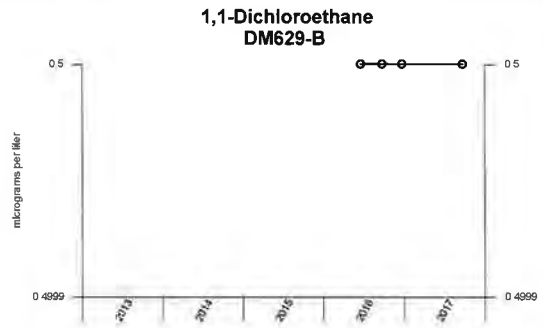
Project Name: MI52 OU1 Effectiveness Report

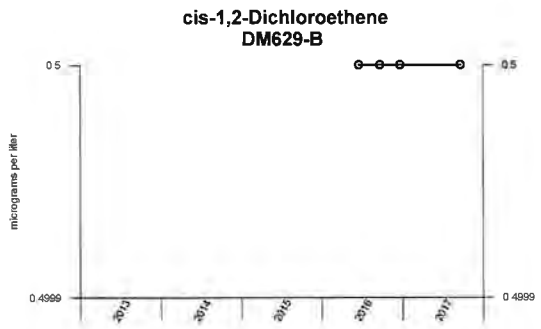
Job No: CC18.1000.00-12 | Date: March 2018

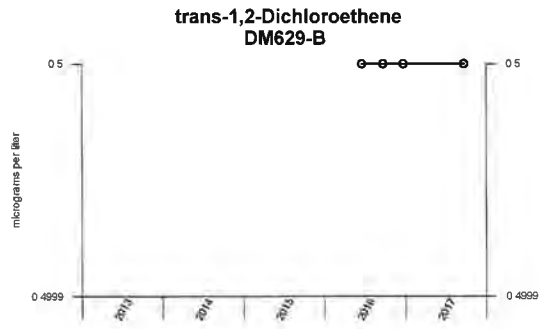
Time-Series Graphs
DM629-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

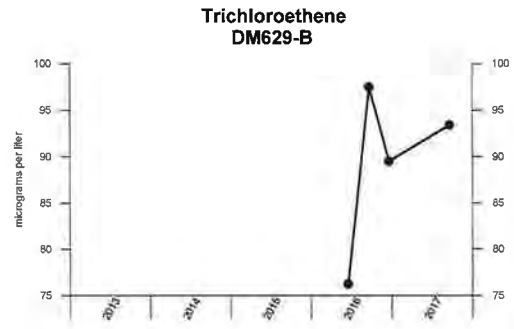


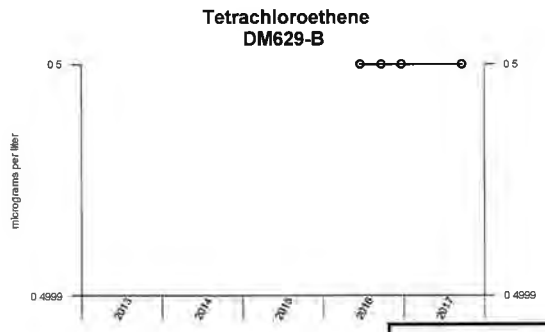


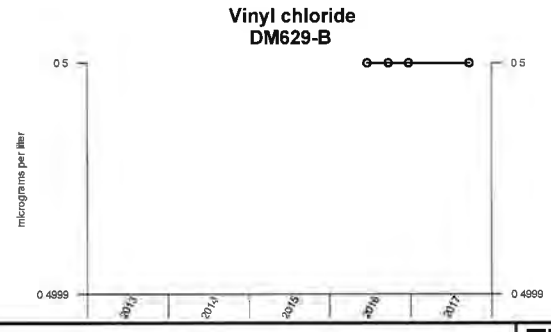


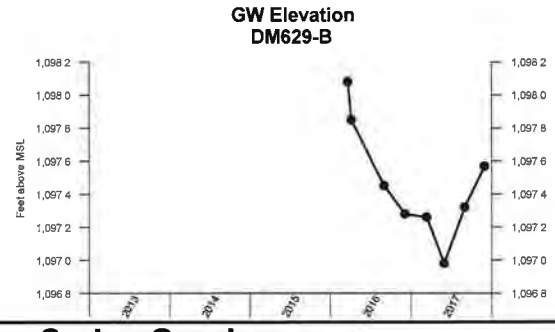












EXPLANATION

- ● - Measured Value
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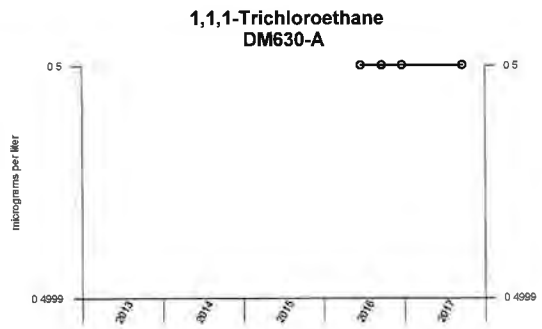
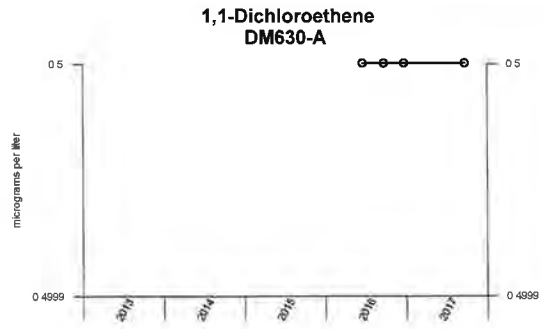
CLEAR CREEK ASSOCIATES

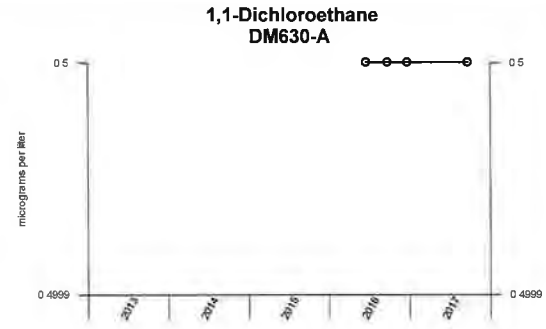
Project Name: MI52 OU1 Effectiveness Report

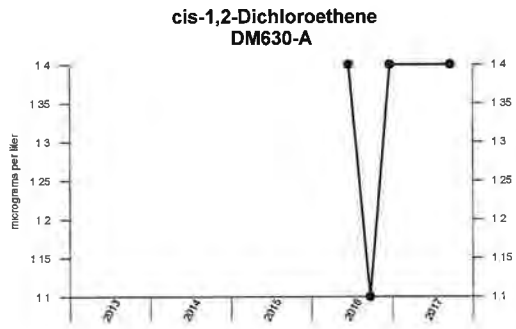
Job No: CC18.1000.00-12 | Date: March 2018

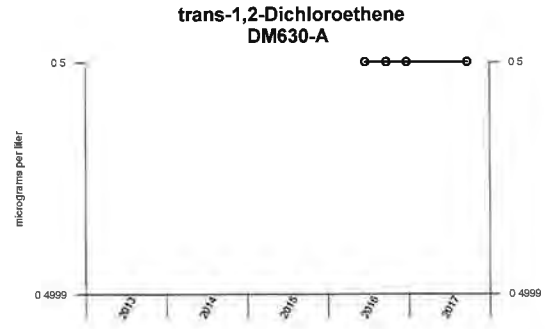
Time-Series Graphs
DM629-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

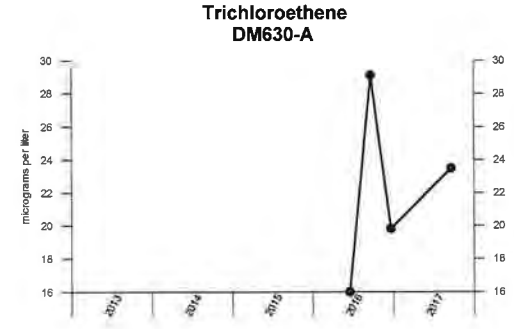


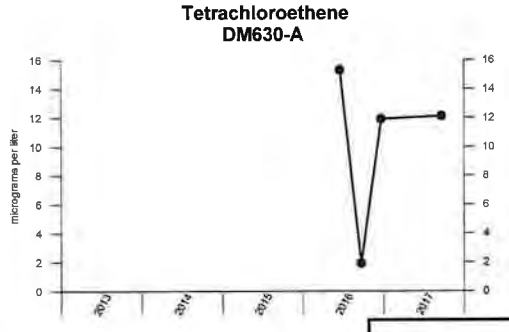


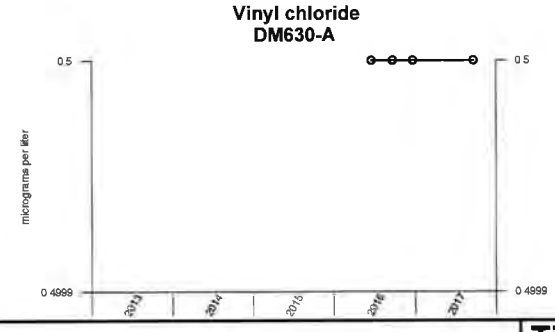


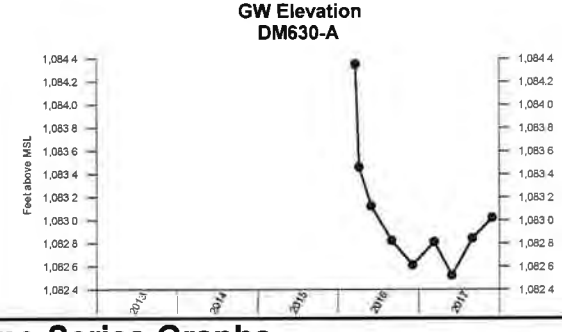












EXPLANATION

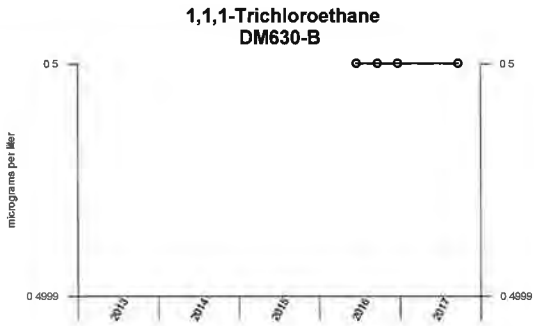
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

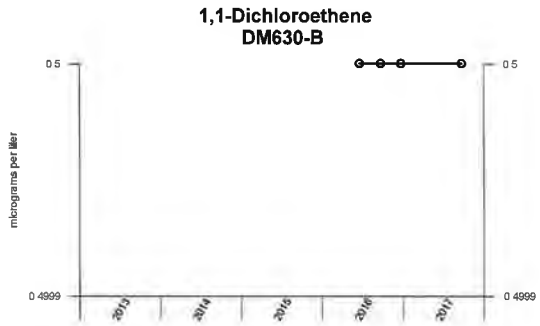
CLEAR CREEK ASSOCIATES

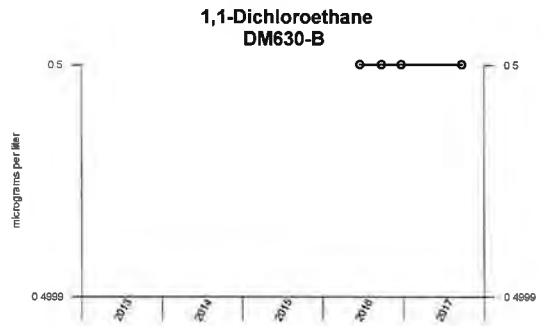
Project Name: MI52 OU1 Effectiveness Report

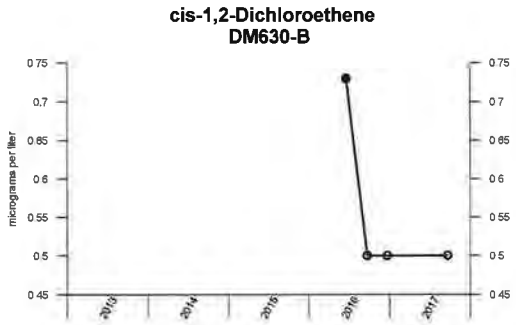
Job No: CC18.1000.00-12 | Date: March 2018

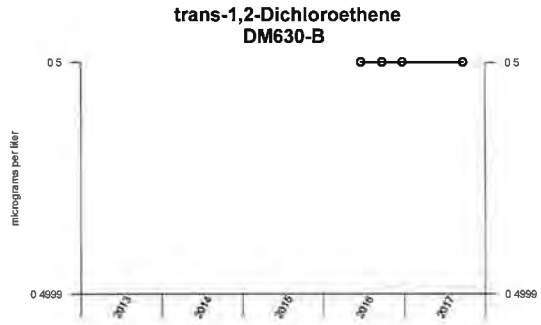
Time-Series Graphs
DM630-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

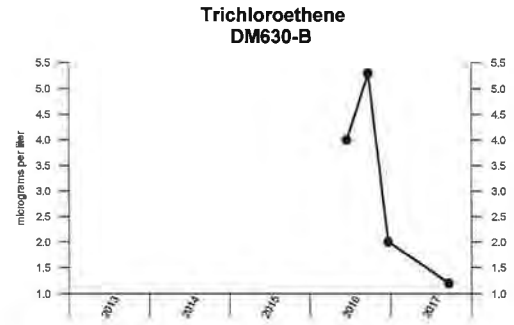


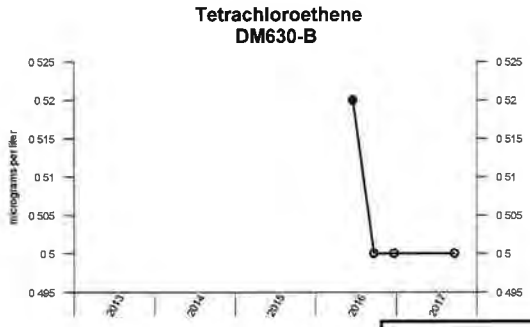


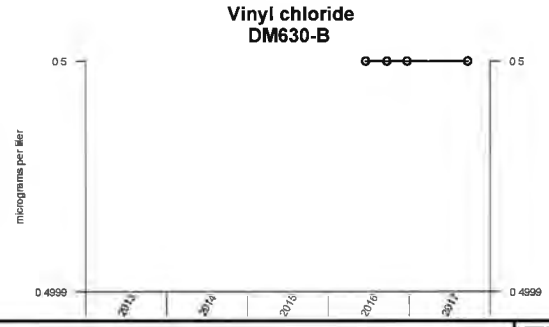


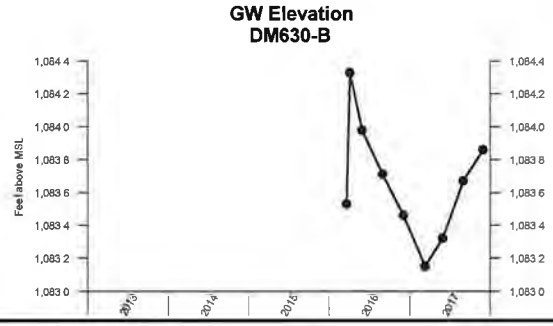












EXPLANATION

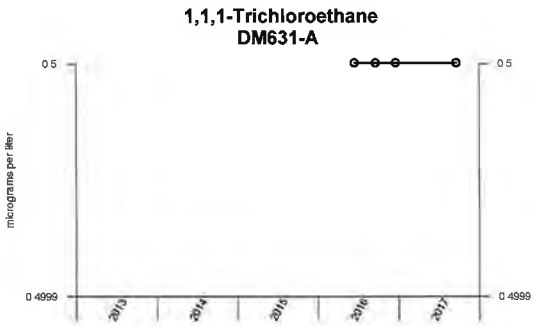
● - Measured Value
○ - Undetected (Displayed at RL)

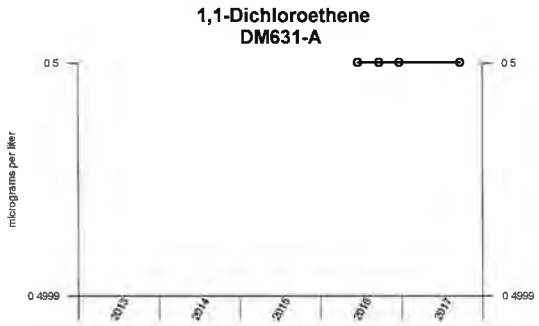
CLEAR CREEK ASSOCIATES

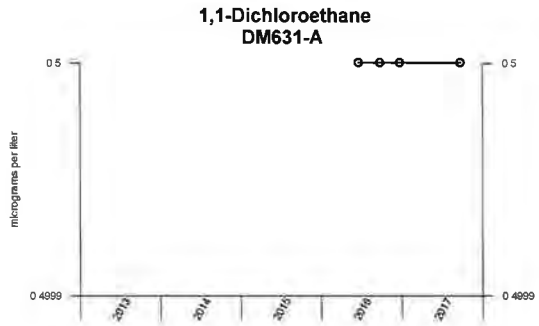
Project Name: MI52 OU1 Effectiveness Report

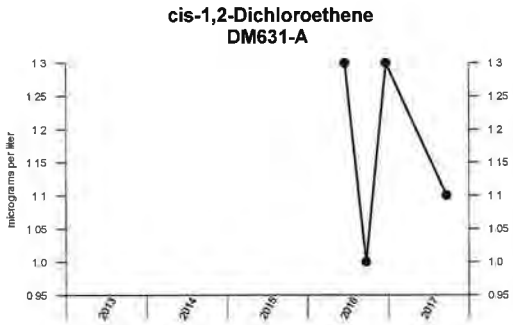
Job No: CC18.1000.00-12 | Date: March 2018

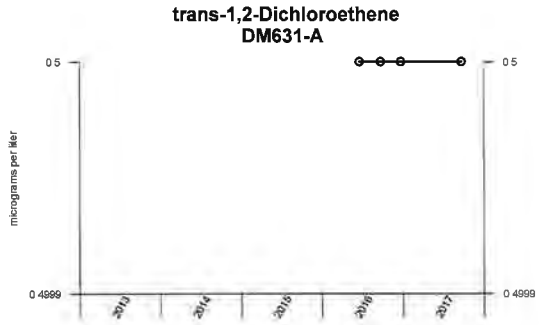
Time-Series Graphs
DM630-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

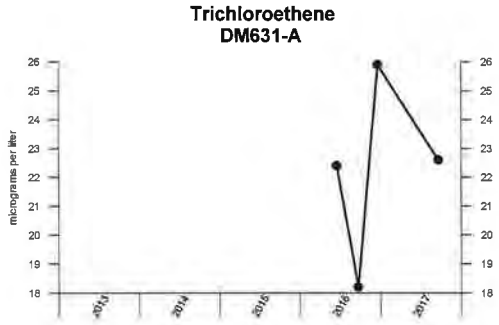


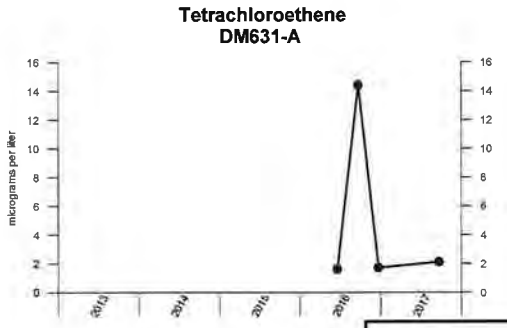


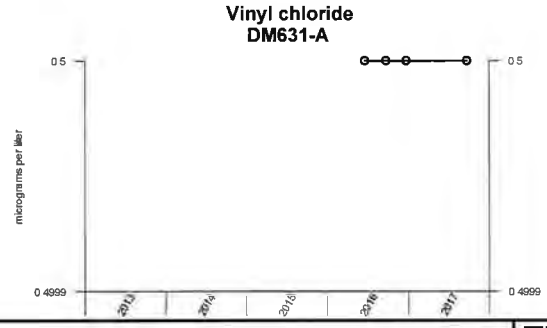


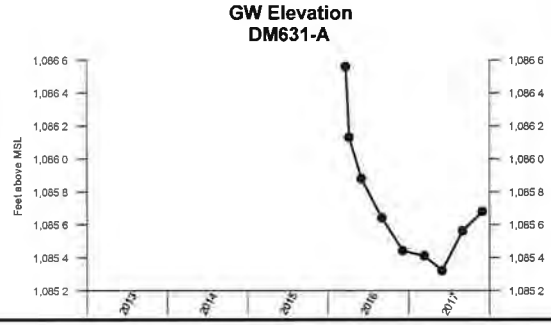












EXPLANATION

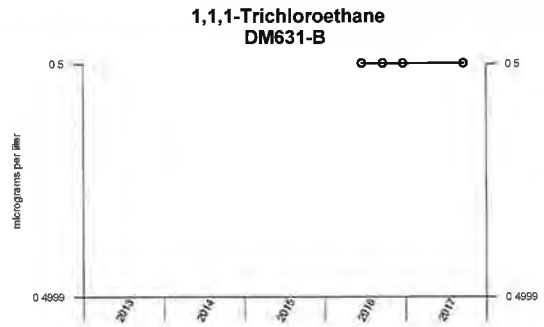
● - Measured Value
○ - Undetected (Displayed at RL)

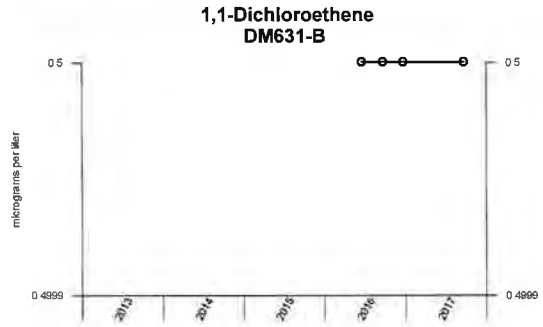
CLEAR CREEK ASSOCIATES

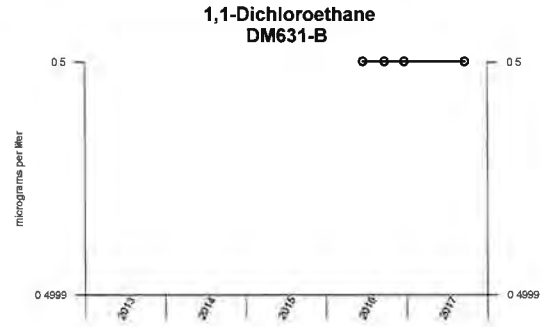
Project Name: MI52 OU1 Effectiveness Report

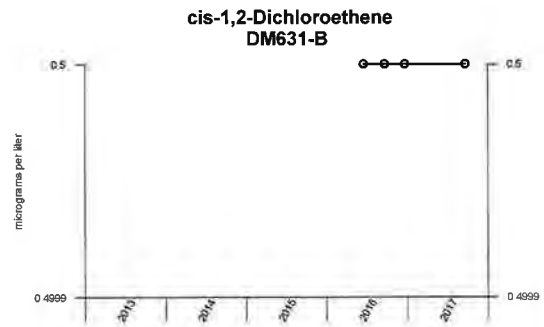
Job No: CC18.1000.00-12 | Date: March 2018

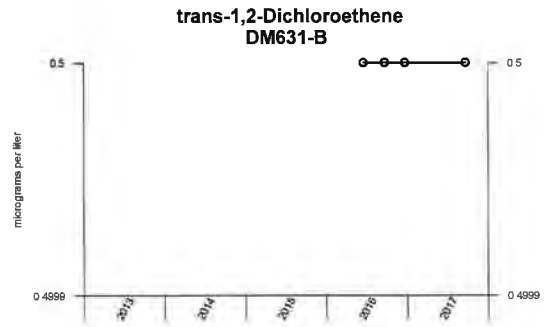
Time-Series Graphs
DM631-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

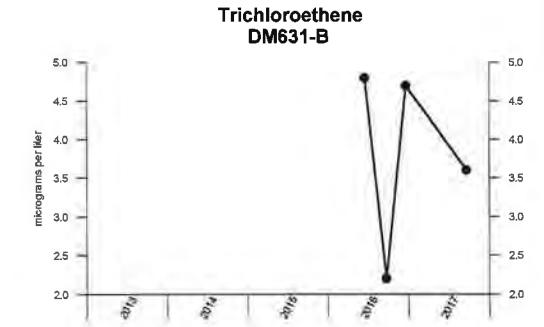


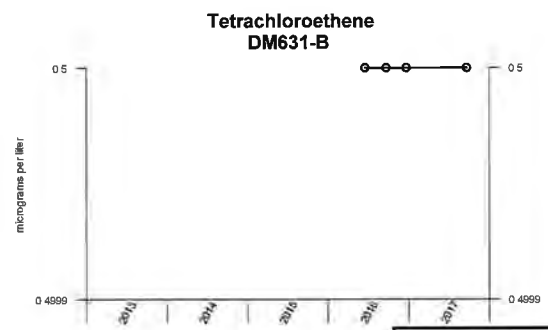


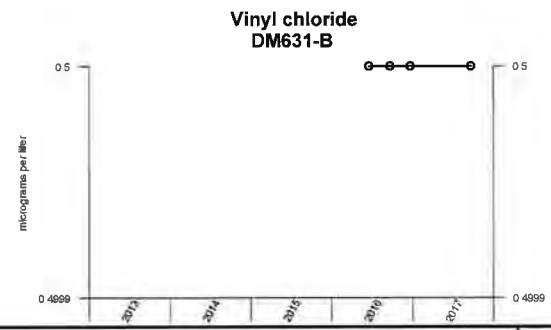


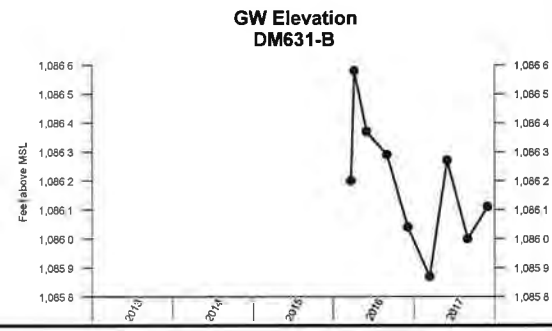












EXPLANATION

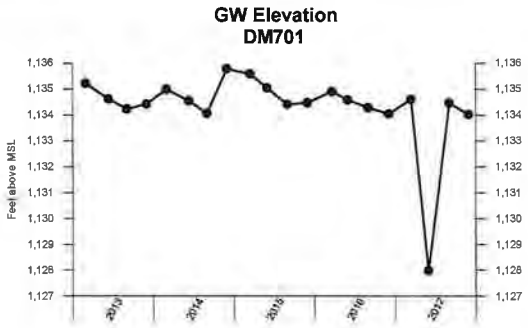
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM631-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

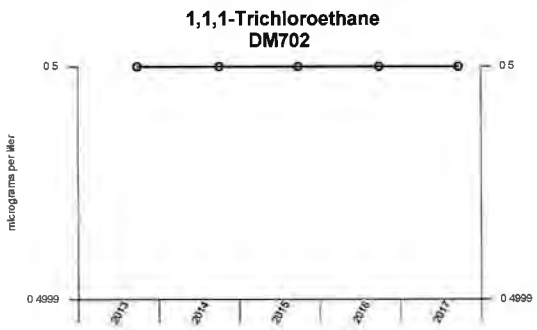
● - Measured Value
○ - Undetected (Displayed at RL)

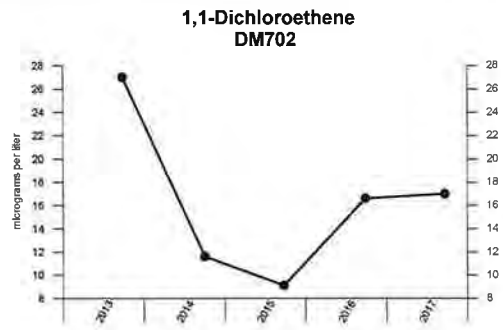
CLEAR CREEK ASSOCIATES

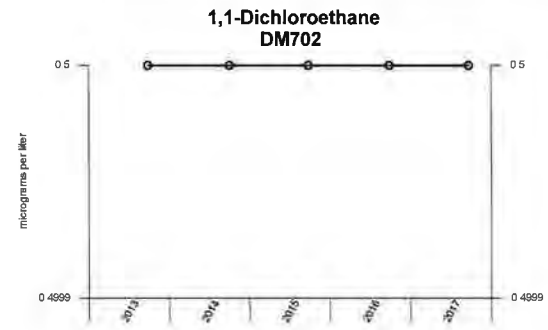
Project Name: MI52 OU1 Effectiveness Report

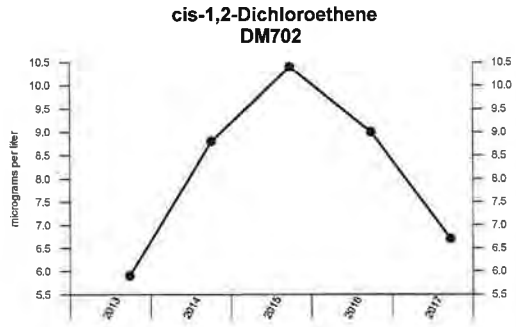
Job No: CC18.1000.00-12 | Date: March 2018

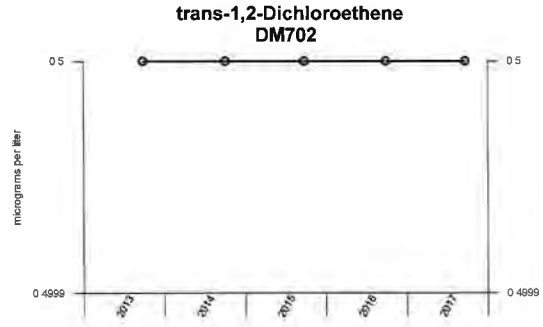
Time-Series Graphs
DM701
MI52 OU1 Effectiveness Report
Phoenix, Arizona

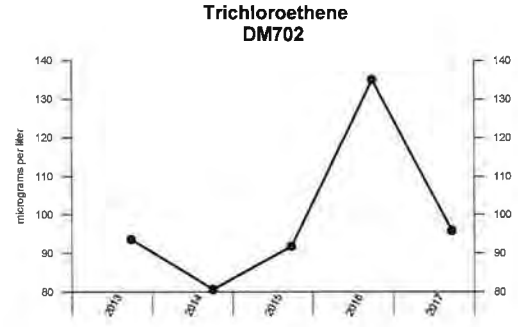


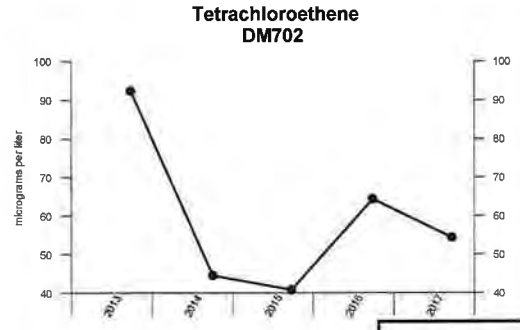


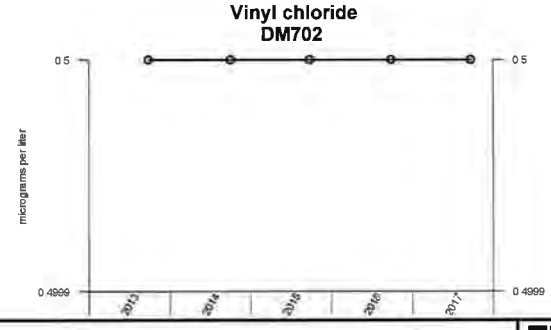


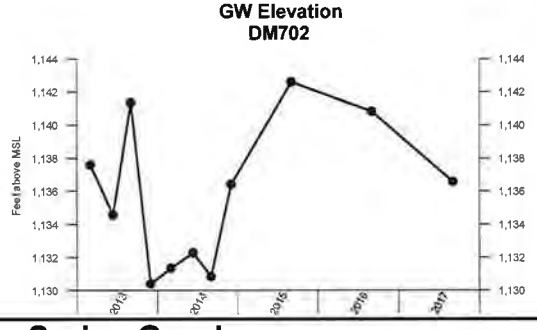












EXPLANATION

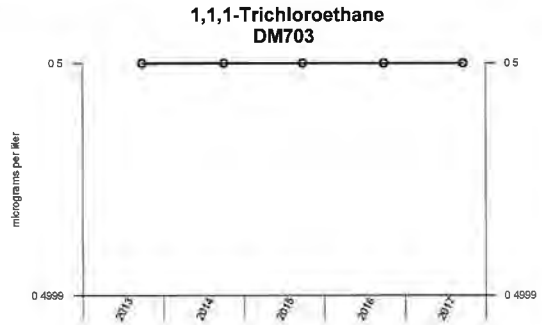
● - Measured Value
○ - Undetected (Displayed at RL)

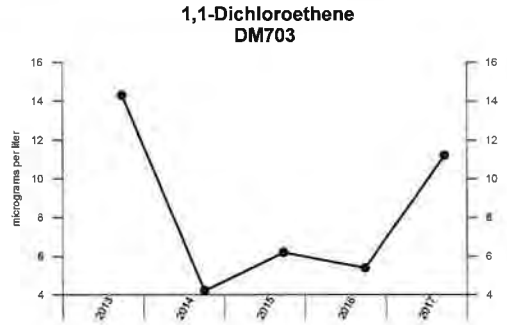
CLEAR CREEK ASSOCIATES

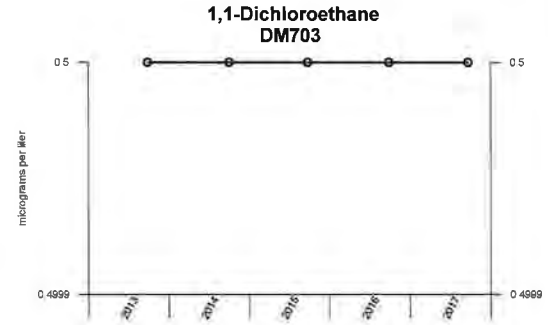
Project Name: MI52 OU1 Effectiveness Report

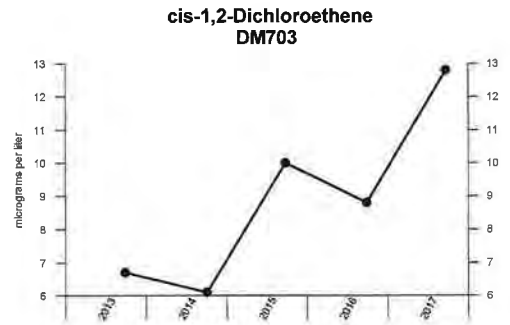
Job No: CC18.1000.00-12 | Date: March 2018

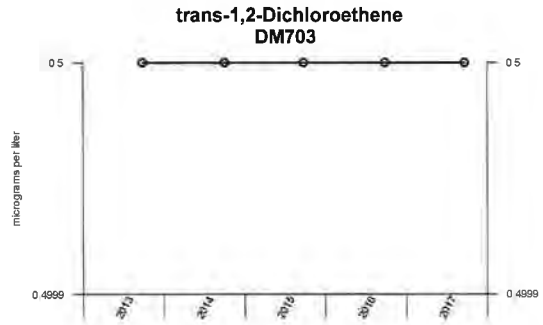
Time-Series Graphs
DM702
MI52 OU1 Effectiveness Report
Phoenix, Arizona

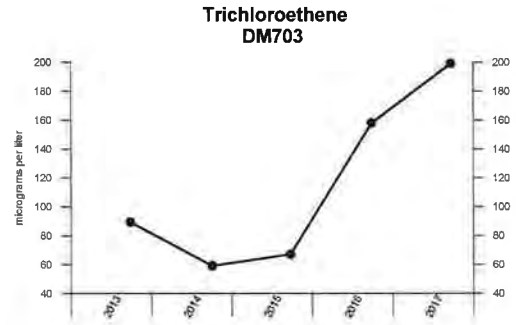


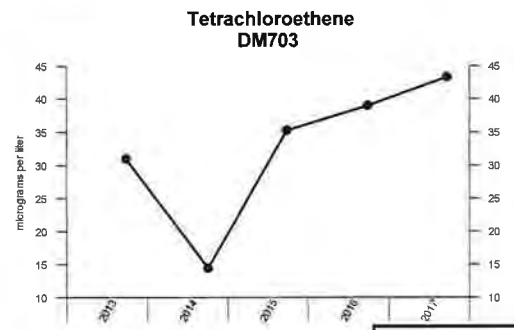


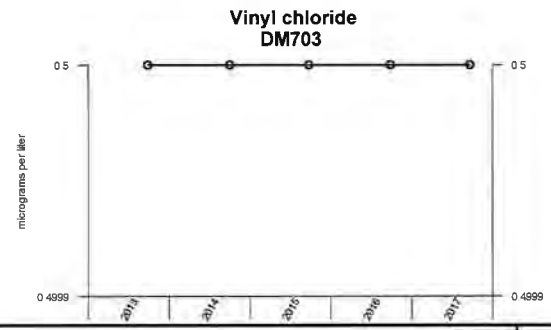


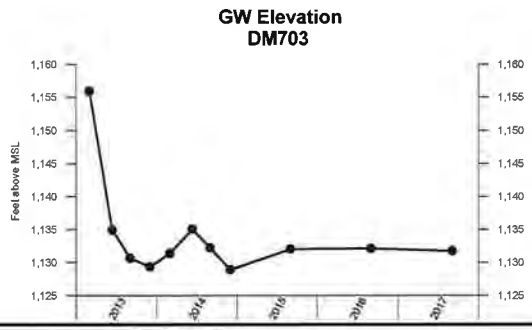












EXPLANATION

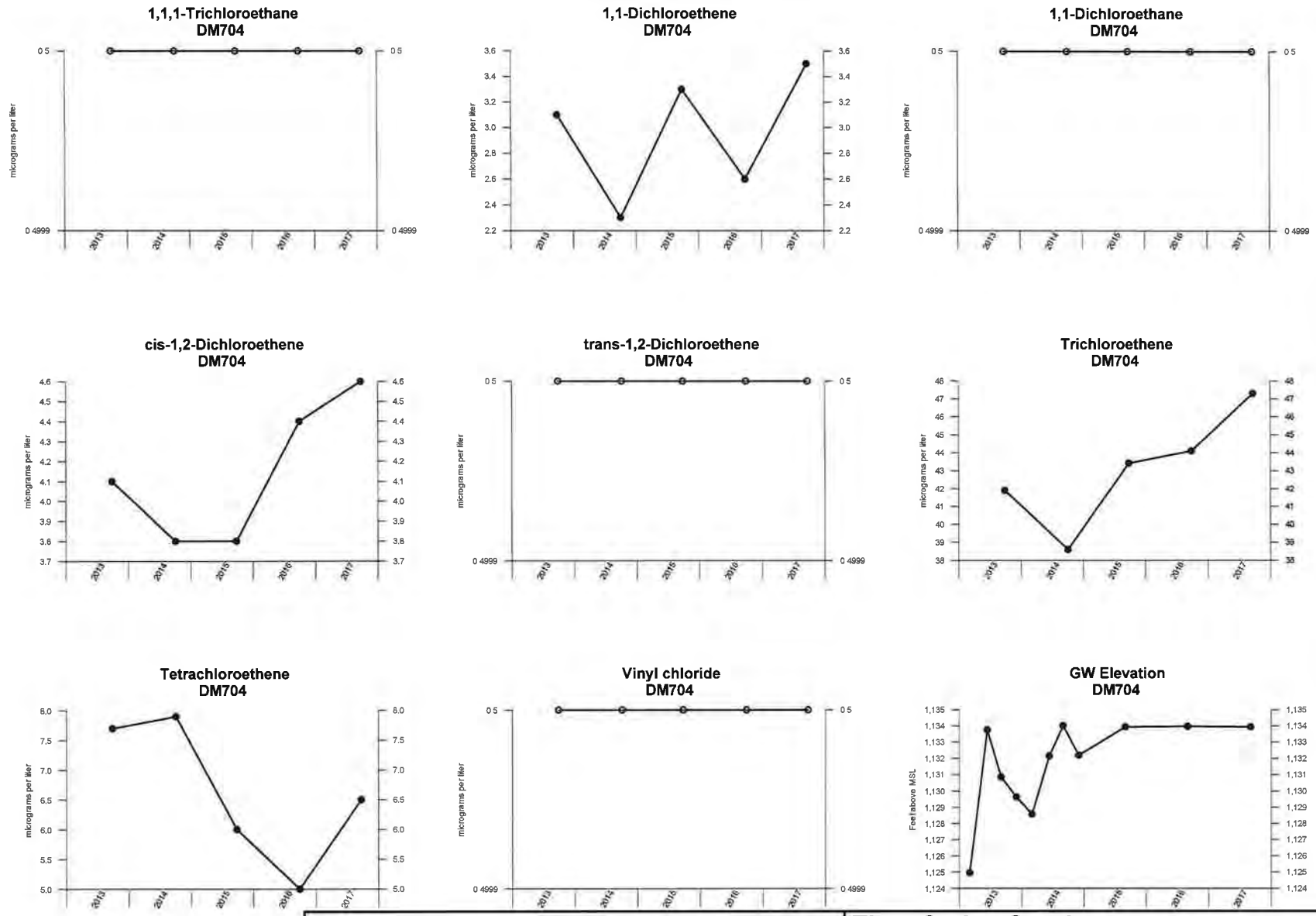
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM703
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

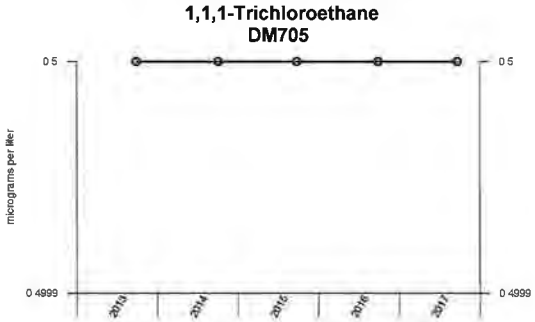
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

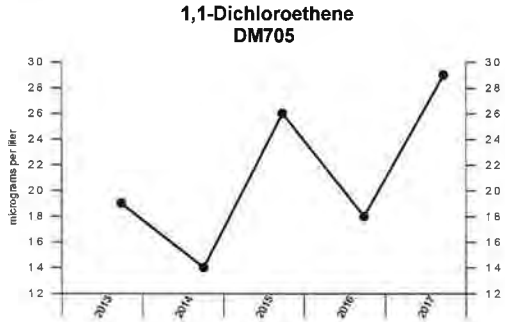
CLEAR CREEK ASSOCIATES

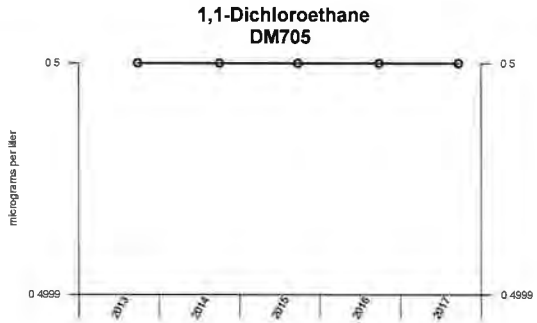
Project Name: MI52 OU1 Effectiveness Report

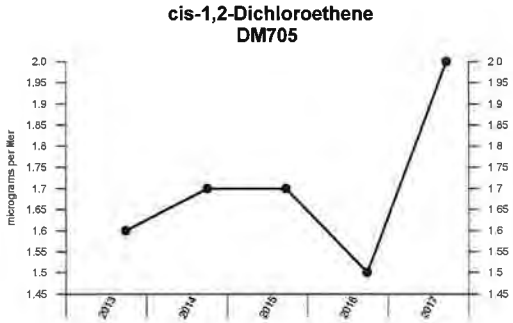
Job No: CC18.1000.00-12 | Date: March 2018

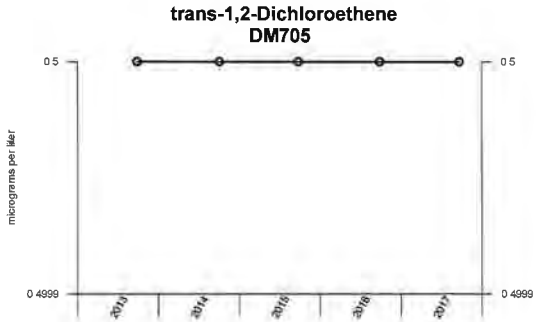
Time-Series Graphs
DM704
MI52 OU1 Effectiveness Report
Phoenix, Arizona

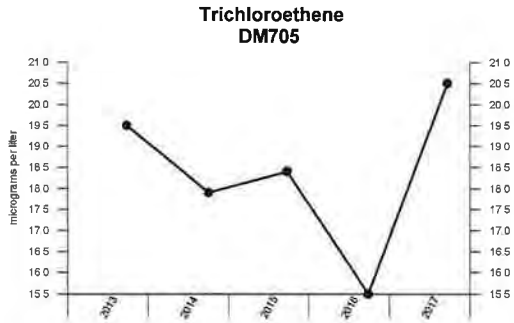


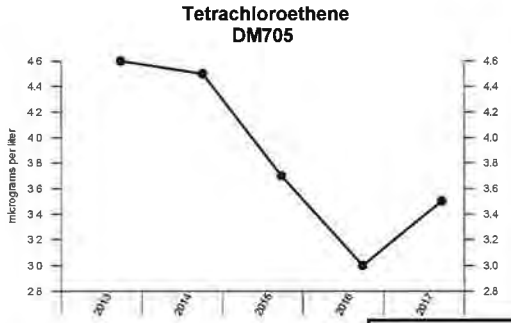


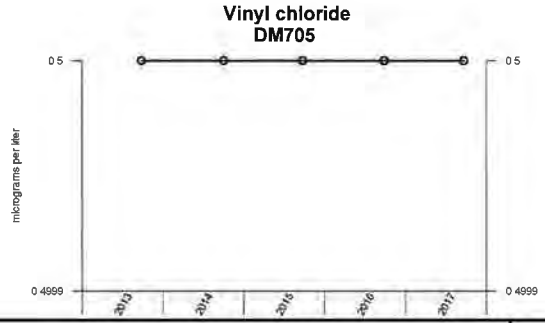


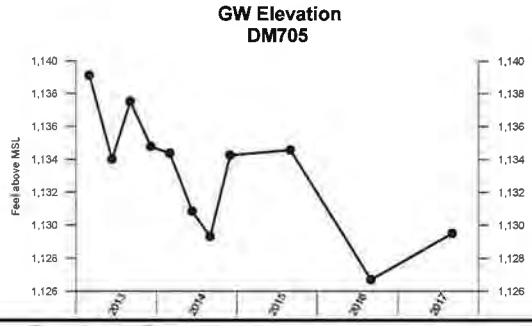












EXPLANATION

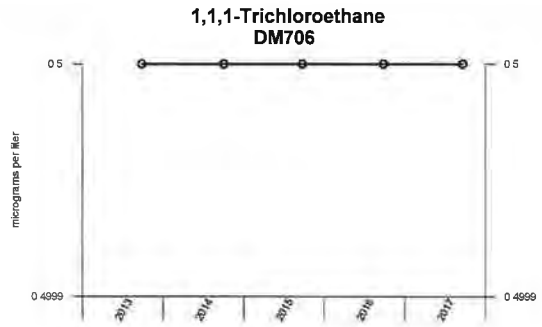
● - Measured Value
○ - Undetected (Displayed at RL)

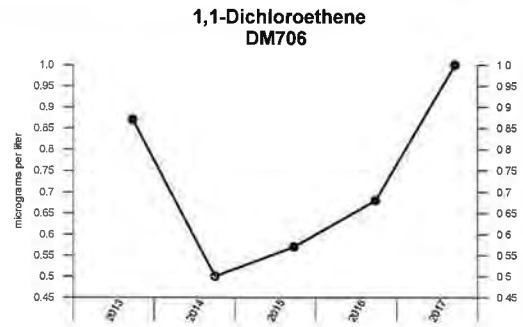
CLEAR CREEK ASSOCIATES

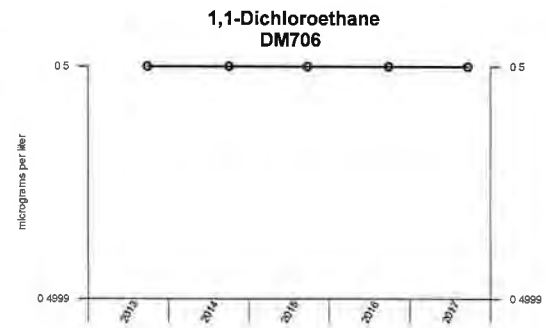
Project Name: MI52 OU1 Effectiveness Report

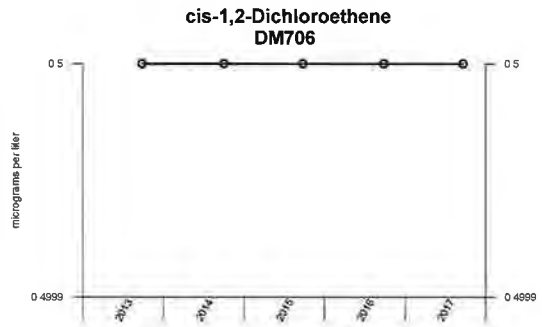
Job No: CC18.1000.00-12 | Date: March 2018

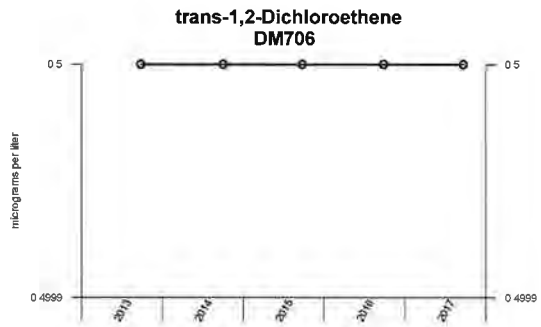
Time-Series Graphs
DM705
MI52 OU1 Effectiveness Report
Phoenix, Arizona

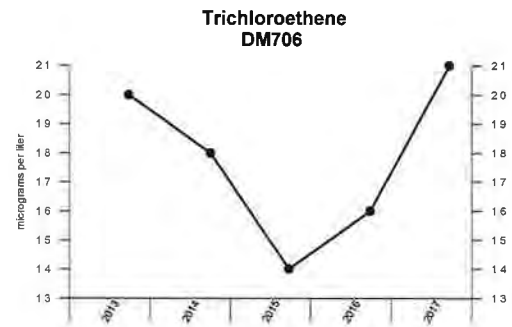


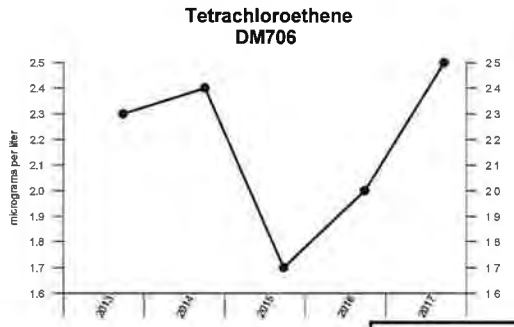


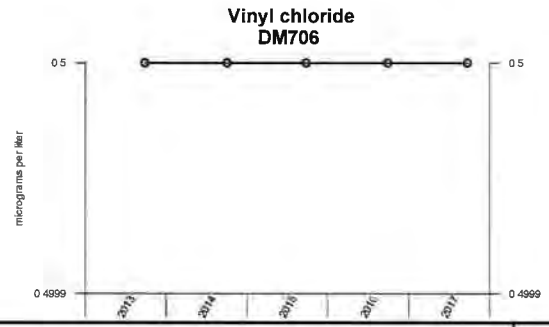


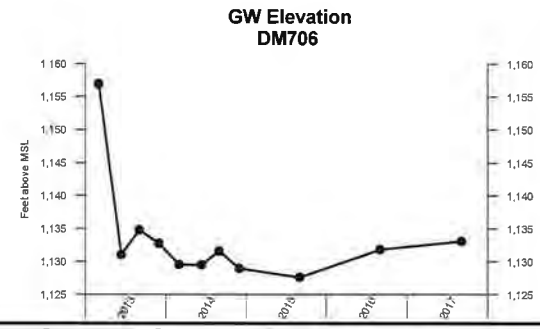












EXPLANATION

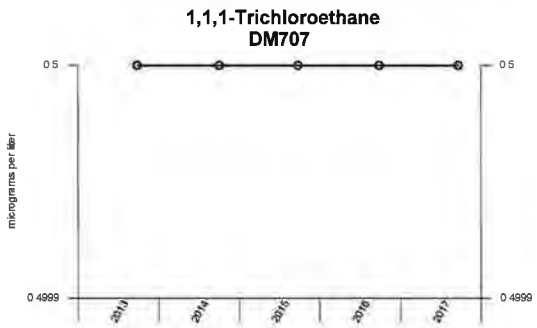
● - Measured Value
○ - Undetected (Displayed at RL)

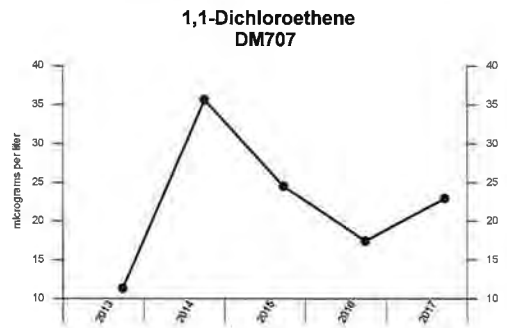
CLEAR CREEK ASSOCIATES

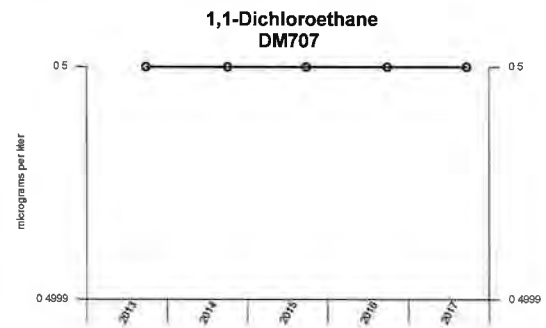
Project Name: MI52 OU1 Effectiveness Report

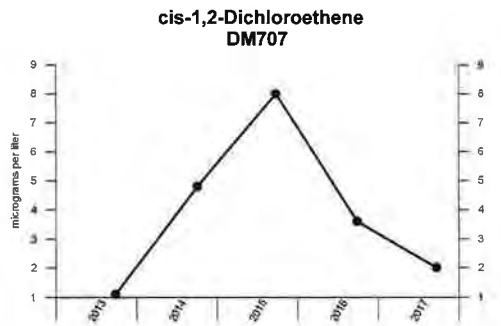
Job No: CC18.1000.00-12 | Date: March 2018

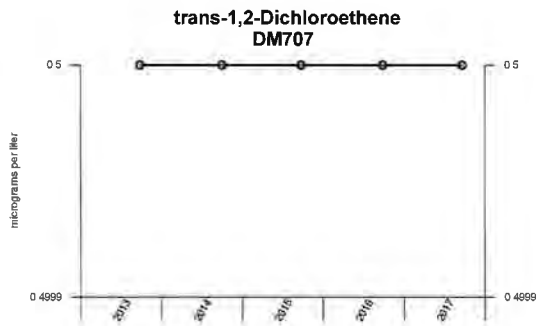
Time-Series Graphs
DM706
MI52 OU1 Effectiveness Report
Phoenix, Arizona

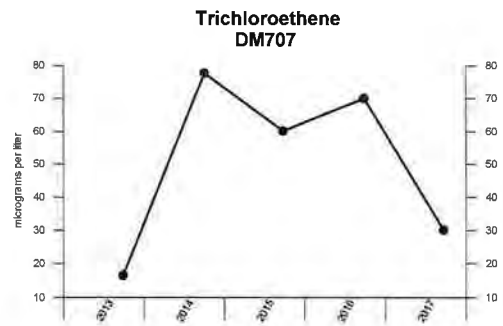


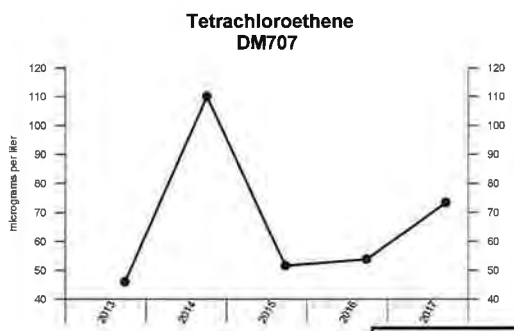


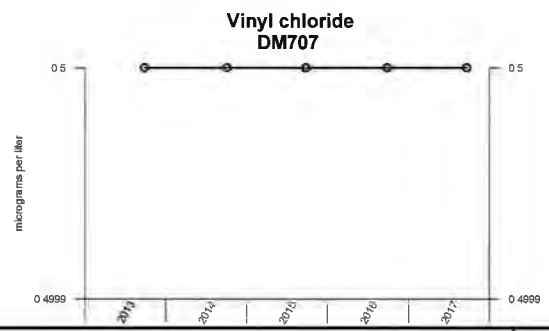


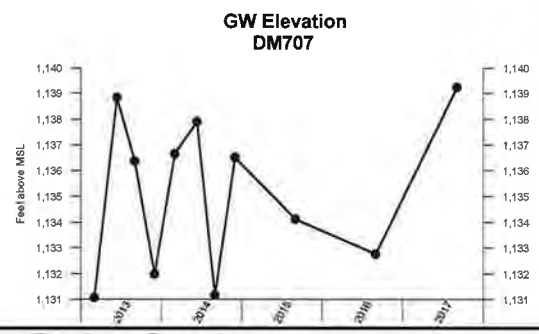












EXPLANATION

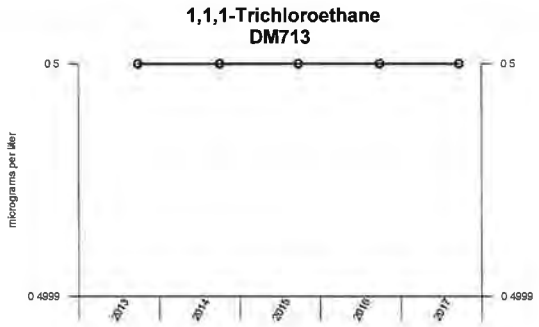
● - Measured Value
○ - Undetected (Displayed at RL)

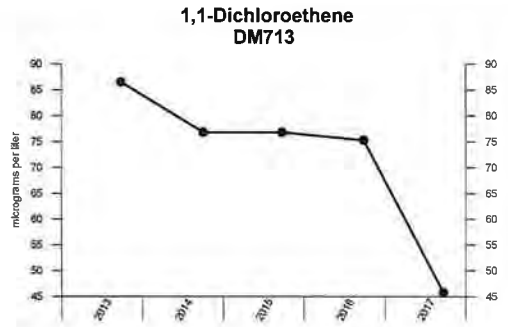
CLEAR CREEK ASSOCIATES

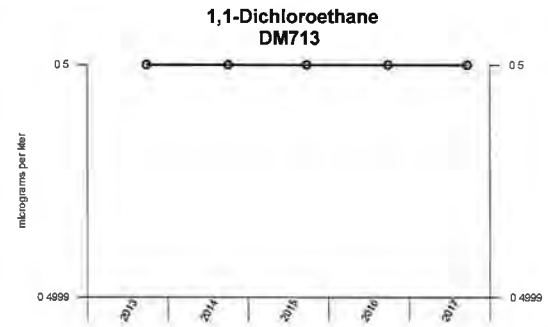
Project Name: MI52 OU1 Effectiveness Report

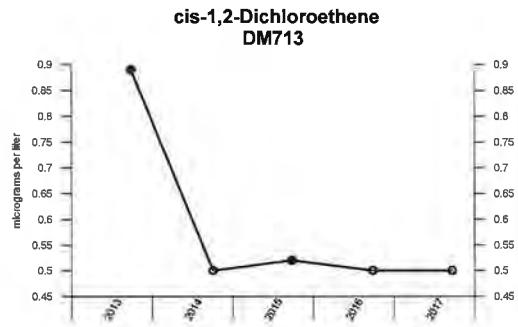
Job No: CC18.1000.00-12 | Date: March 2018

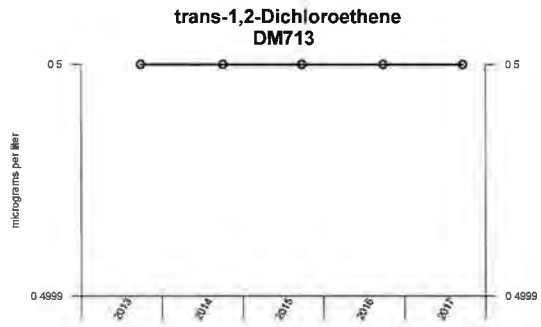
Time-Series Graphs
DM707
MI52 OU1 Effectiveness Report
Phoenix, Arizona

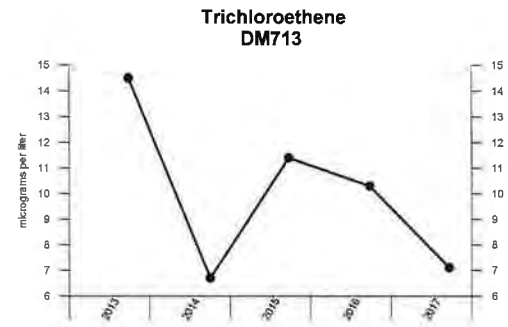


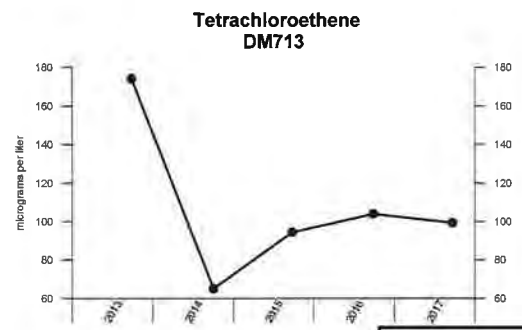


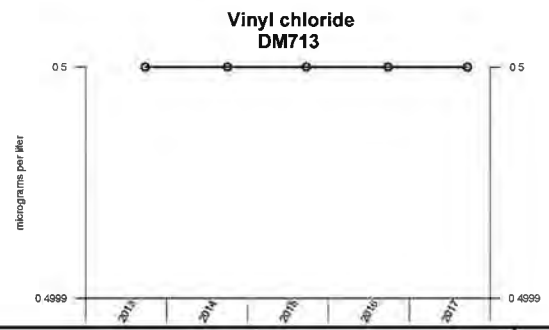


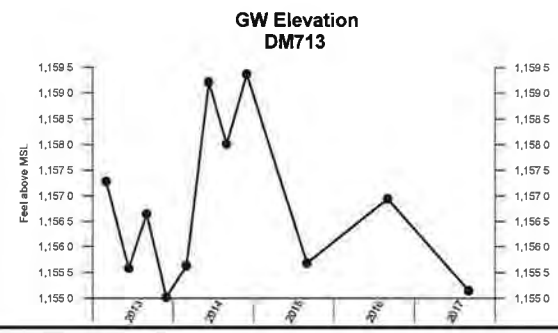












EXPLANATION

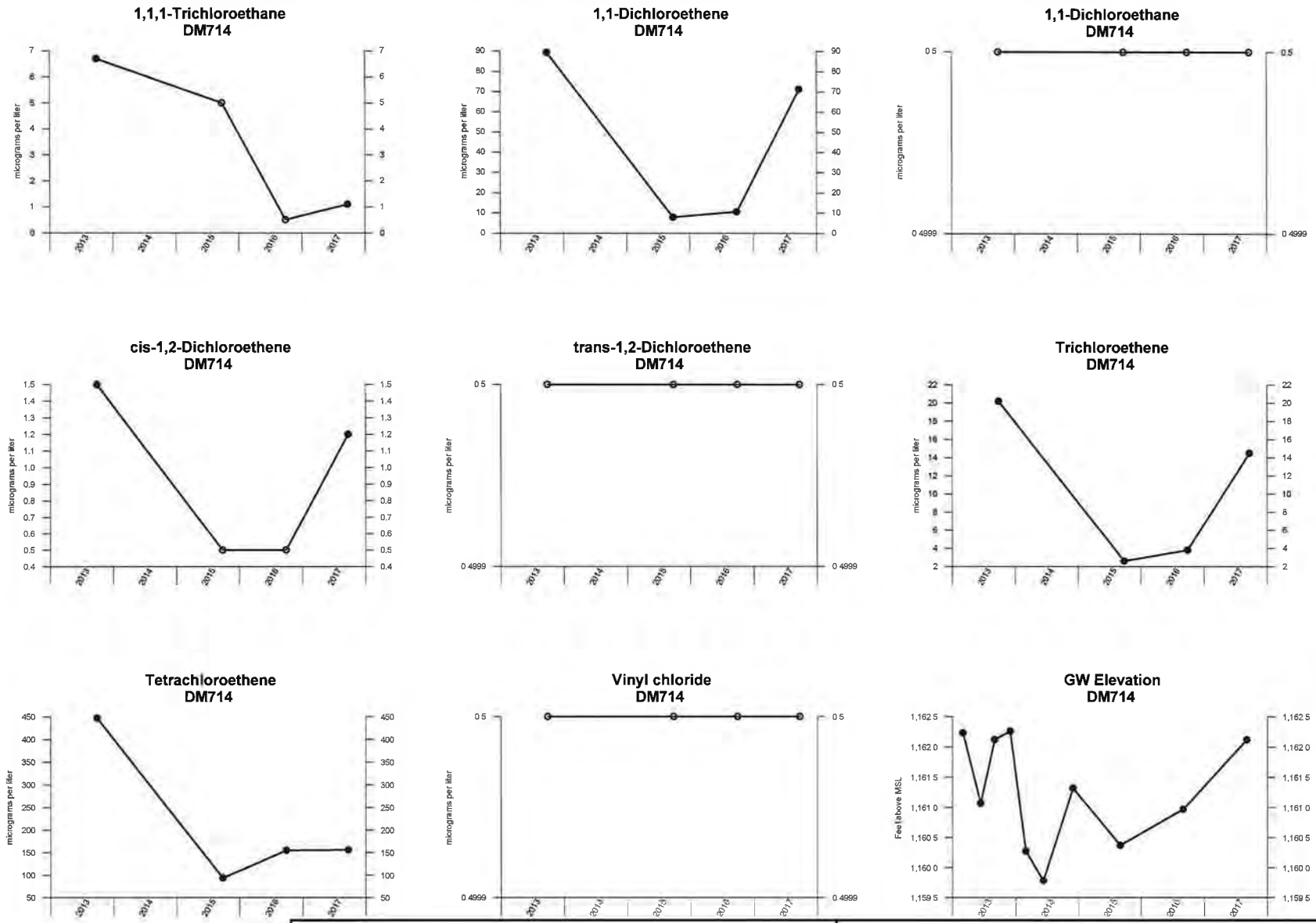
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM713
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

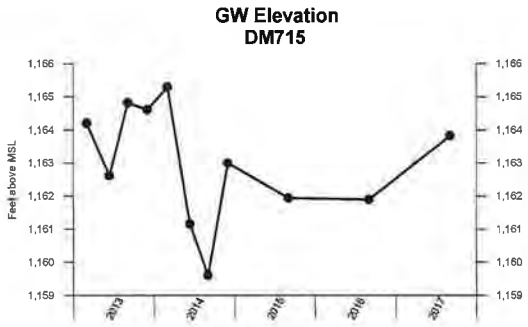
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM714
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

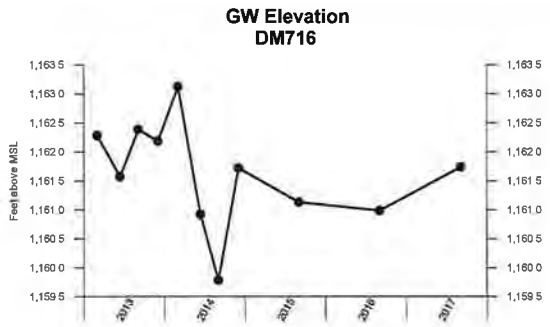
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM715
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

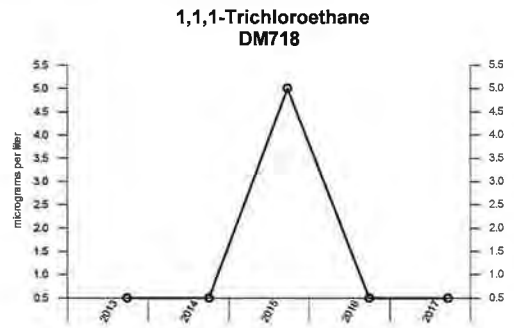
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

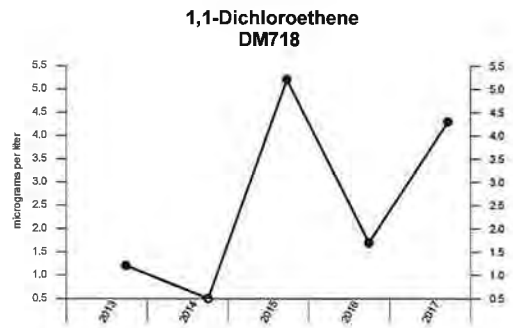
CLEAR CREEK ASSOCIATES

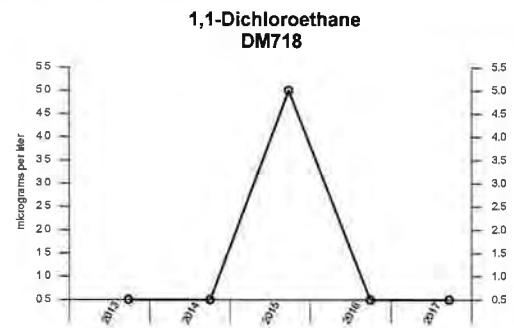
Project Name: MI52 OU1 Effectiveness Report

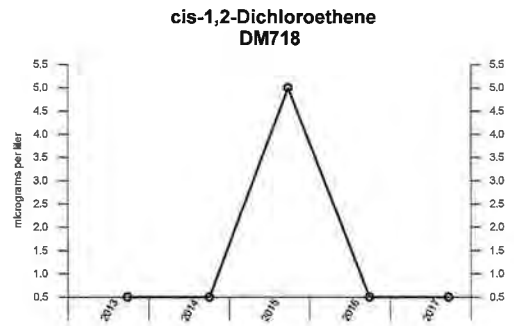
Job No: CC18.1000.00-12 | Date: March 2018

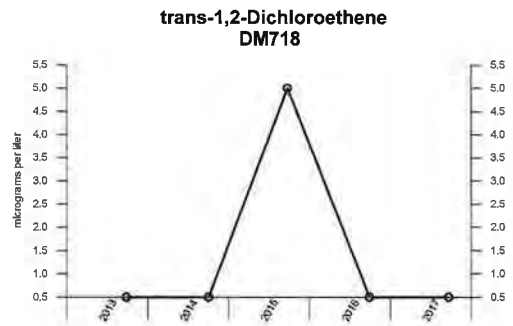
Time-Series Graphs
DM716
MI52 OU1 Effectiveness Report
Phoenix, Arizona

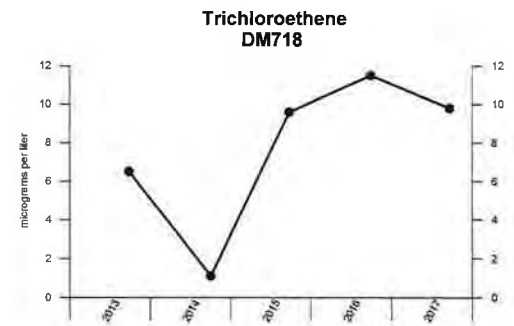


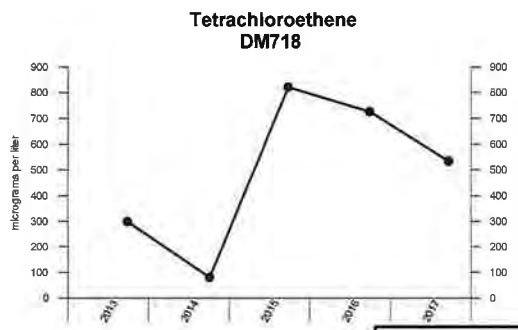


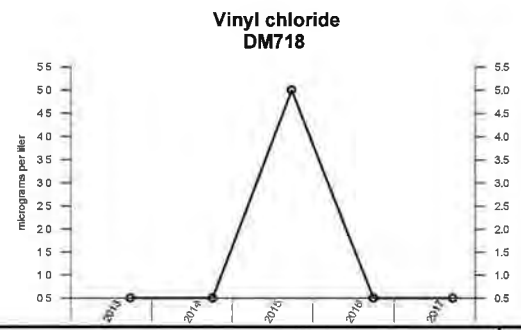


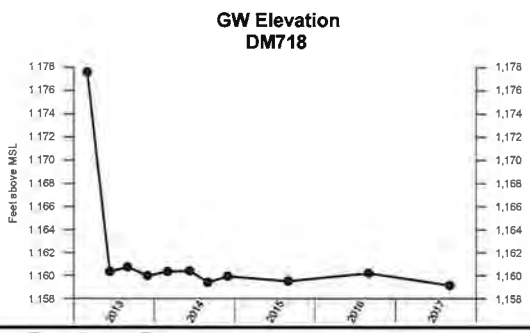












EXPLANATION

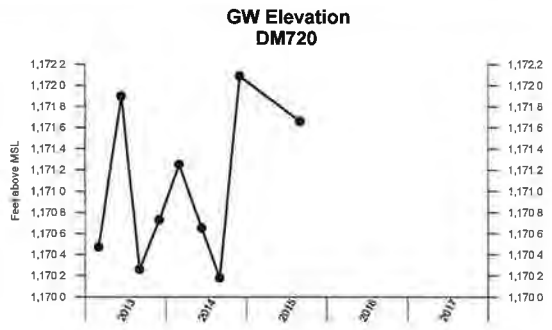
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM718
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

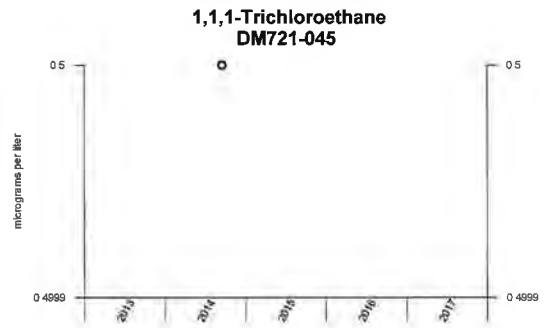
● - Measured Value
○ - Undetected (Displayed at RL)

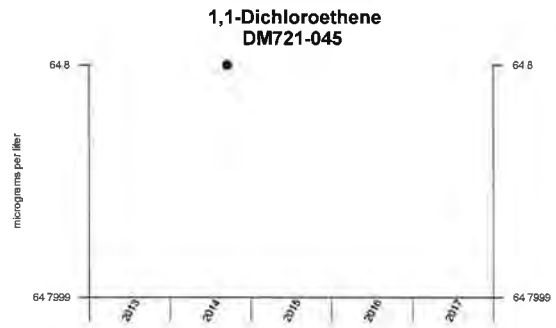
CLEAR CREEK ASSOCIATES

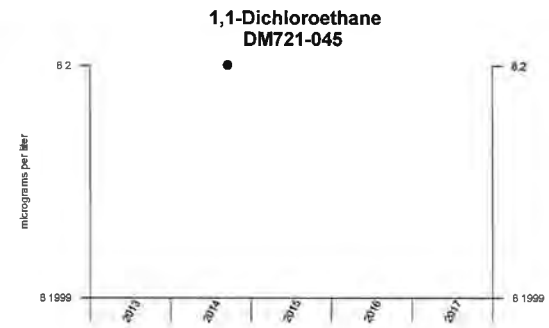
Project Name: MI52 OU1 Effectiveness Report

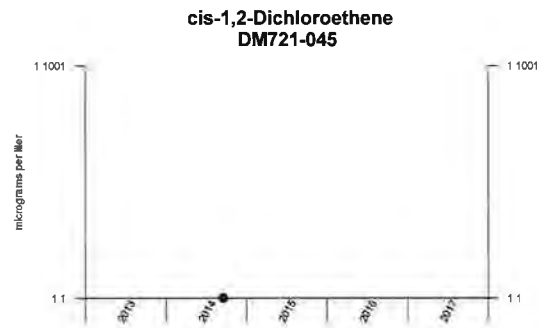
Job No: CC18.1000.00-12 | Date: March 2018

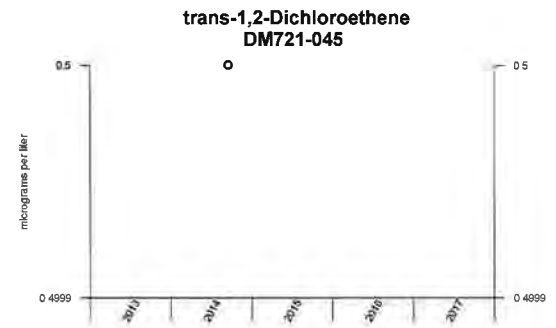
Time-Series Graphs
DM720
MI52 OU1 Effectiveness Report
Phoenix, Arizona

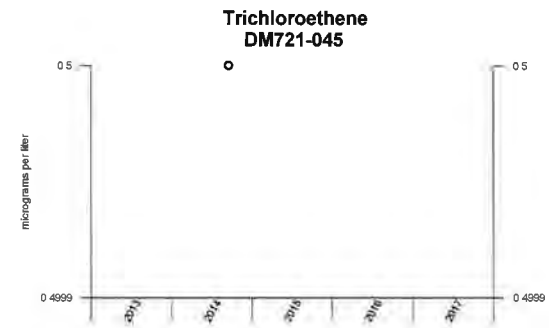


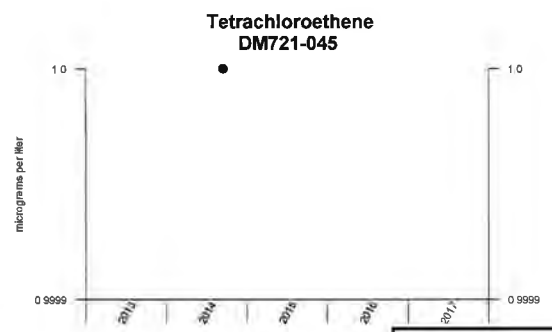


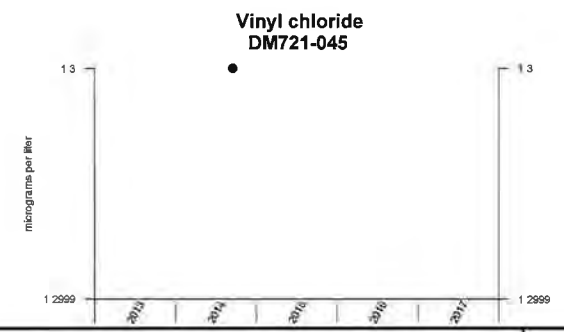


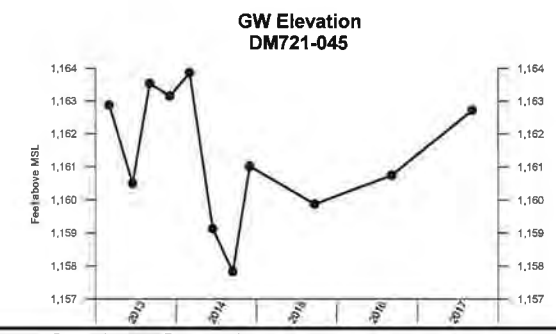












EXPLANATION

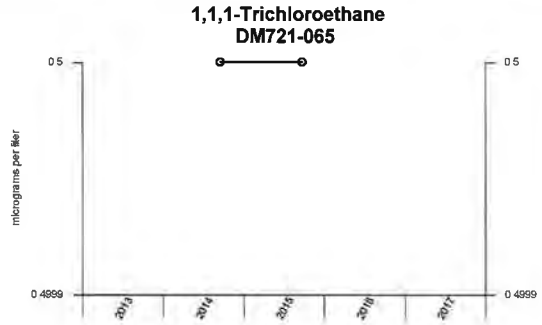
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

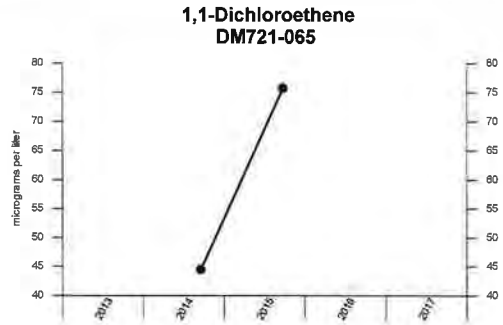
CLEAR CREEK ASSOCIATES

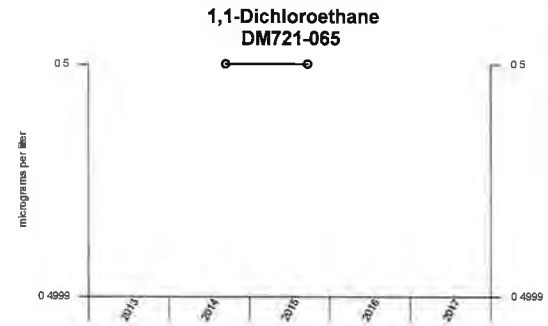
Project Name: MI52 OU1 Effectiveness Report

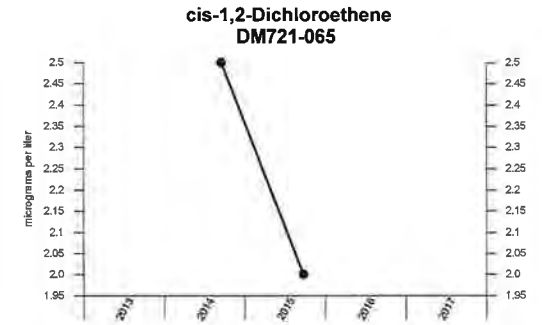
Job No: CC18.1000.00-12 | Date: March 2018

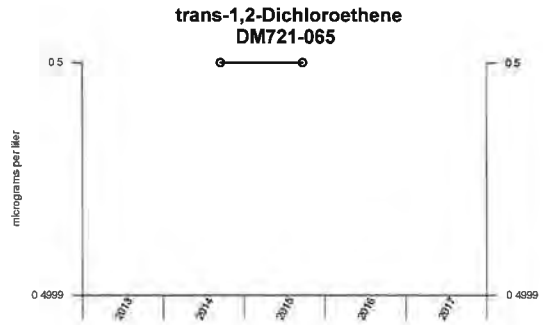
Time-Series Graphs
DM721-045
MI52 OU1 Effectiveness Report
Phoenix, Arizona

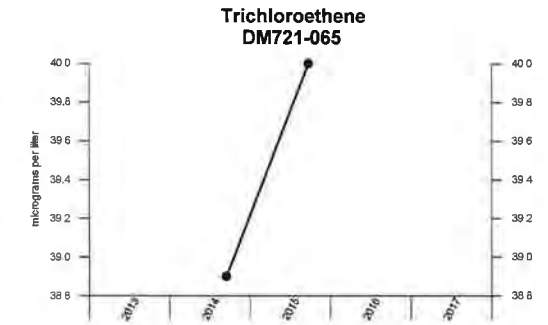


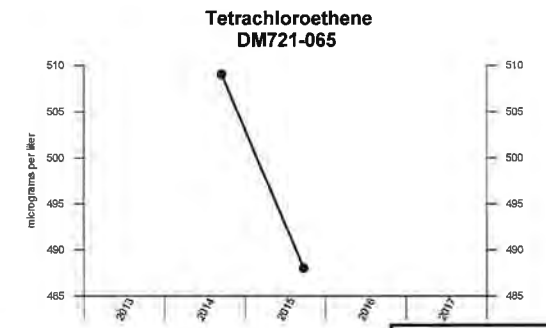


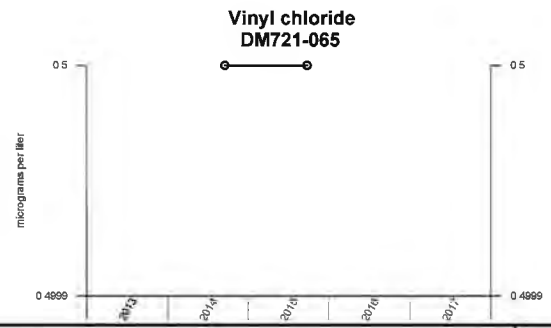


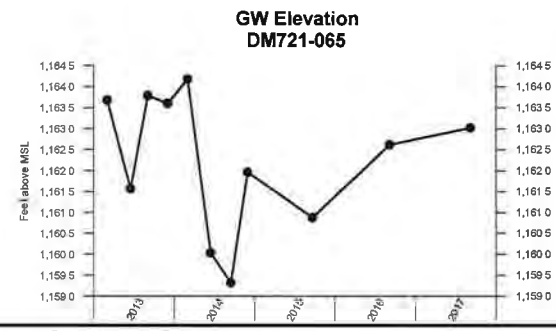












EXPLANATION

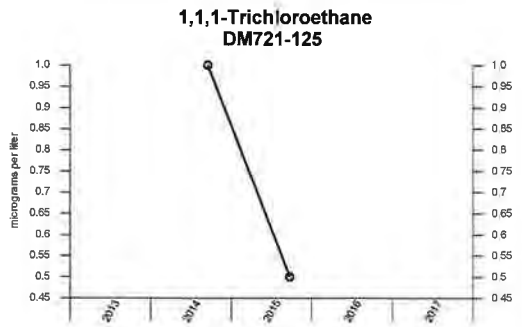
● - Measured Value
○ - Undetected (Displayed at RL)

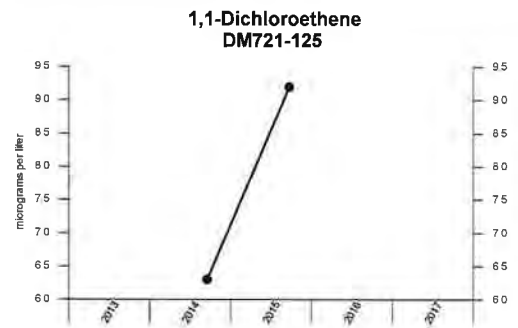
CLEAR CREEK ASSOCIATES

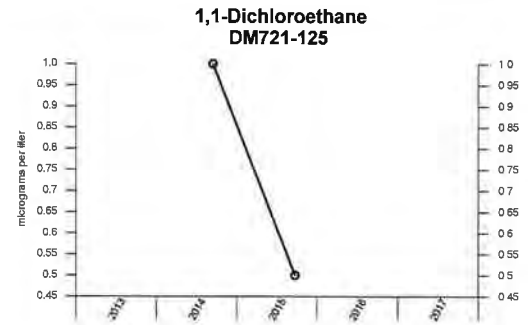
Project Name: MI52 OU1 Effectiveness Report

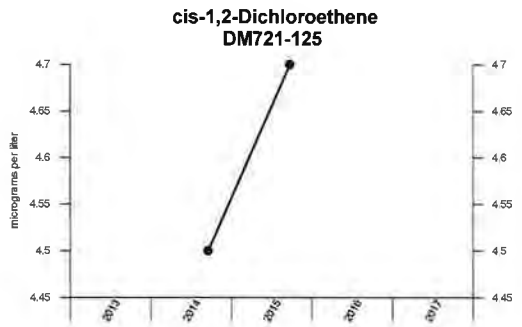
Job No: CC18.1000.00-12 | Date: March 2018

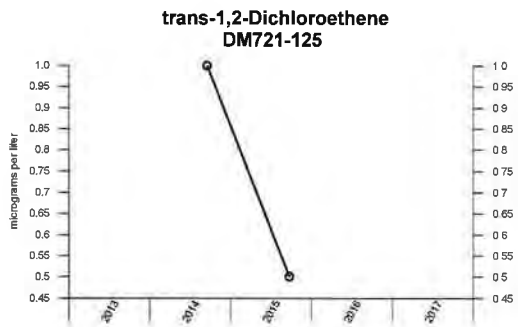
Time-Series Graphs
DM721-065
MI52 OU1 Effectiveness Report
Phoenix, Arizona

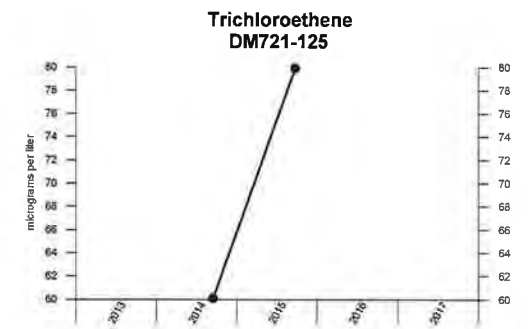


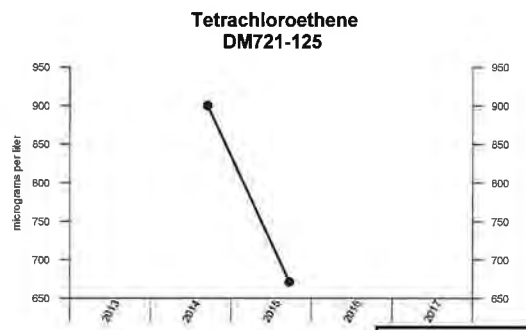


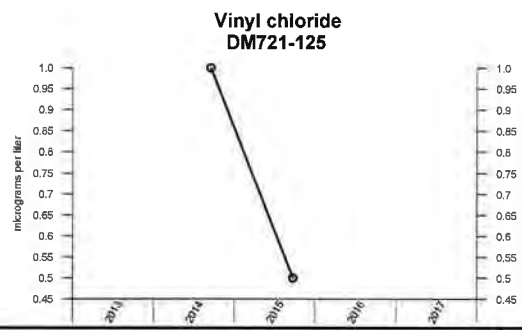


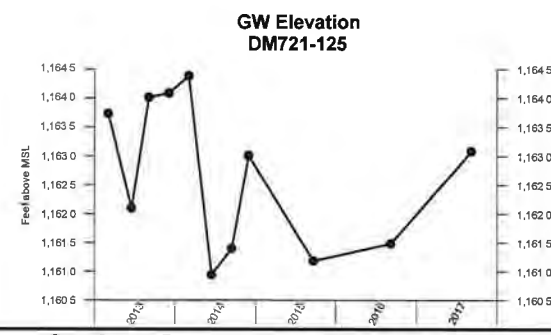












EXPLANATION

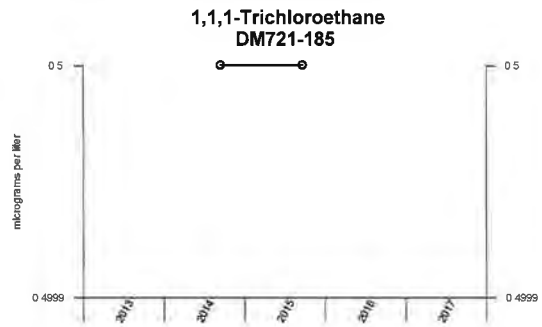
● - Measured Value
○ - Undetected (Displayed at RL)

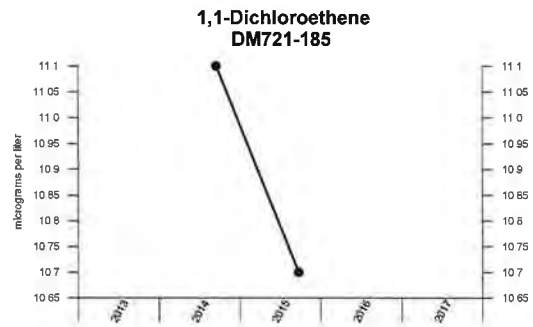
CLEAR CREEK ASSOCIATES

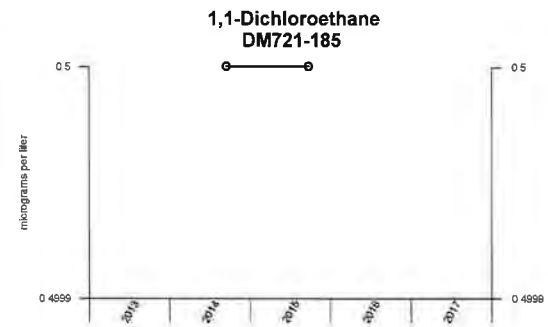
Project Name: MI52 OU1 Effectiveness Report

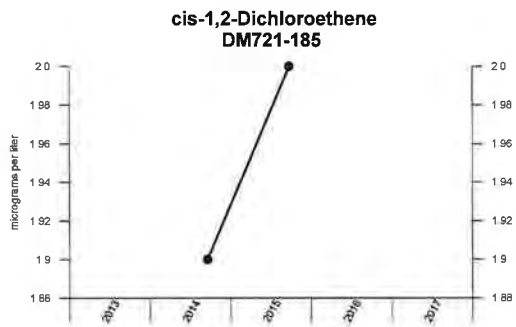
Job No: CC18.1000.00-12 | Date: March 2018

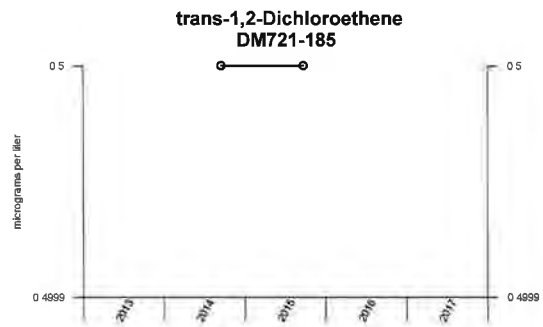
Time-Series Graphs
DM721-125
MI52 OU1 Effectiveness Report
Phoenix, Arizona

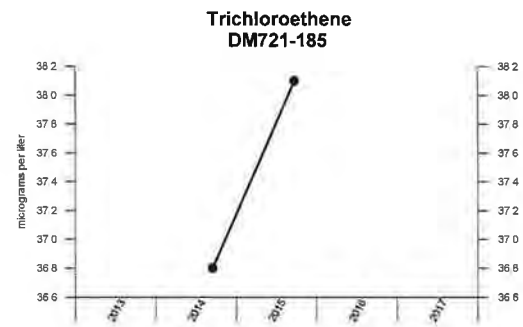


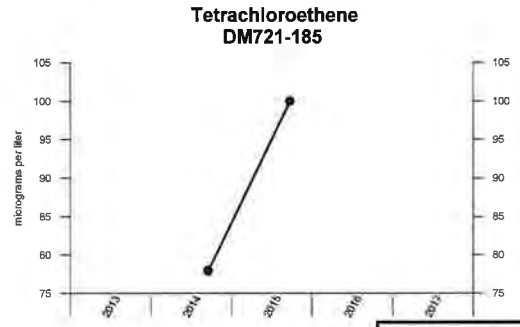


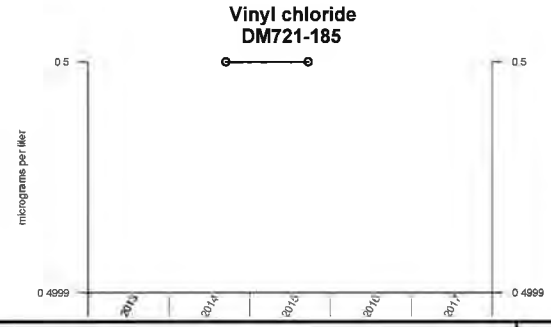


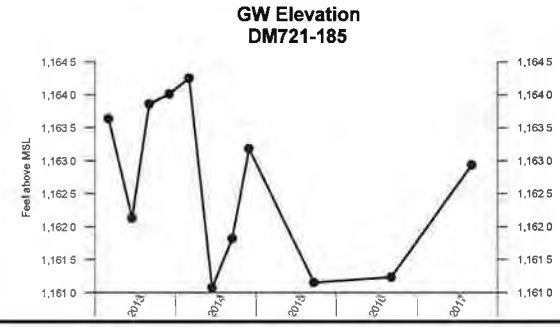












EXPLANATION

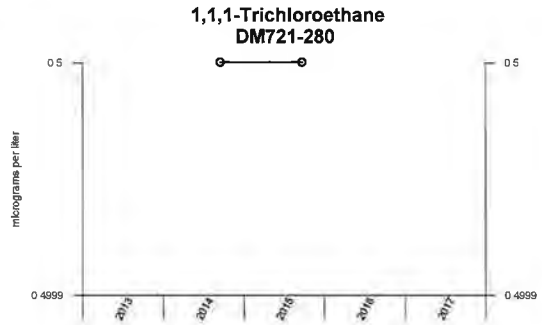
● - Measured Value
○ - Undetected (Displayed at RL)

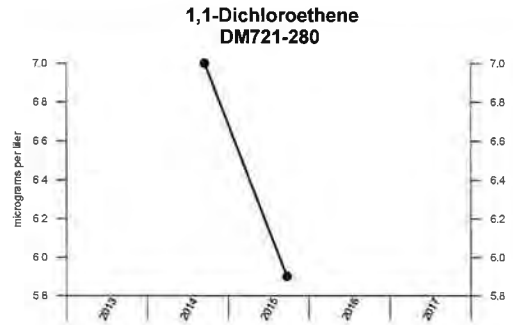
CLEAR CREEK ASSOCIATES

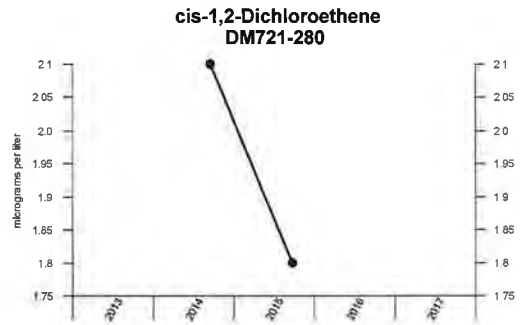
Project Name: MI52 OU1 Effectiveness Report

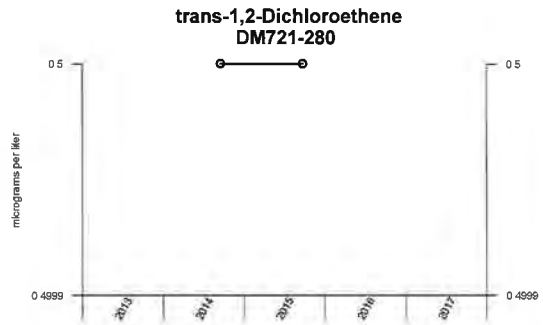
Job No: CC18.1000.00-12 | Date: March 2018

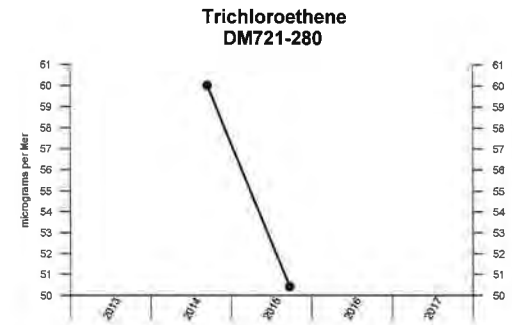
Time-Series Graphs
DM721-185
MI52 OU1 Effectiveness Report
Phoenix, Arizona

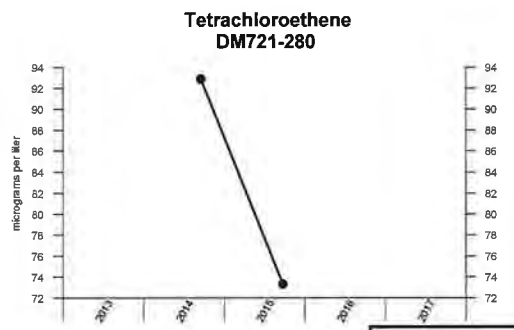


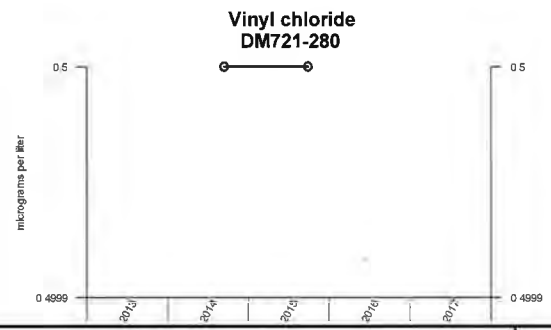


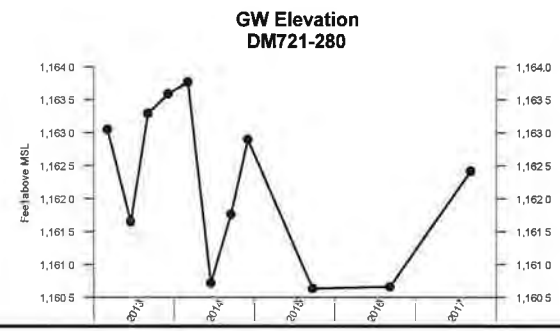












EXPLANATION

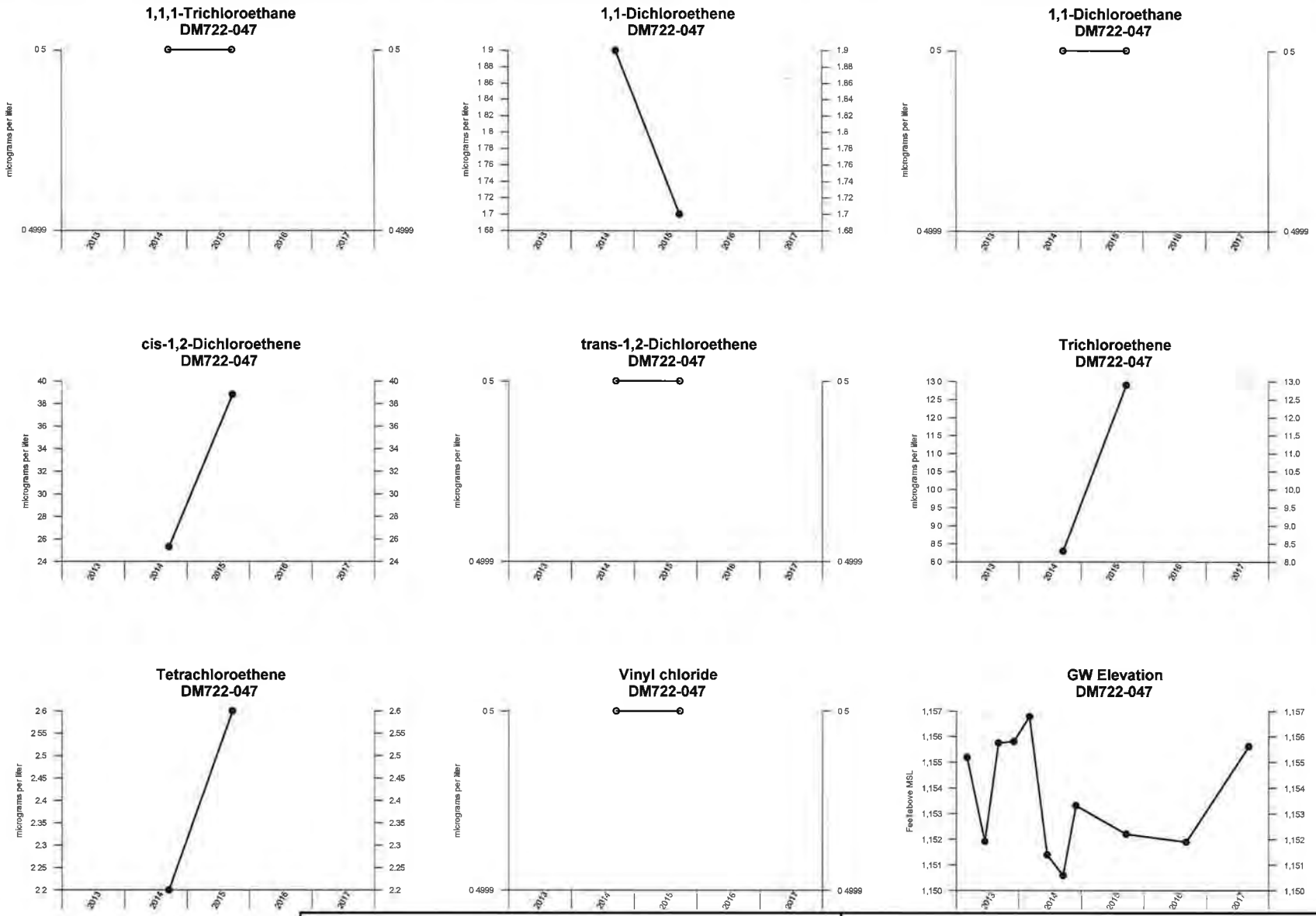
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM721-280
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

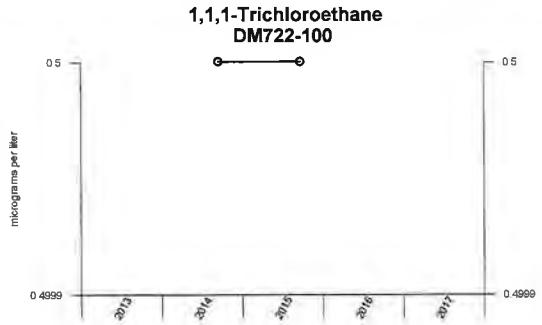
● - Measured Value
○ - Undetected (Displayed at RL)

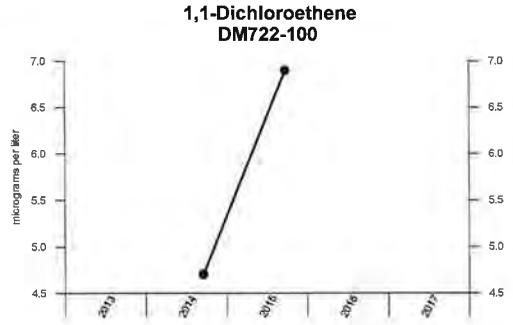
CLEAR CREEK ASSOCIATES

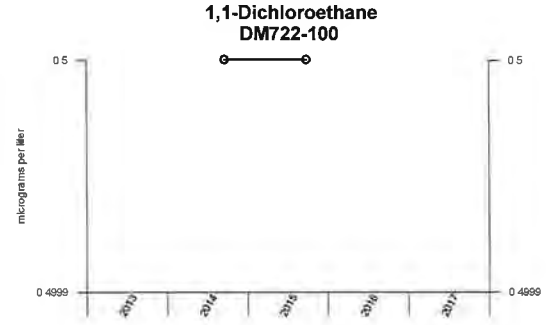
Project Name: MI52 OU1 Effectiveness Report

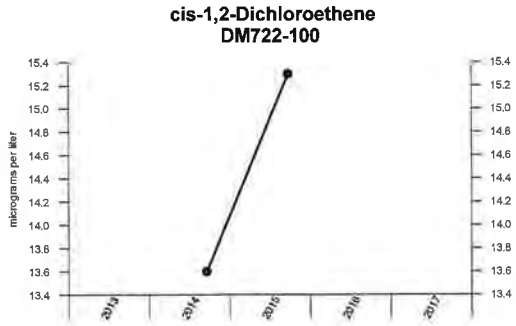
Job No: CC18.1000.00-12 | Date: March 2018

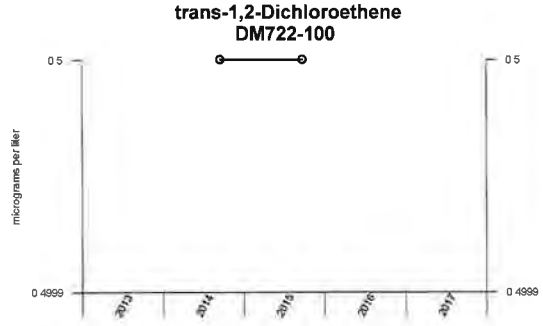
Time-Series Graphs
DM722-047
MI52 OU1 Effectiveness Report
Phoenix, Arizona

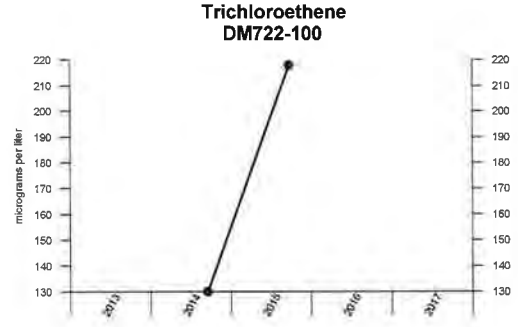


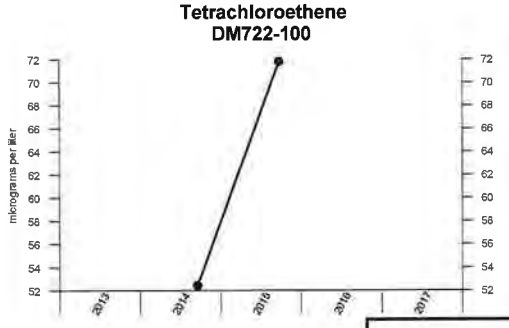


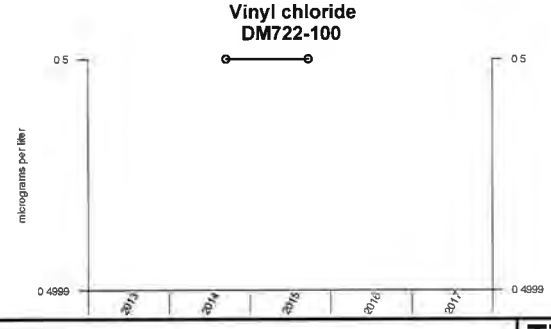


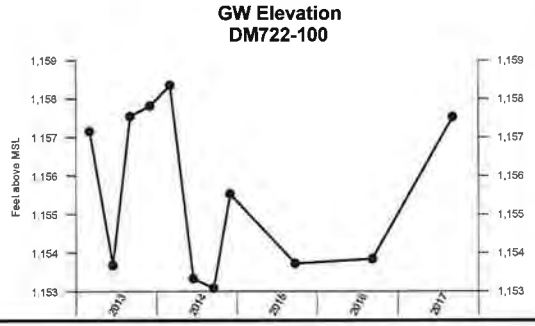












EXPLANATION

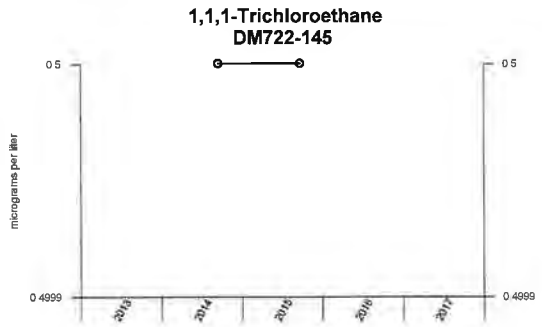
● - Measured Value
○ - Undetected (Displayed at RL)

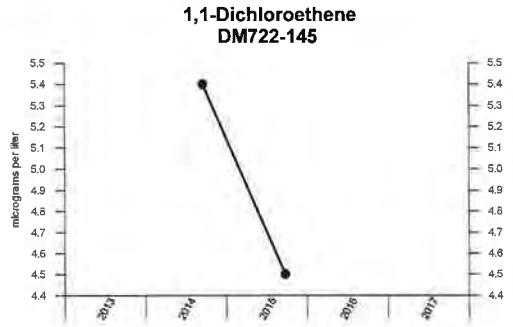
CLEAR CREEK ASSOCIATES

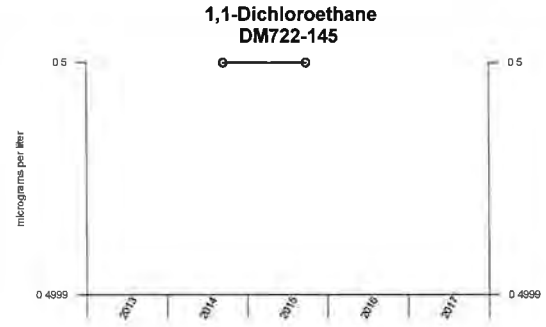
Project Name: MI52 OU1 Effectiveness Report

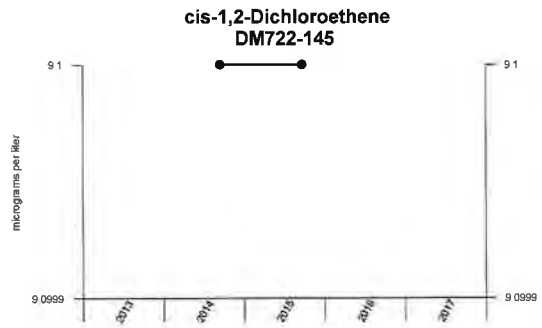
Job No: CC18.1000.00-12 | Date: March 2018

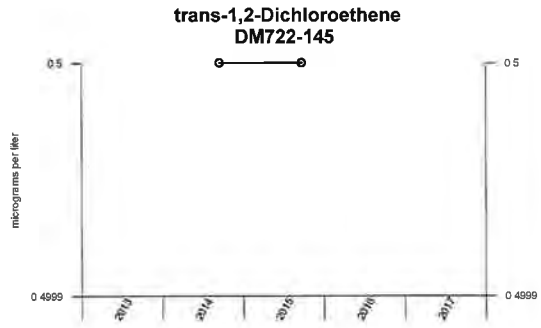
Time-Series Graphs
DM722-100
MI52 OU1 Effectiveness Report
Phoenix, Arizona

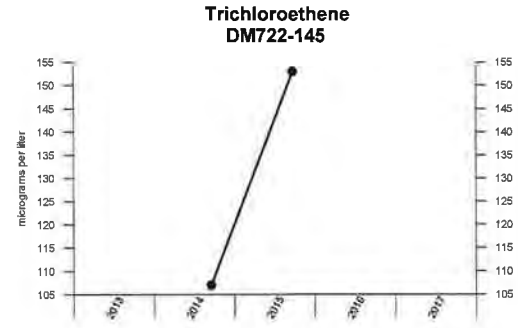


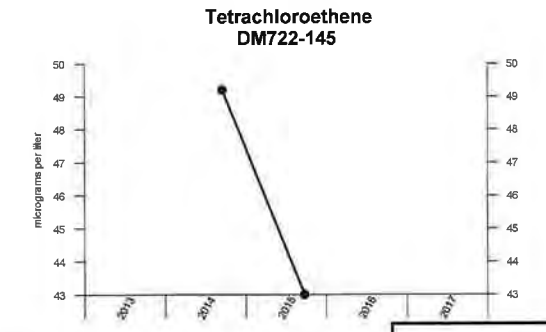


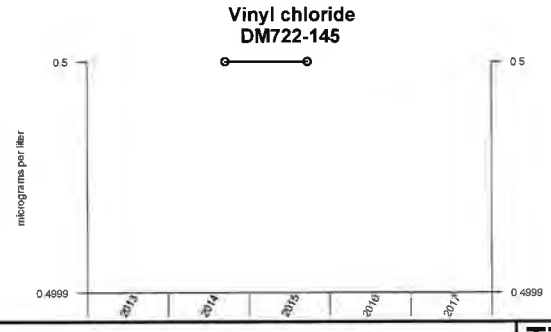


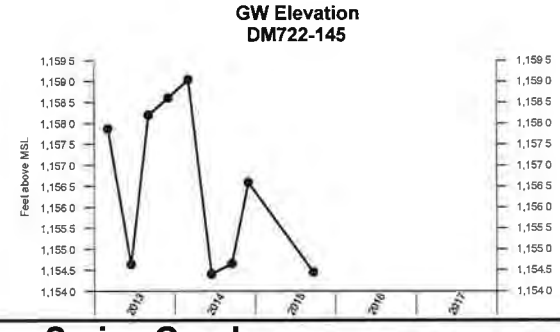












EXPLANATION

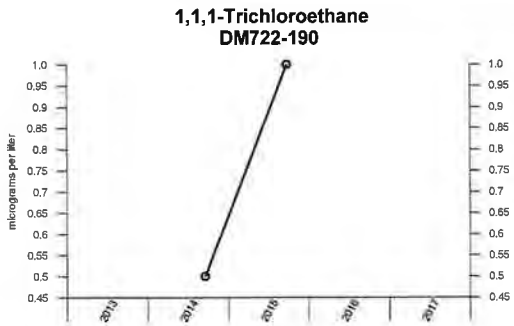
● - Measured Value
○ - Undetected (Displayed at RL)

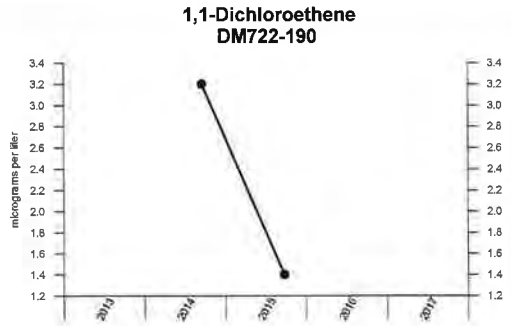
CLEAR CREEK ASSOCIATES

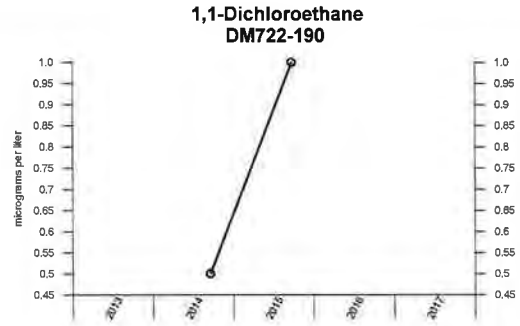
Project Name: MI52 OU1 Effectiveness Report

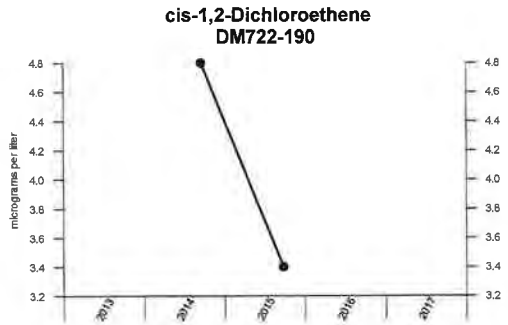
Job No: CC18.1000.00-12 | Date: March 2018

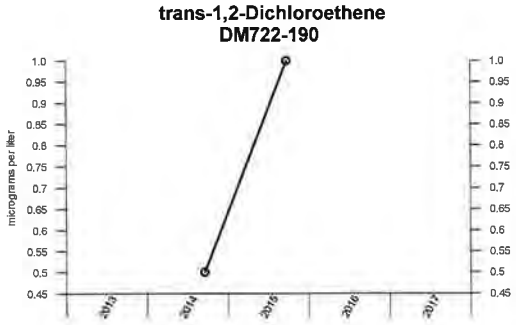
Time-Series Graphs
DM722-145
MI52 OU1 Effectiveness Report
Phoenix, Arizona

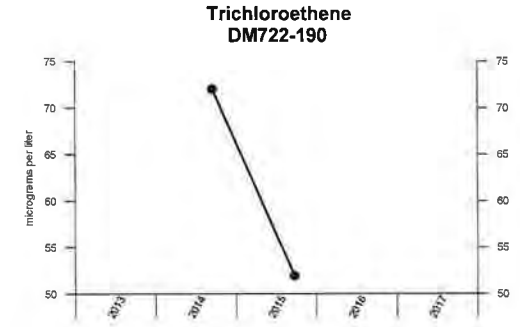


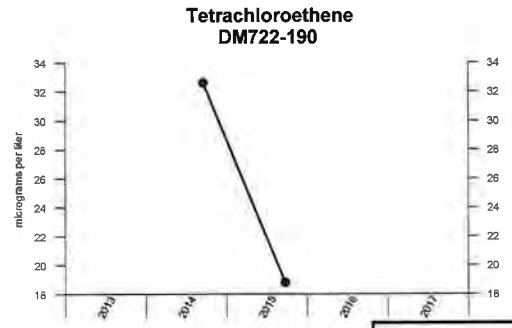


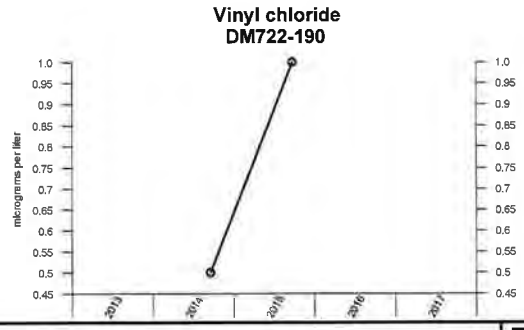


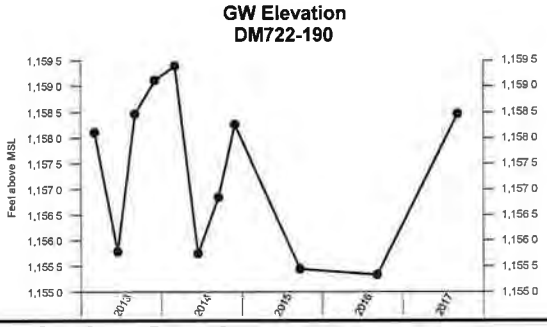












EXPLANATION

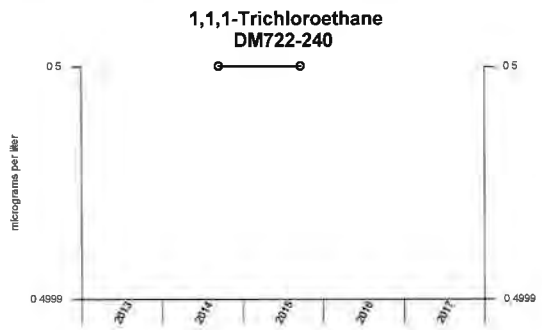
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

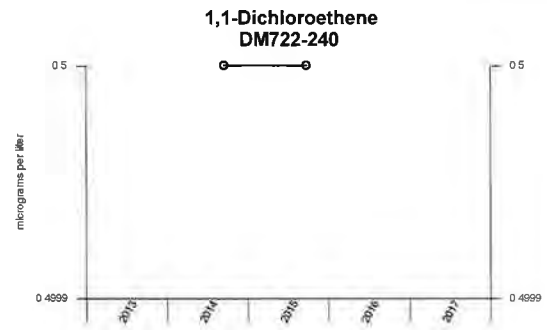
CLEAR CREEK ASSOCIATES

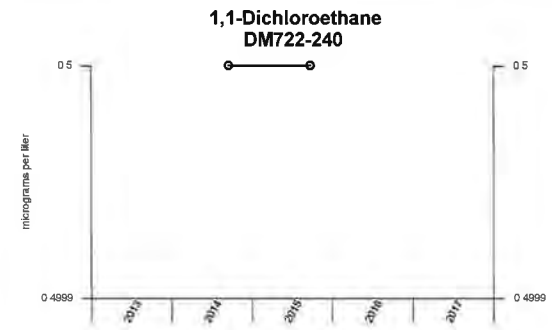
Project Name: MI52 OU1 Effectiveness Report

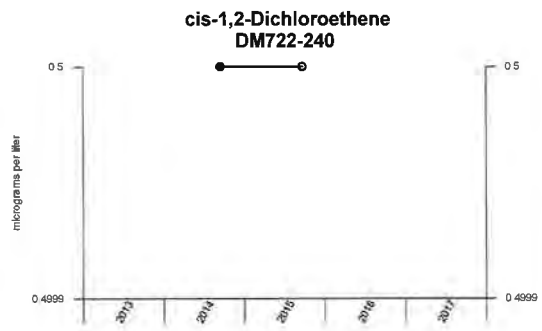
Job No: CC18.1000.00-12 | Date: March 2018

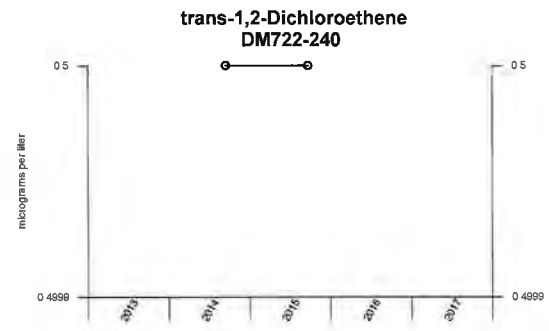
Time-Series Graphs
DM722-190
MI52 OU1 Effectiveness Report
Phoenix, Arizona

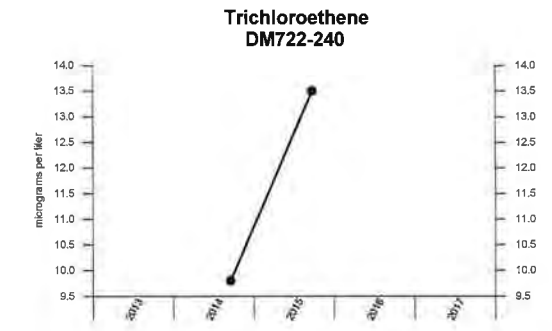


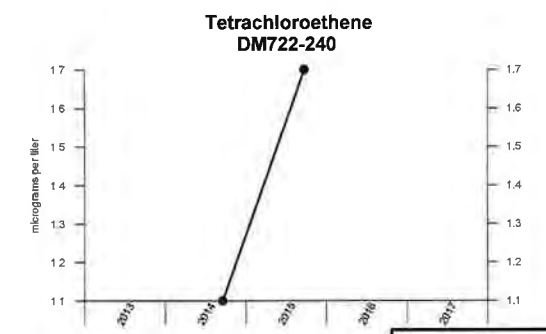


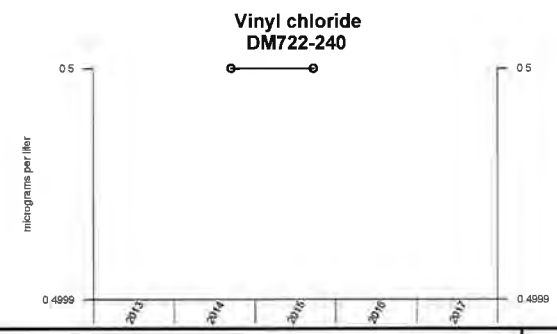


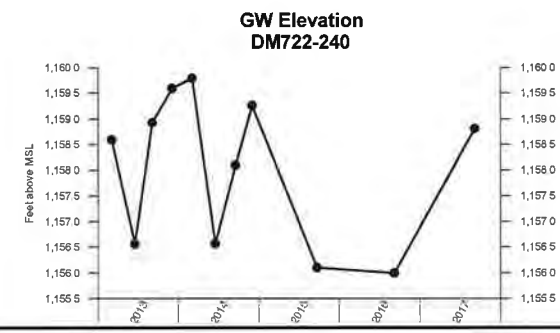












EXPLANATION

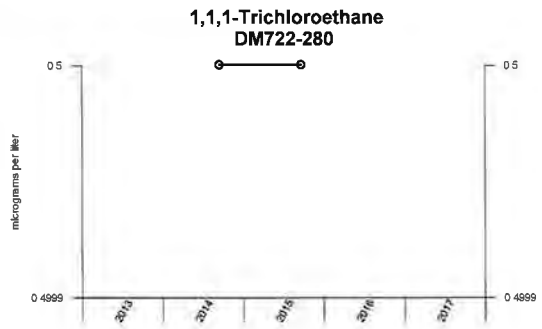
● - Measured Value
○ - Undetected (Displayed at RL)

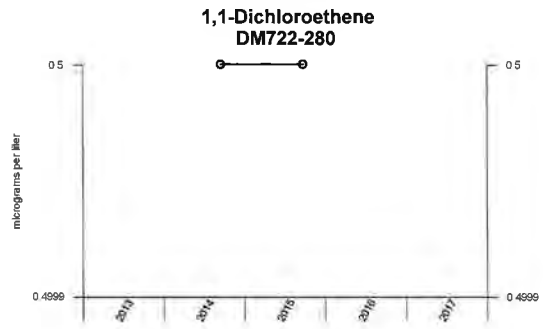
CLEAR CREEK ASSOCIATES

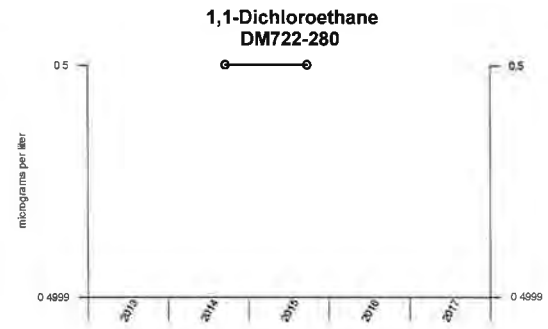
Project Name: MI52 OU1 Effectiveness Report

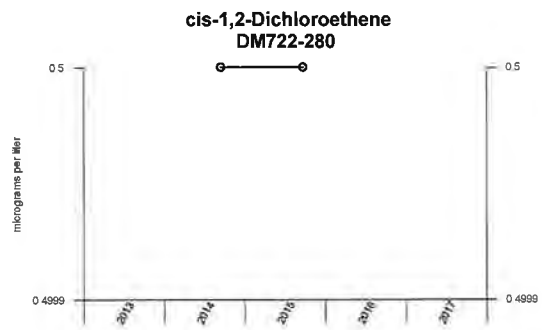
Job No: CC18.1000.00-12 | Date: March 2018

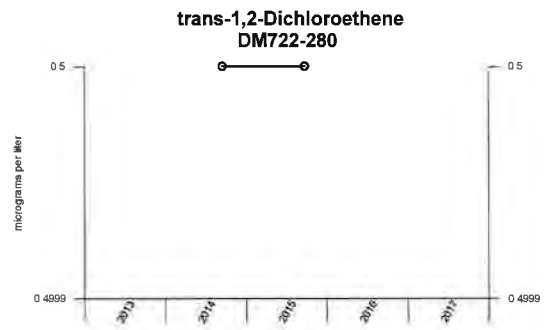
Time-Series Graphs
DM722-240
MI52 OU1 Effectiveness Report
Phoenix, Arizona

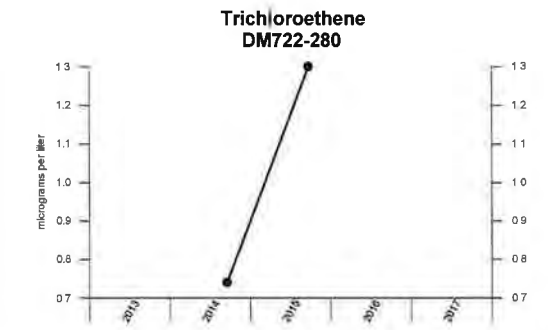


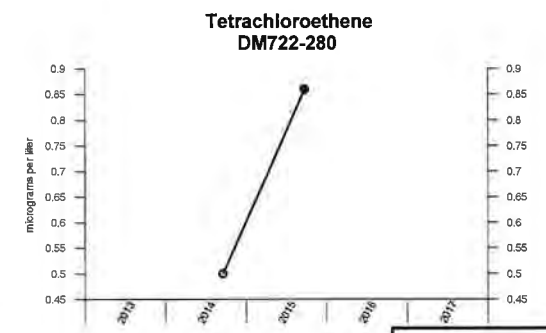


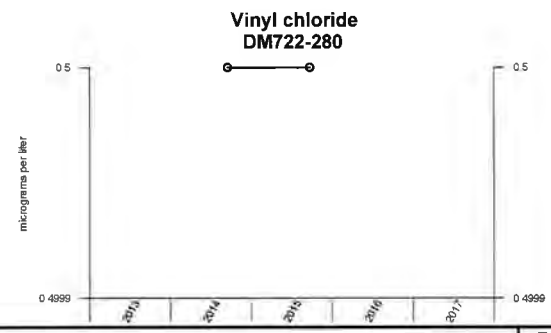


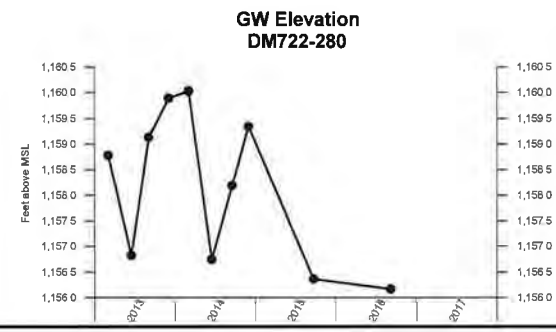












EXPLANATION

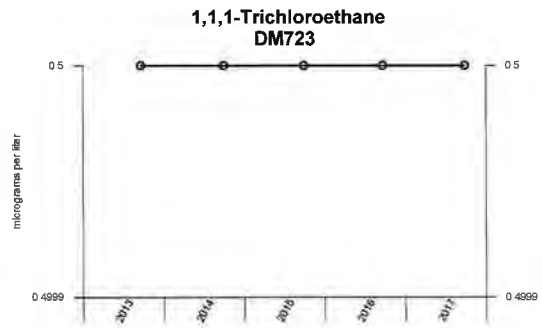
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

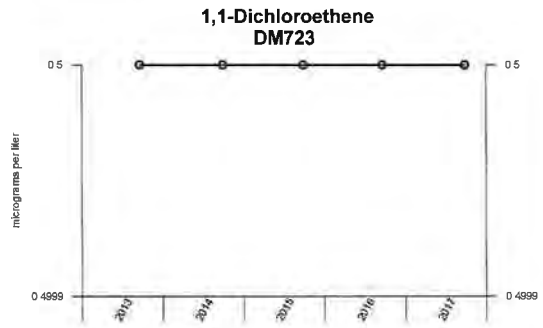
CLEAR CREEK ASSOCIATES

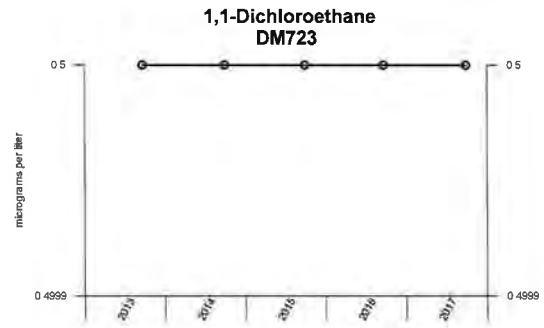
Project Name: MI52 OU1 Effectiveness Report

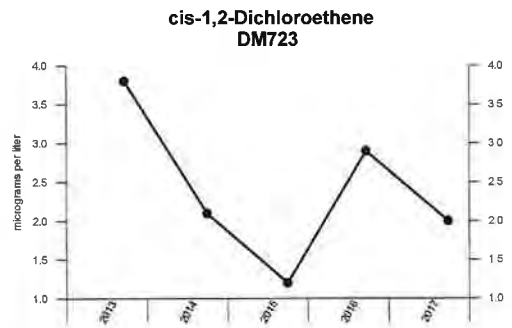
Job No: CC18.1000.00-12 | Date: March 2018

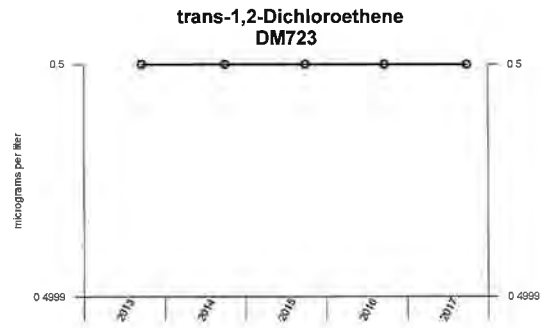
Time-Series Graphs
DM722-280
MI52 OU1 Effectiveness Report
Phoenix, Arizona

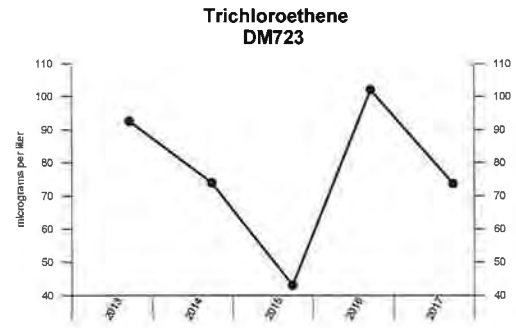


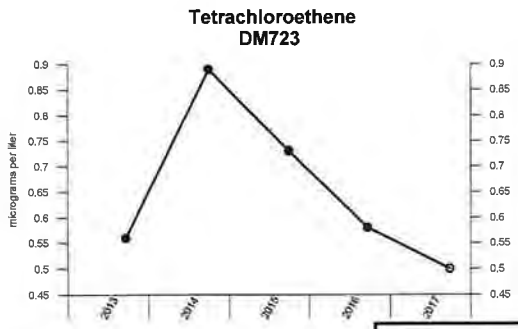


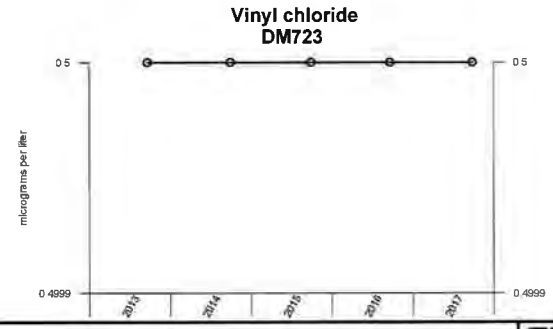


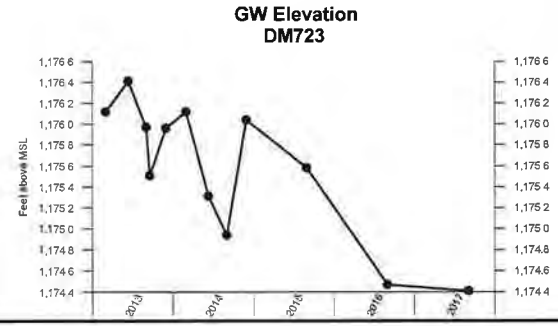












EXPLANATION

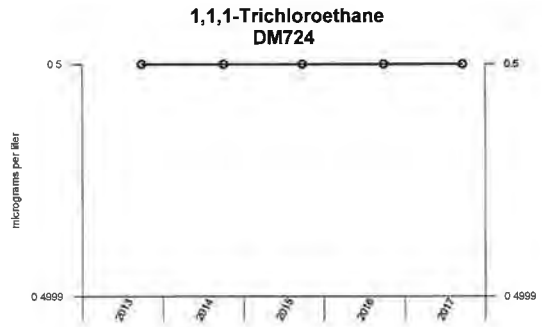
● - Measured Value
○ - Undetected (Displayed at RL)

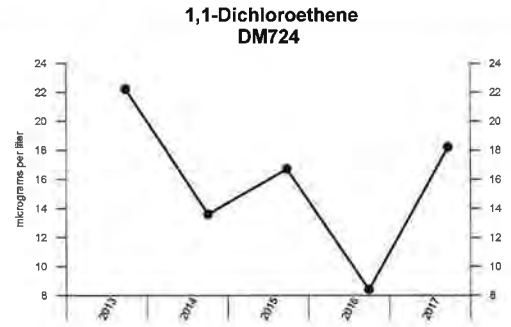
CLEAR CREEK ASSOCIATES

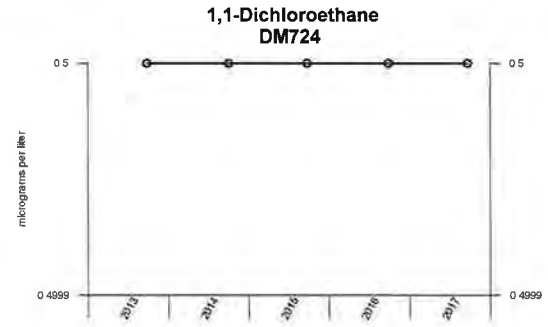
Project Name: MI52 OU1 Effectiveness Report

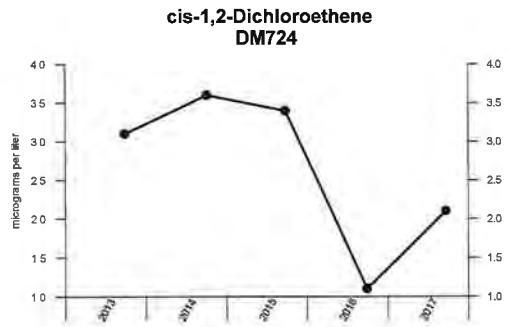
Job No: CC18.1000.00-12 | Date: March 2018

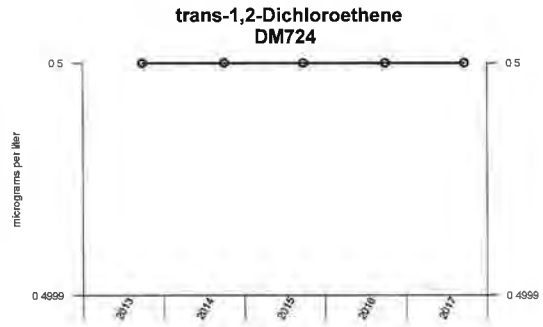
Time-Series Graphs
DM723
MI52 OU1 Effectiveness Report
Phoenix, Arizona

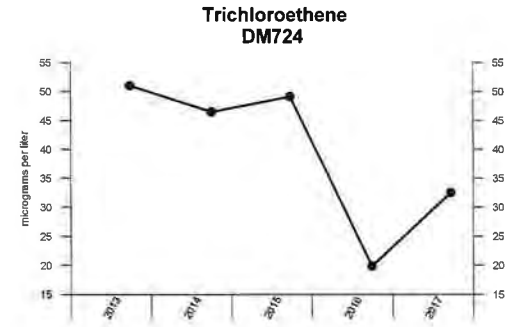


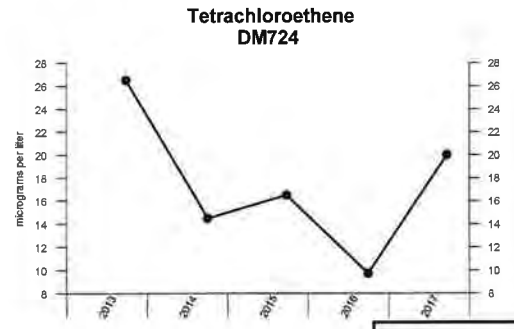


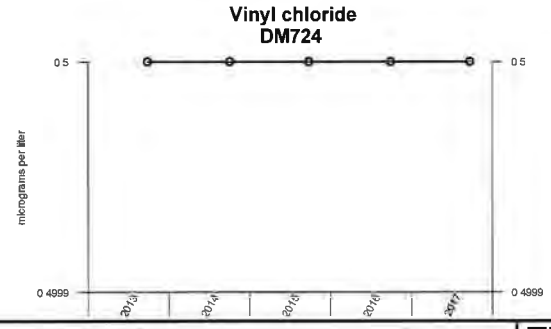


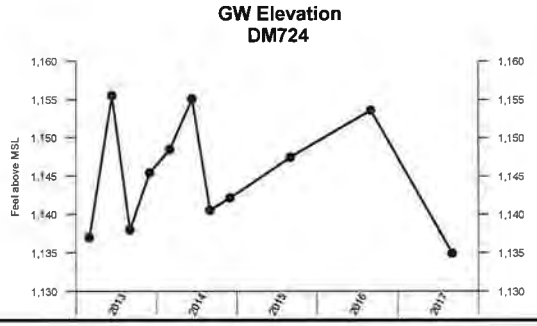












EXPLANATION

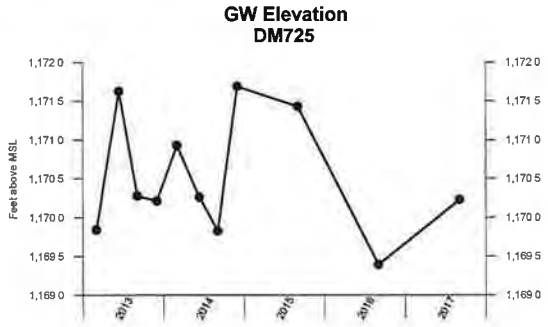
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM724
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

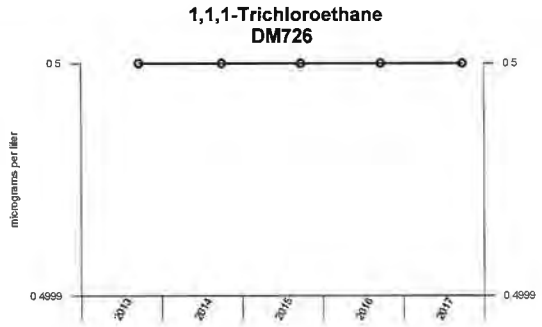
● - Measured Value
○ - Undetected (Displayed at RL)

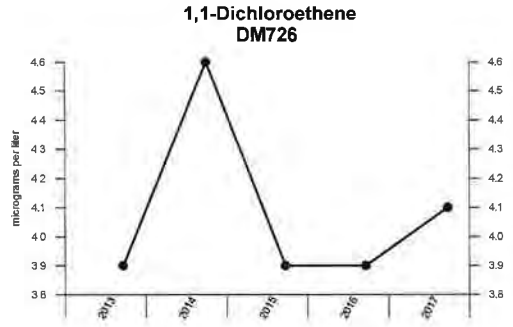
CLEAR CREEK ASSOCIATES

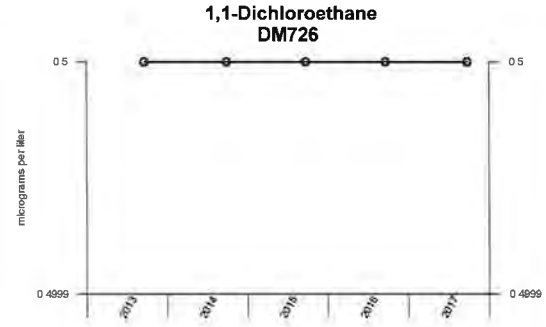
Project Name: MI52 OU1 Effectiveness Report

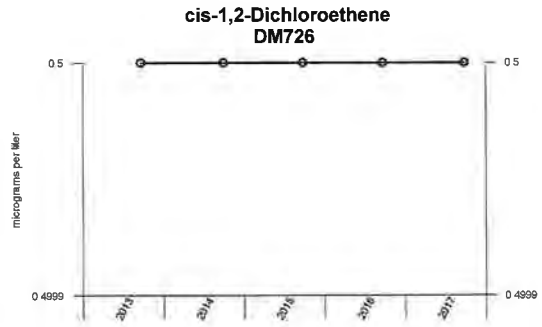
Job No: CC18.1000.00-12 | Date: March 2018

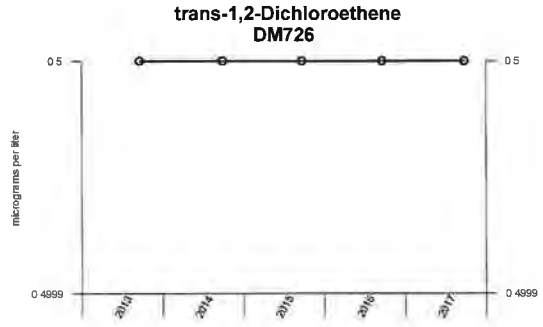
Time-Series Graphs
DM725
MI52 OU1 Effectiveness Report
Phoenix, Arizona

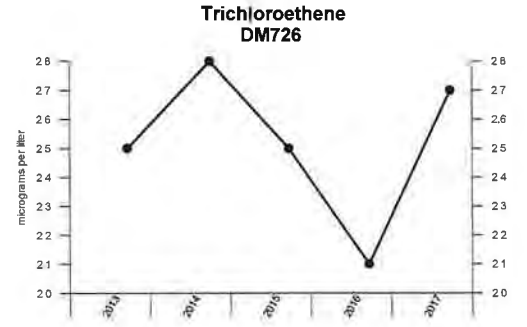


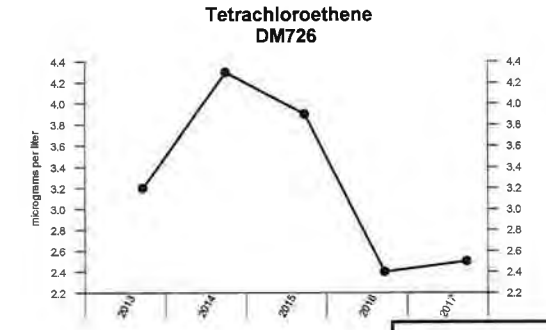


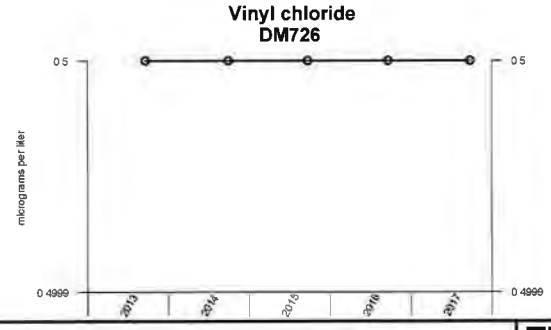


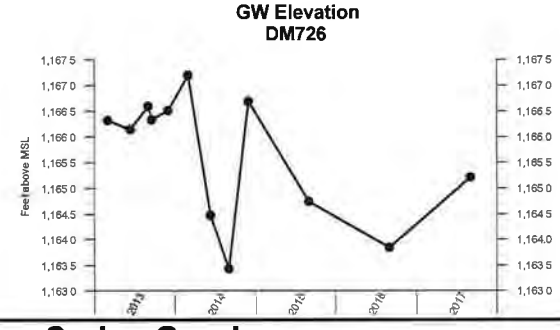












EXPLANATION

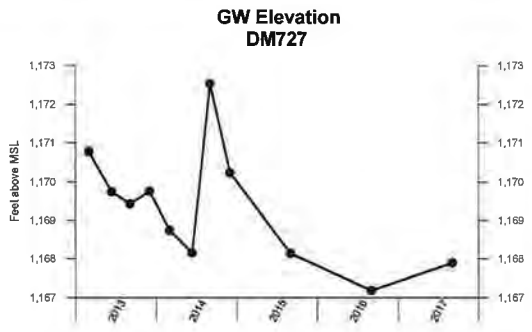
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM726
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

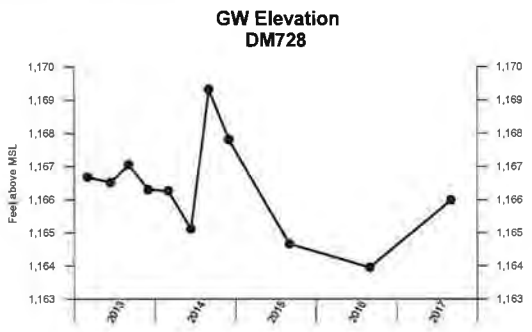
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM727
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

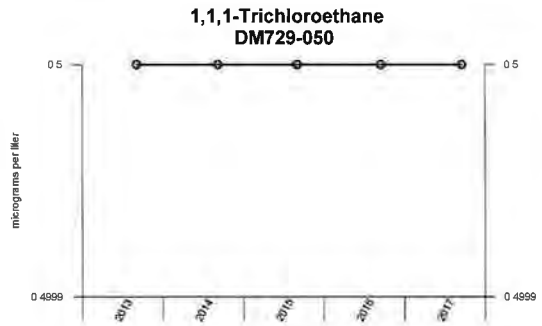
● - Measured Value
○ - Undetected (Displayed at RL)

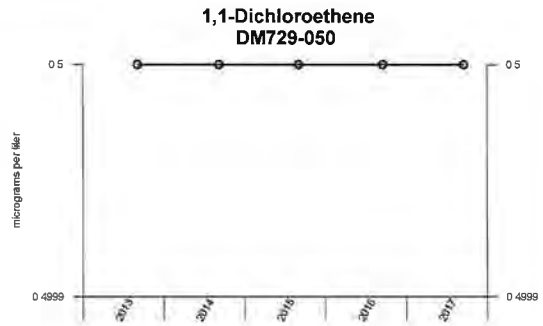
CLEAR CREEK ASSOCIATES

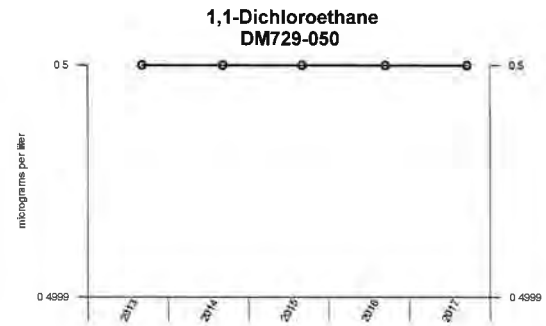
Project Name: MI52 OU1 Effectiveness Report

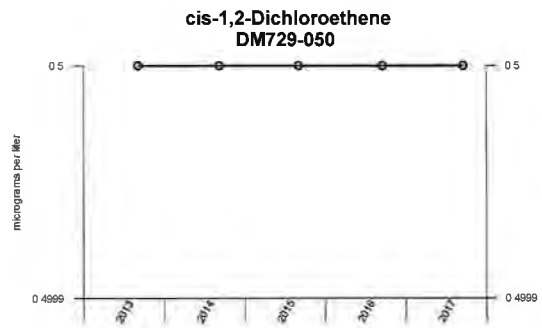
Job No: CC18.1000.00-12 | Date: March 2018

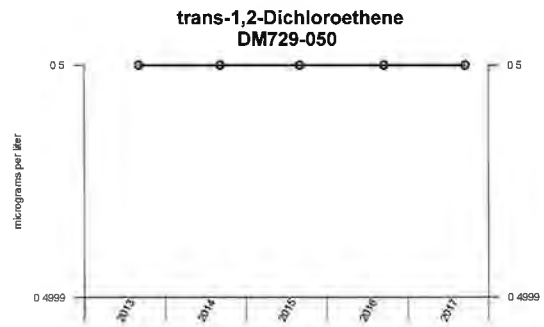
Time-Series Graphs
DM728
MI52 OU1 Effectiveness Report
Phoenix, Arizona

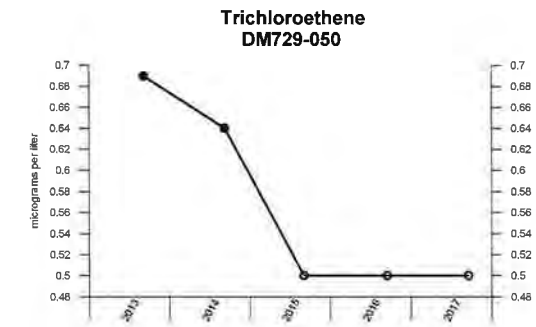


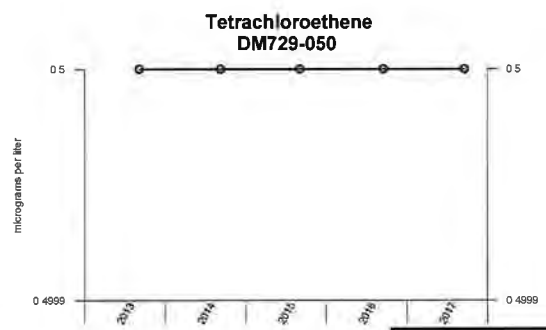


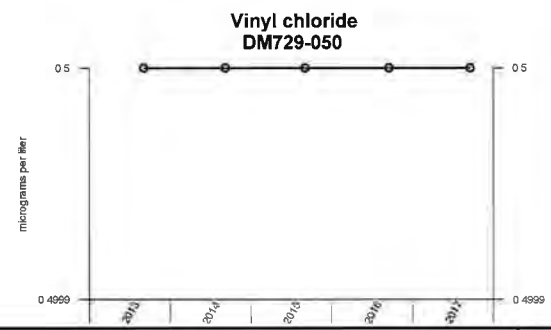


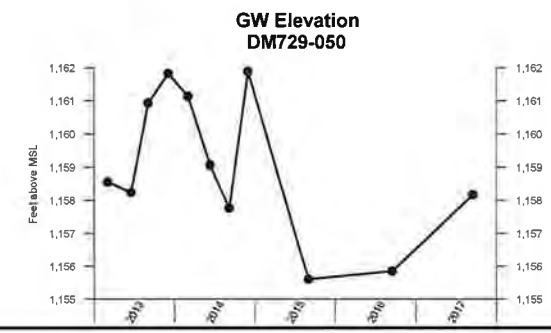












EXPLANATION

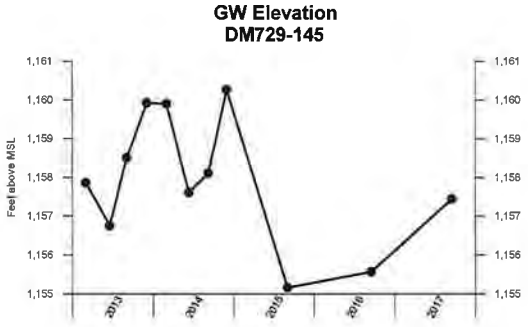
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM729-050
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

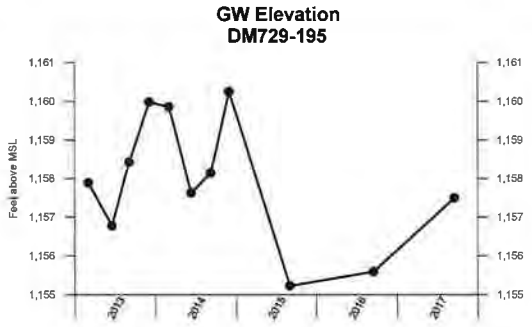
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM729-145
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

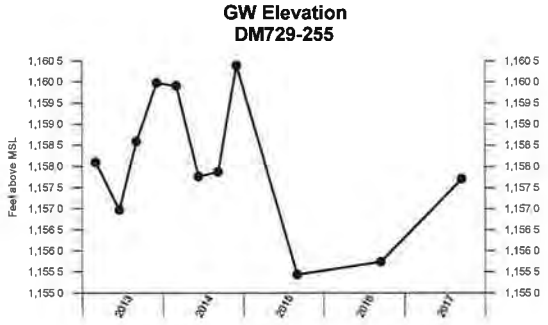
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM729-195
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

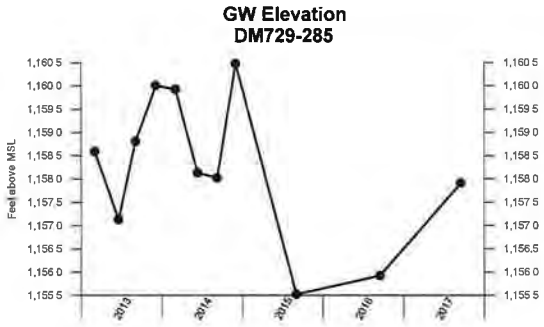
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
DM729-255
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

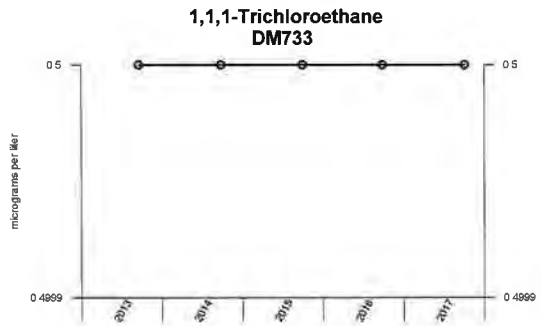
● - Measured Value
○ - Undetected (Displayed at RL)

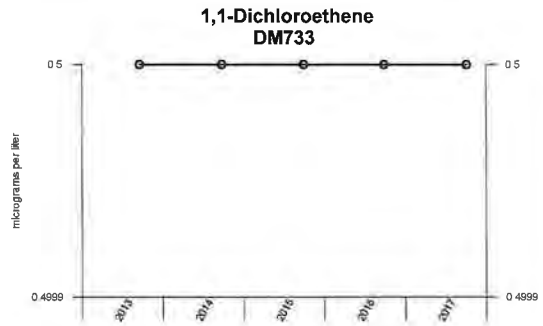
CLEAR CREEK ASSOCIATES

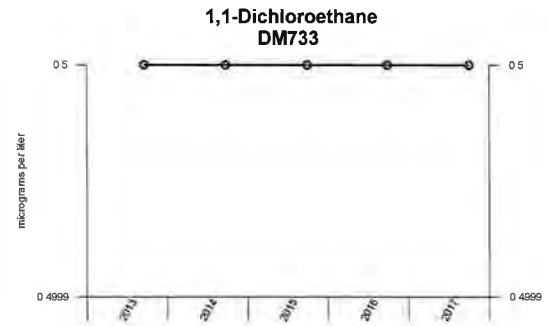
Project Name: MI52 OU1 Effectiveness Report

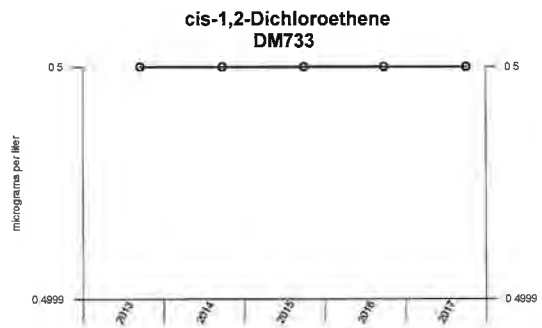
Job No: CC18.1000.00-12 | Date: March 2018

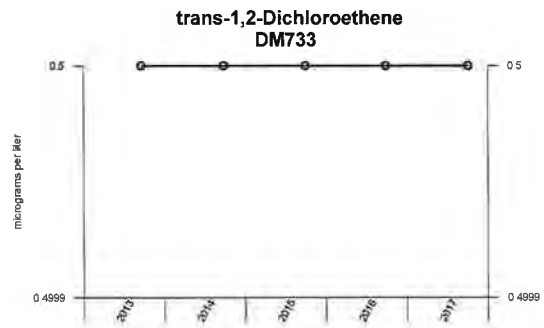
Time-Series Graphs
DM729-285
MI52 OU1 Effectiveness Report
Phoenix, Arizona

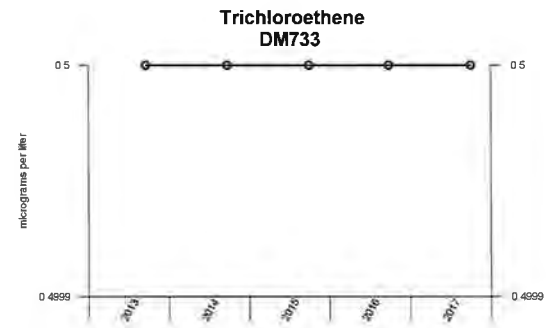


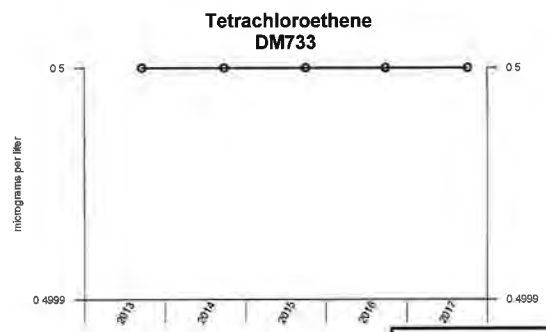


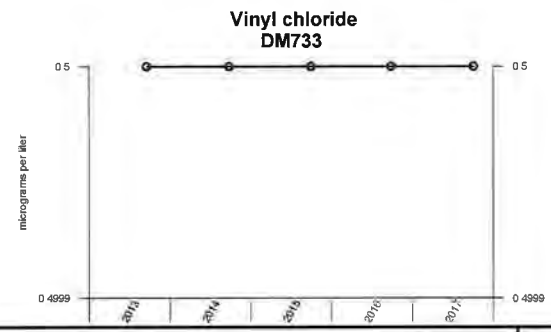


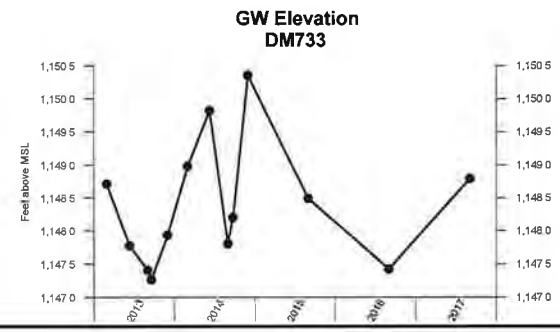












EXPLANATION

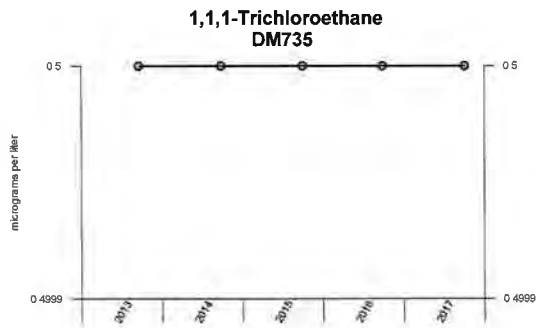
● - Measured Value
○ - Undetected (Displayed at RL)

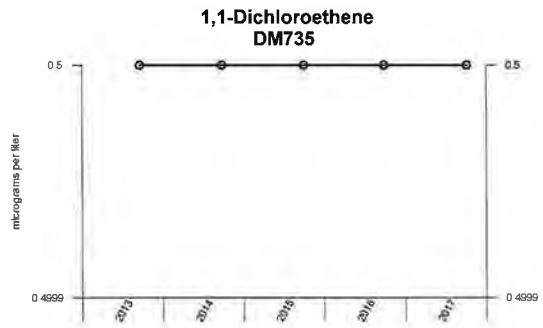
CLEAR CREEK ASSOCIATES

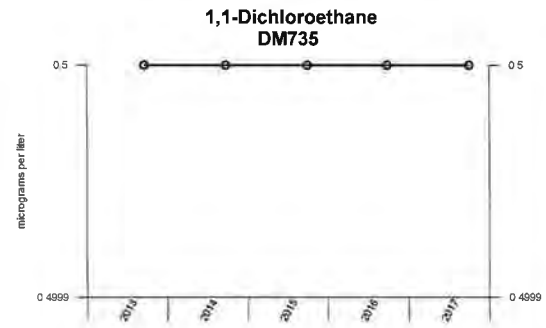
Project Name: MI52 OU1 Effectiveness Report

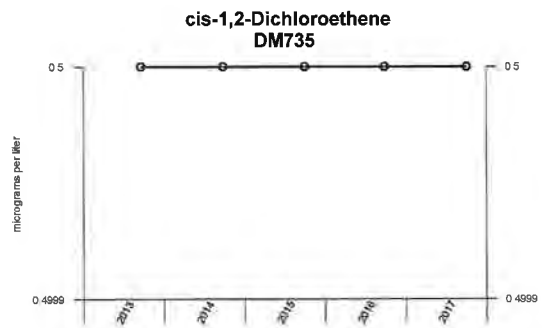
Job No: CC18.1000.00-12 | Date: March 2018

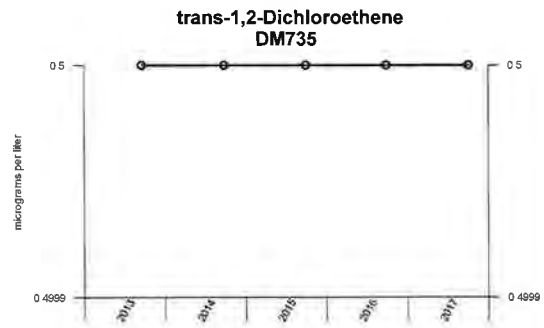
Time-Series Graphs
DM733
MI52 OU1 Effectiveness Report
Phoenix, Arizona

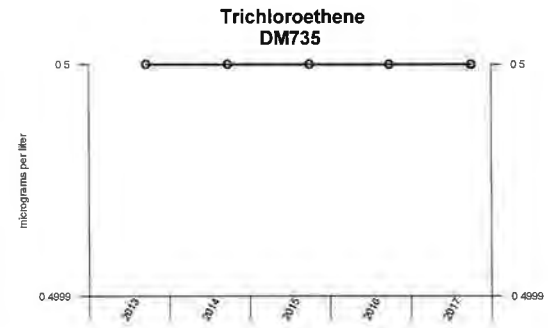


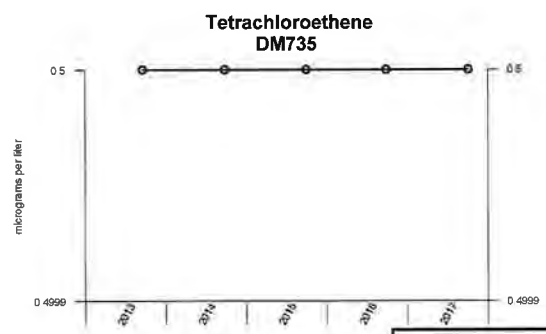


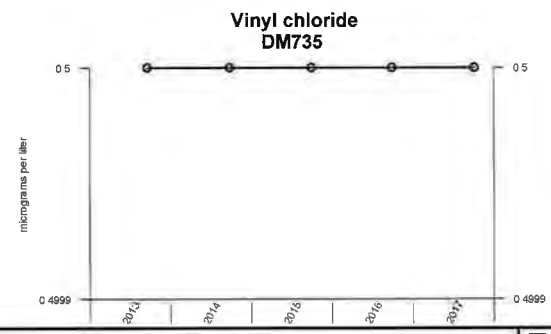


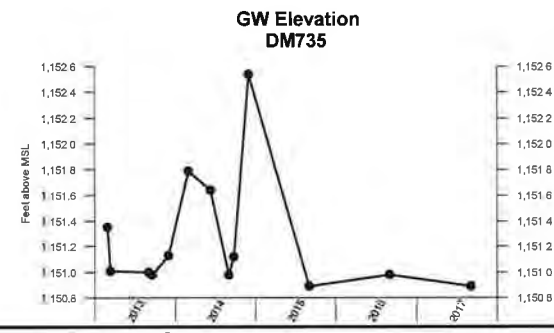












EXPLANATION

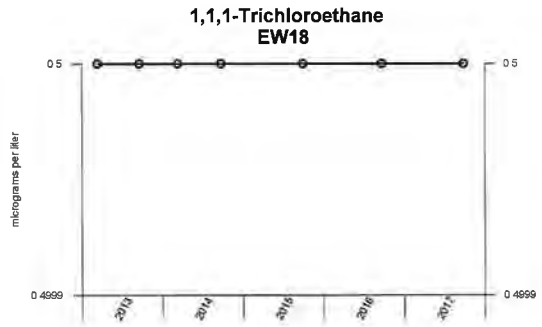
● - Measured Value
○ - Undetected (Displayed at RL)

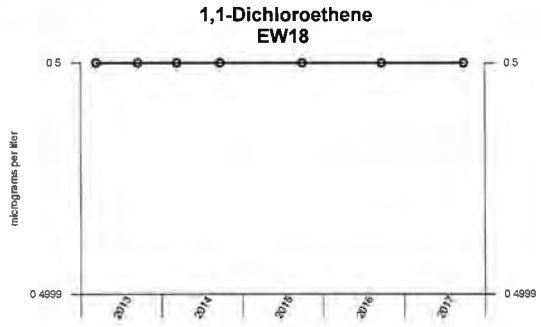
CLEAR CREEK ASSOCIATES

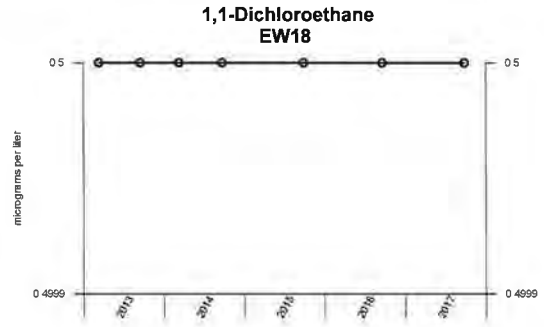
Project Name: MI52 OU1 Effectiveness Report

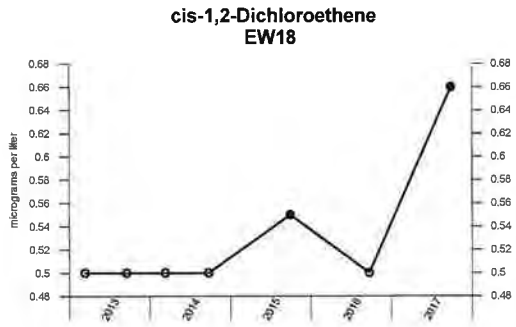
Job No: CC18.1000.00-12 | Date: March 2018

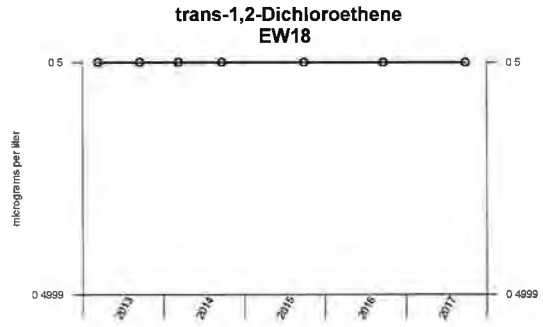
Time-Series Graphs
DM735
MI52 OU1 Effectiveness Report
Phoenix, Arizona

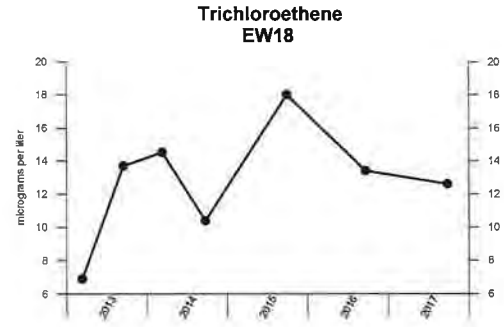


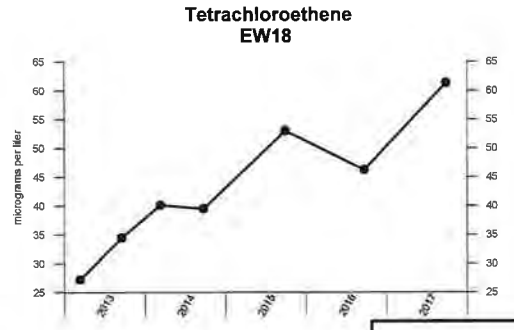


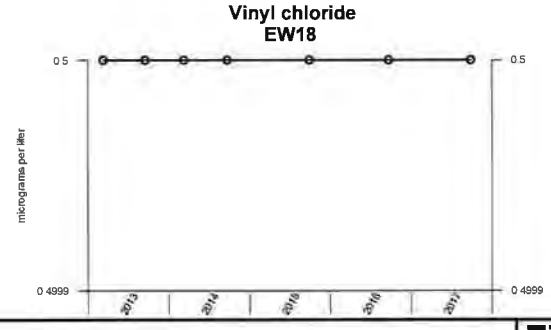


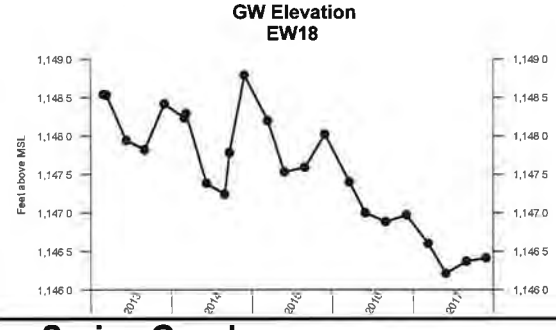












EXPLANATION

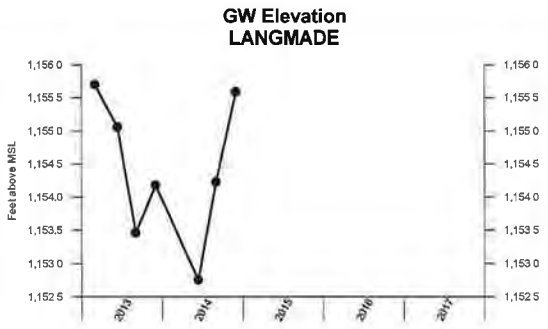
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
EW18
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

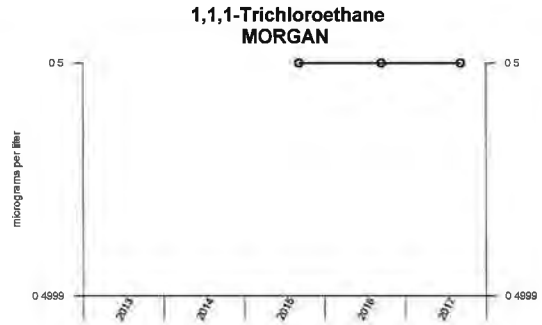
● - Measured Value
○ - Undetected (Displayed at RL)

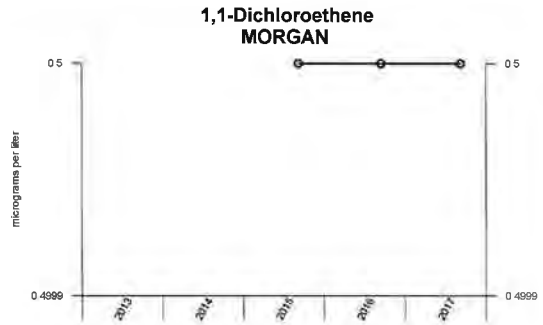
CLEAR CREEK ASSOCIATES

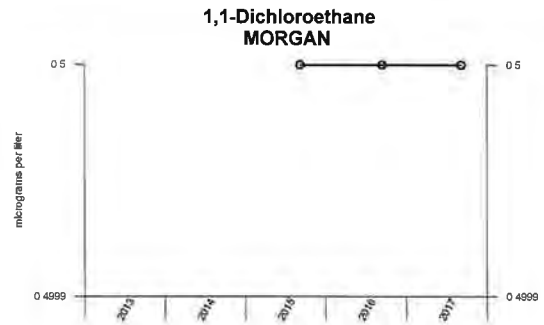
Project Name: MI52 OU1 Effectiveness Report

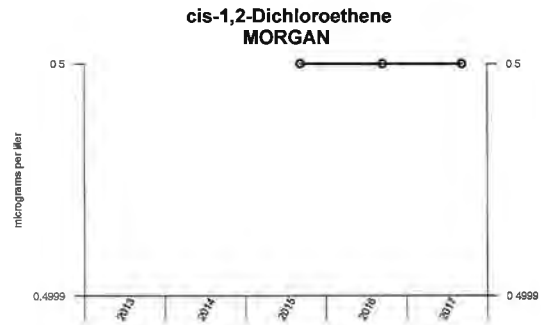
Job No: CC18.1000.00-12 | Date: March 2018

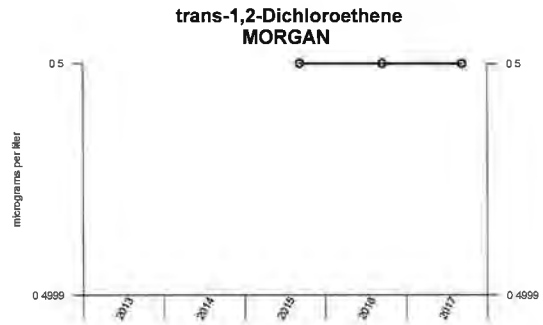
Time-Series Graphs
LANGMADE
MI52 OU1 Effectiveness Report
Phoenix, Arizona

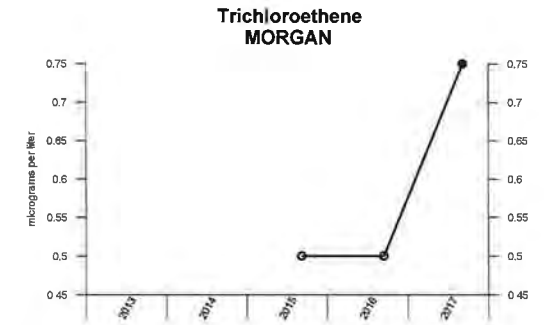


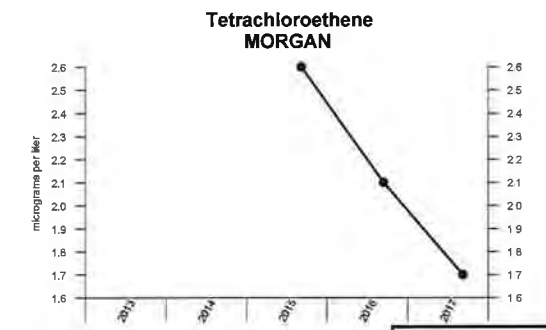


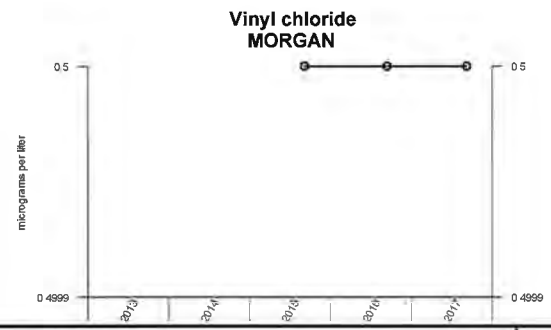












EXPLANATION

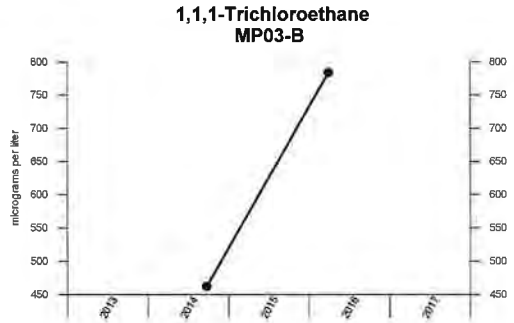
● - Measured Value
○ - Undetected (Displayed at RL)

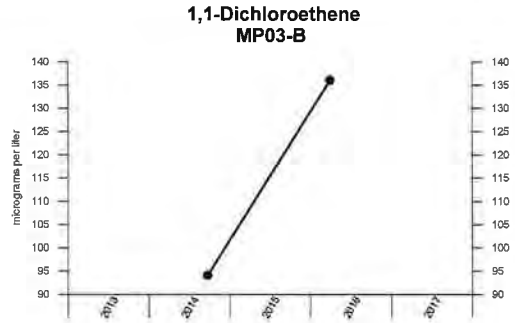
CLEAR CREEK ASSOCIATES

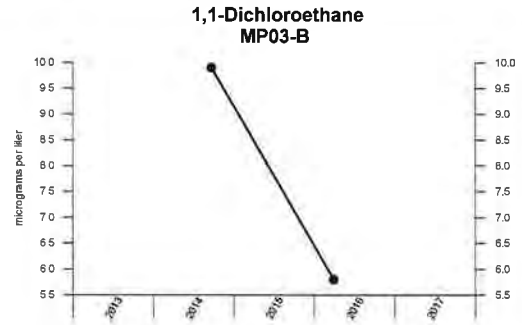
Project Name: MI52 OU1 Effectiveness Report

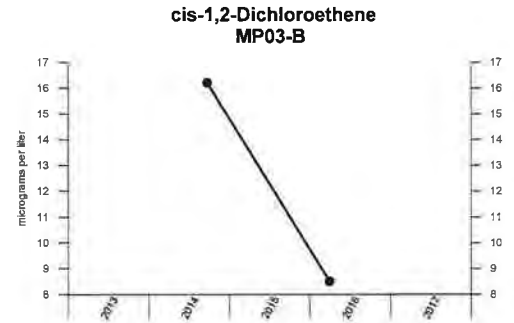
Job No: CC18.1000.00-12 | Date: March 2018

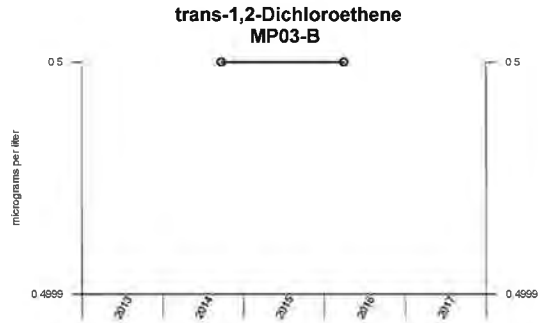
Time-Series Graphs
MORGAN
MI52 OU1 Effectiveness Report
Phoenix, Arizona

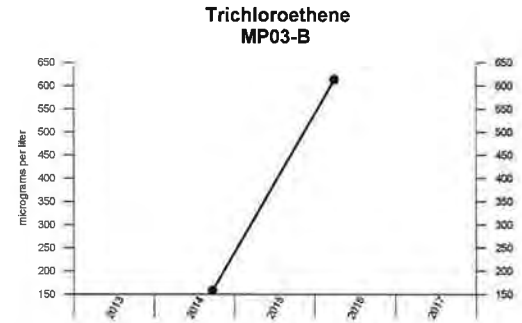


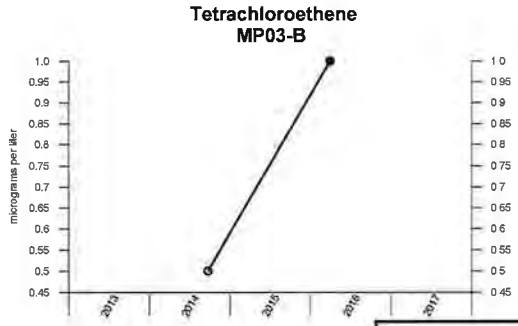


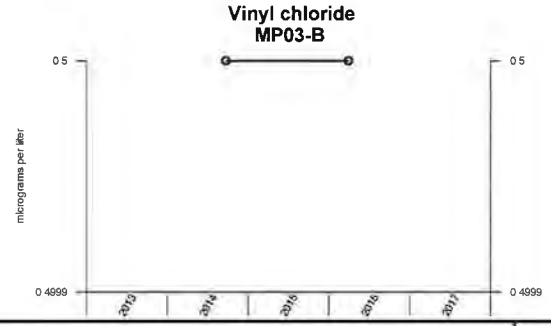


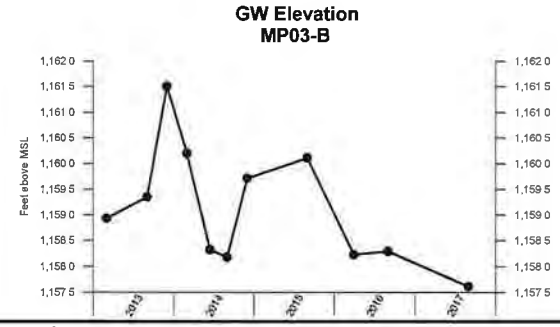












EXPLANATION

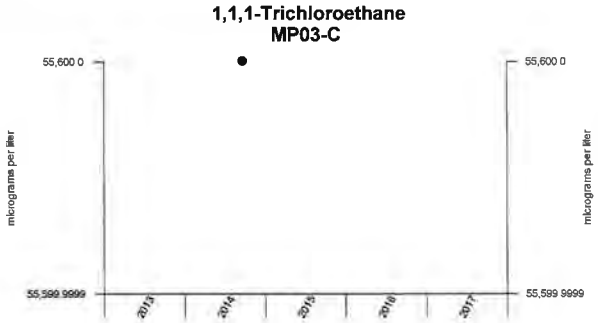
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

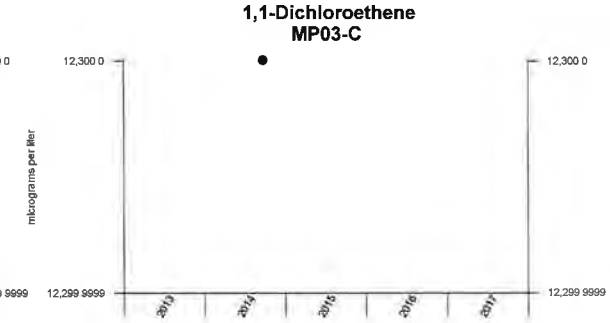
CLEAR CREEK ASSOCIATES

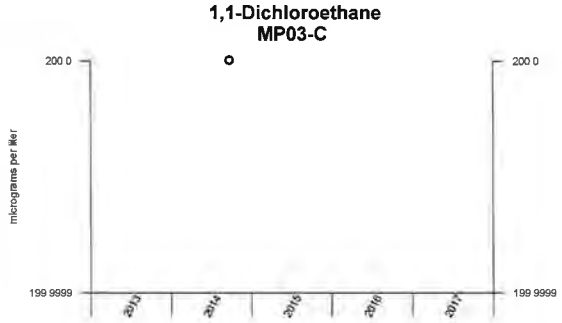
Project Name: MI52 OU1 Effectiveness Report

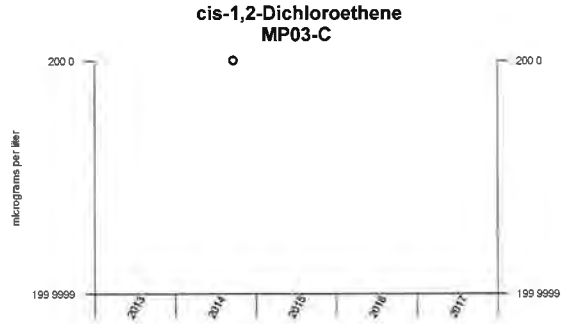
Job No: CC18.1000.00-12 | Date: March 2018

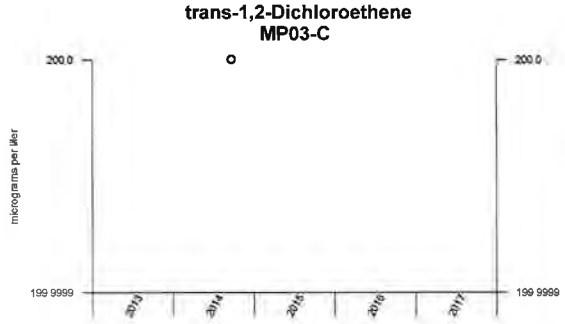
Time-Series Graphs
MP03-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

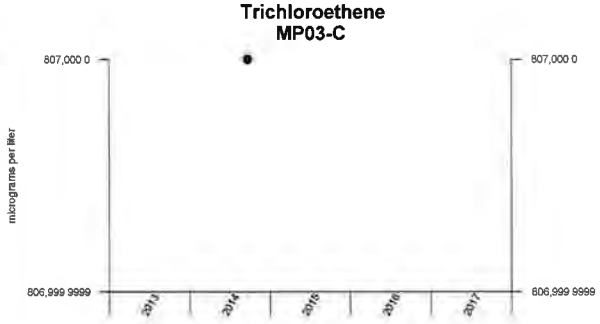


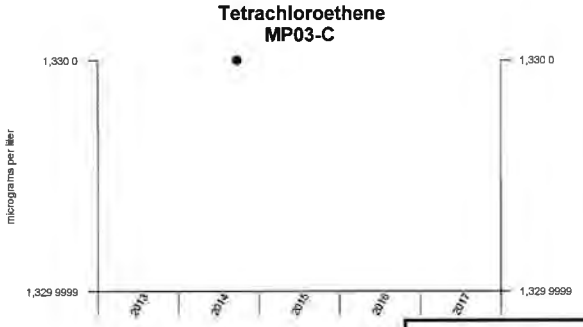


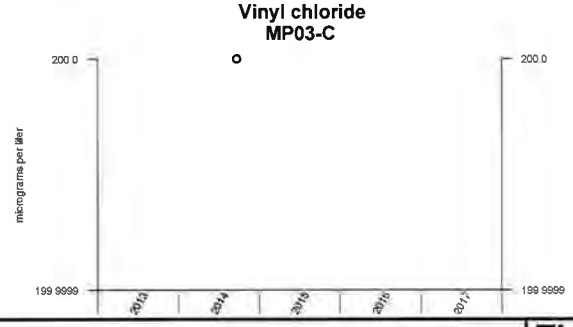


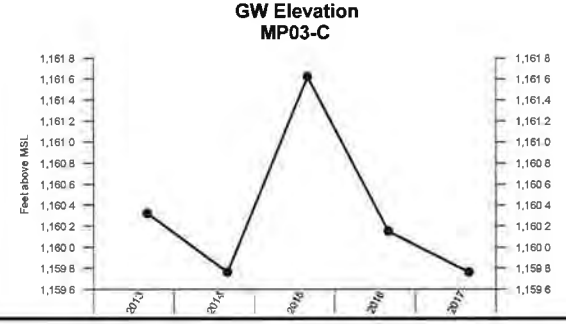












EXPLANATION

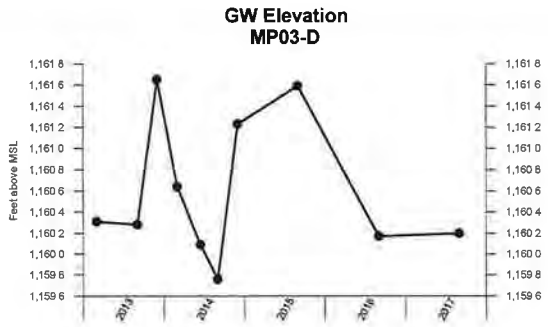
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
MP03-C
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

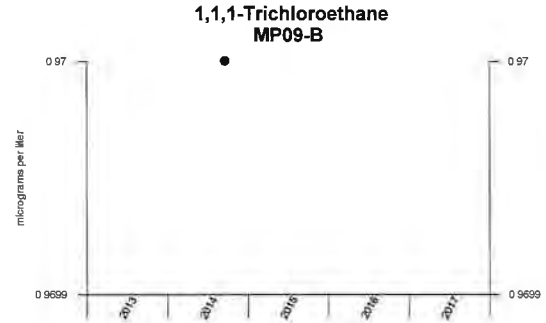
● - Measured Value
o - Undetected (Displayed at RL)

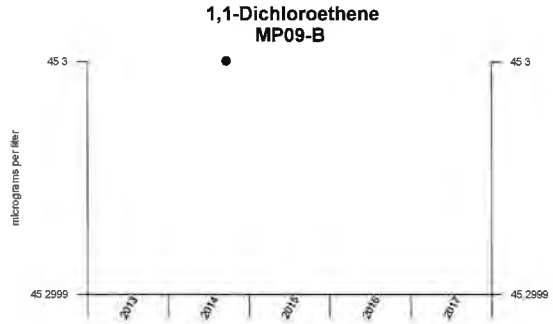
CLEAR CREEK ASSOCIATES

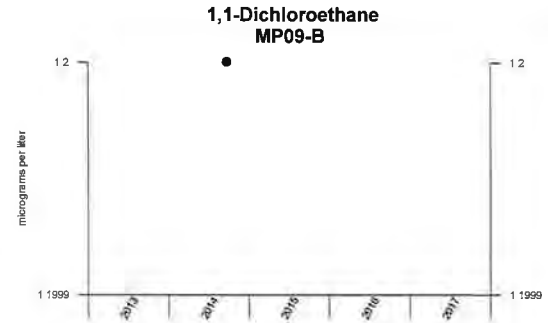
Project Name: MI52 OU1 Effectiveness Report

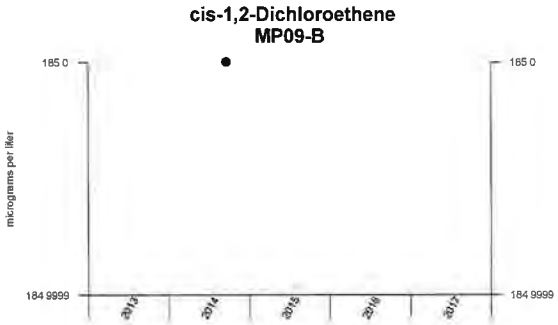
Job No: CC18.1000.00-12 | Date: March 2018

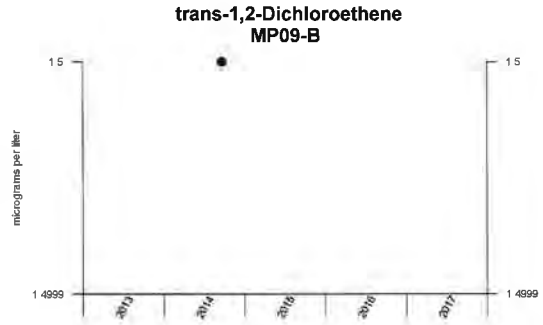
Time-Series Graphs
MP03-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona

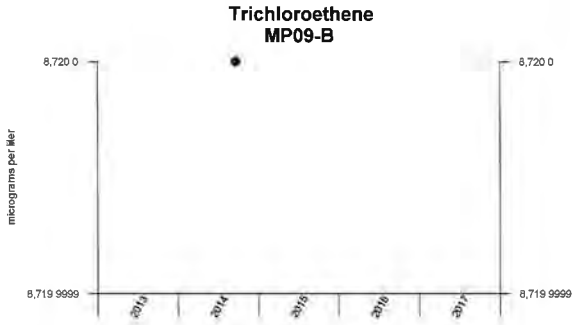


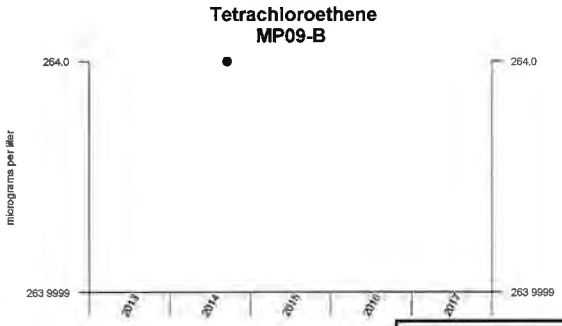


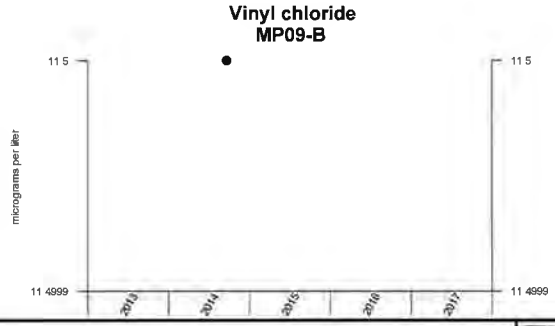


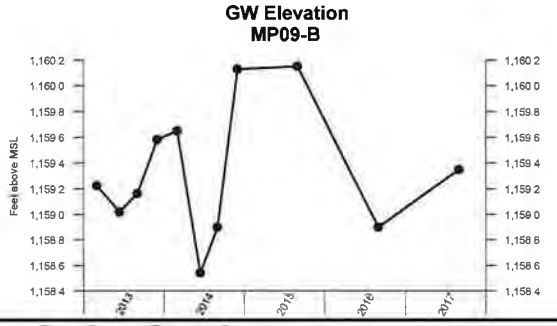












EXPLANATION

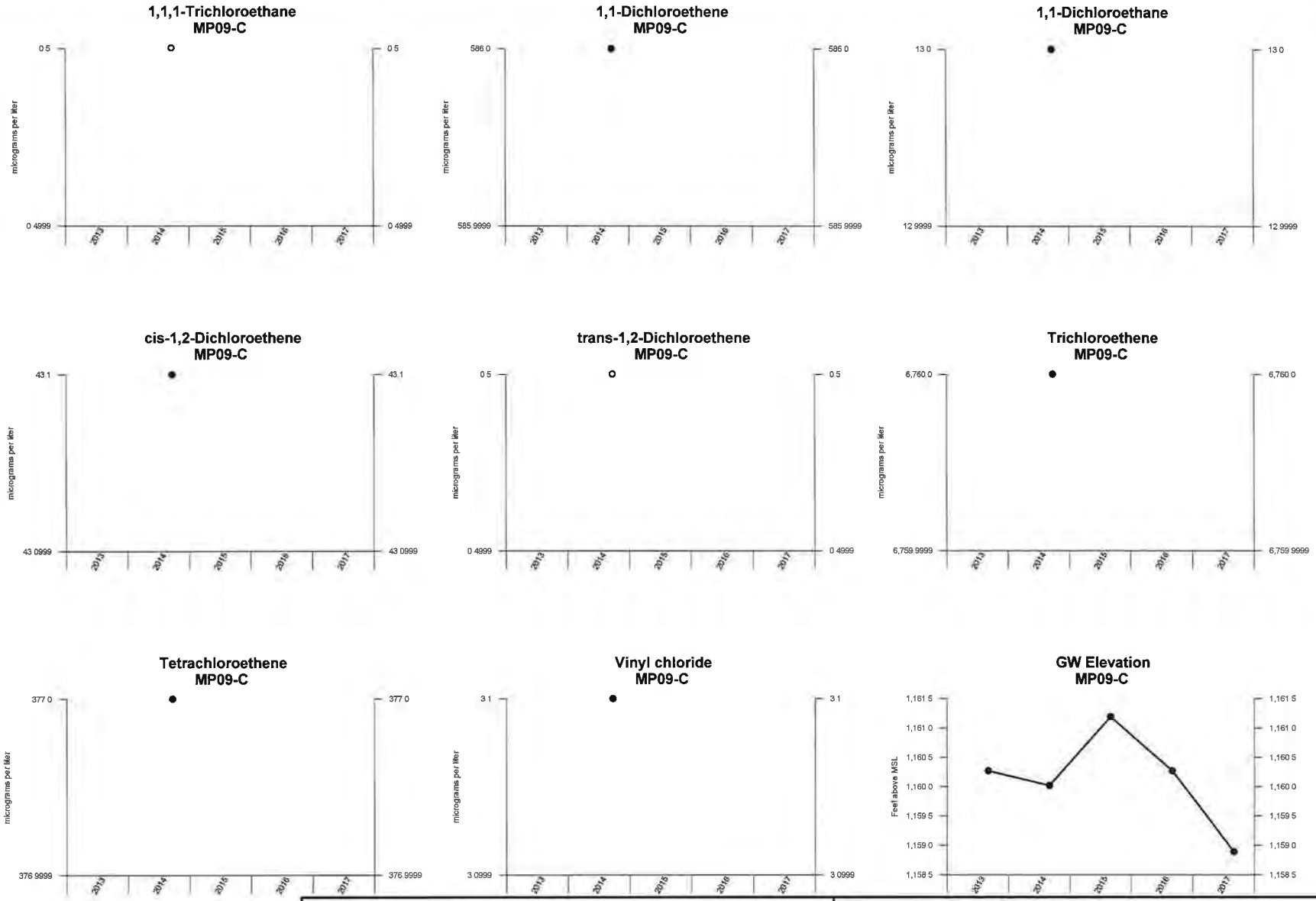
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
MP09-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

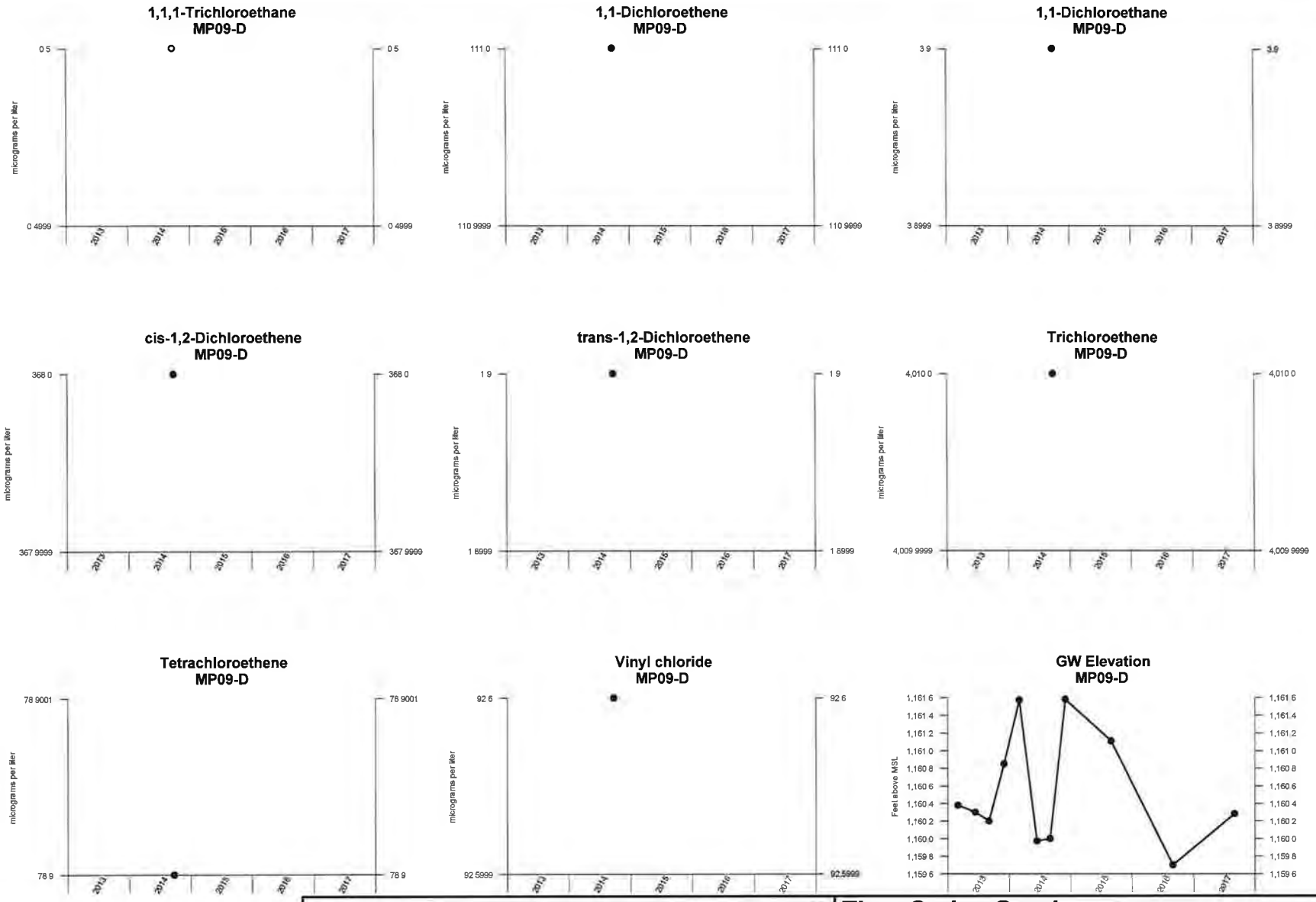
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
MP09-C
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

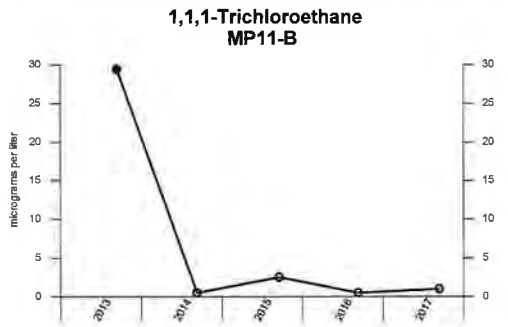
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

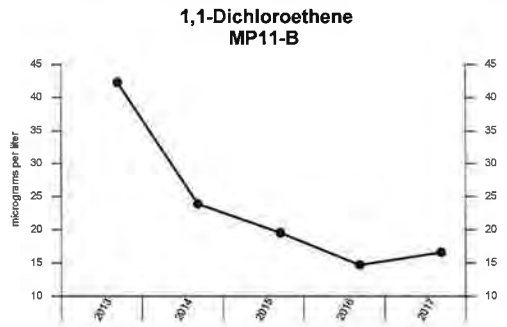
CLEAR CREEK ASSOCIATES

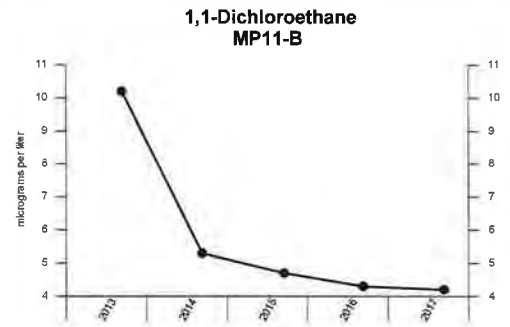
Project Name: MI52 OU1 Effectiveness Report

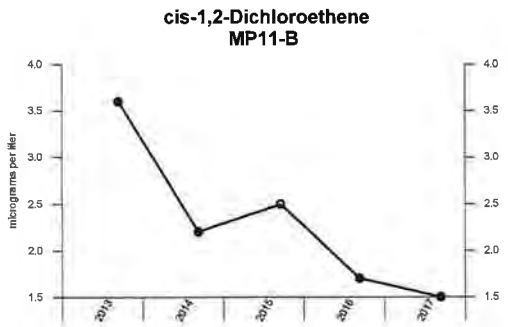
Job No: CC18.1000.00-12 | Date: March 2018

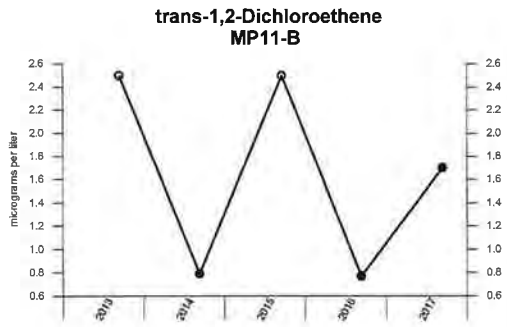
Time-Series Graphs
MP09-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona

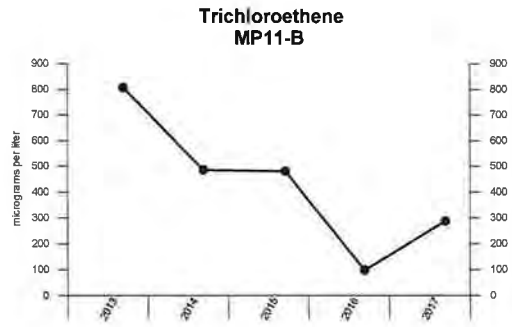


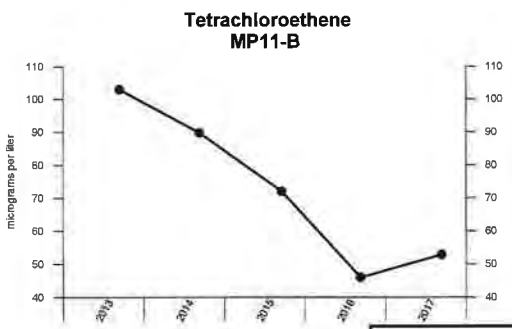


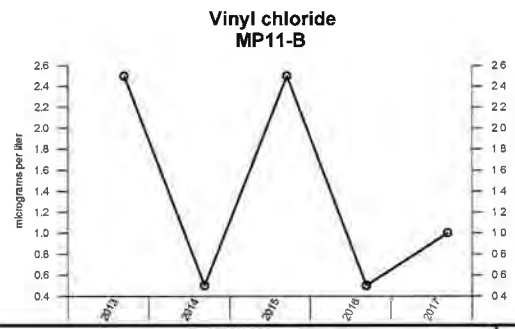


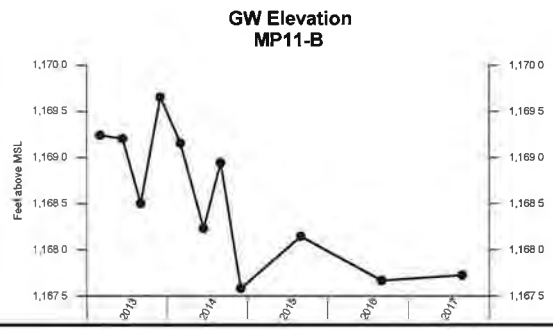












EXPLANATION

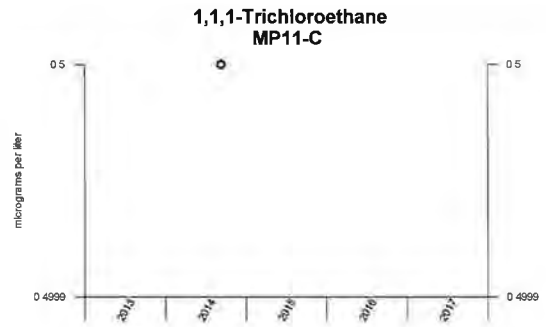
● - Measured Value
○ - Undetected (Displayed at RL)

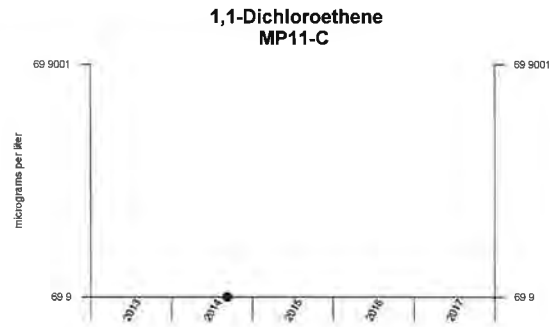
CLEAR CREEK ASSOCIATES

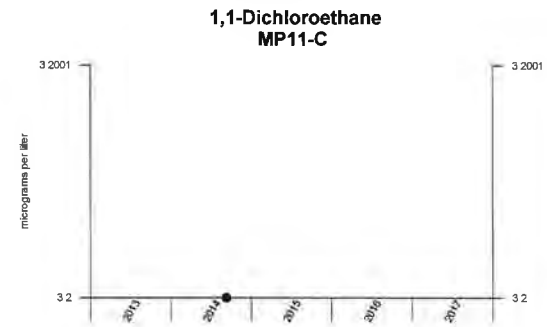
Project Name: MI52 OU1 Effectiveness Report

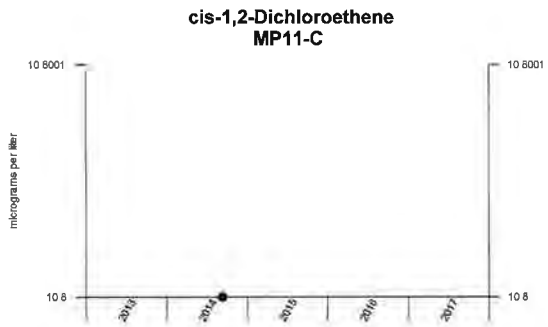
Job No: CC18.1000.00-12 | Date: March 2018

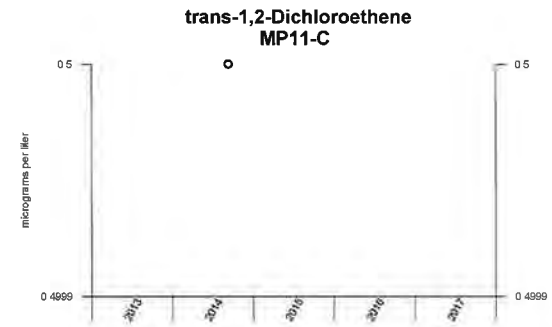
Time-Series Graphs
MP11-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

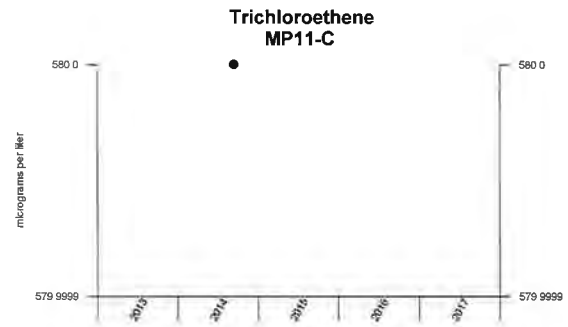


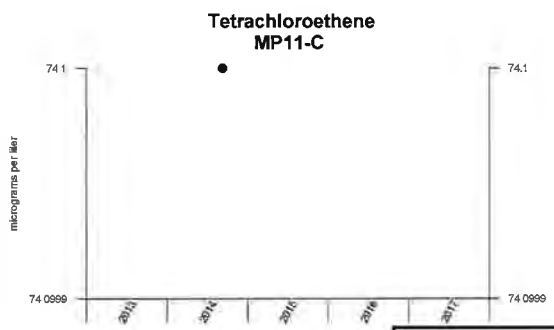


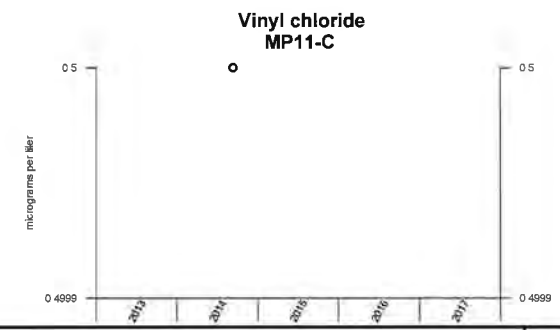


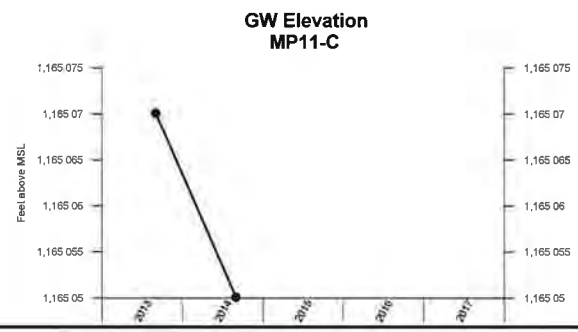












EXPLANATION

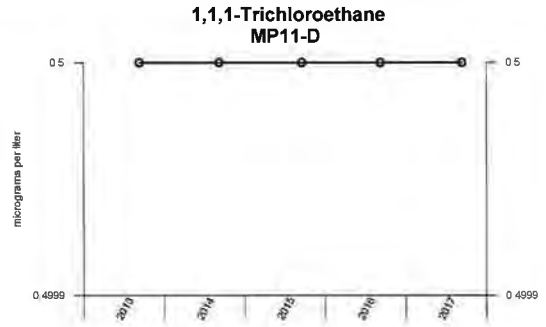
● - Measured Value
○ - Undetected (Displayed at RL)

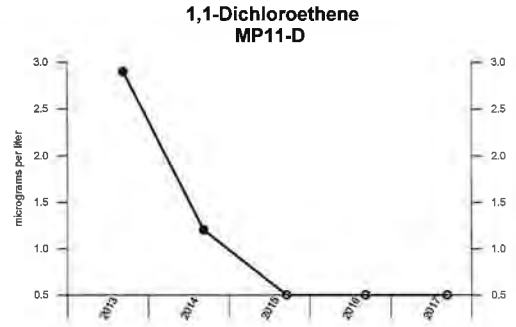
CLEAR CREEK ASSOCIATES

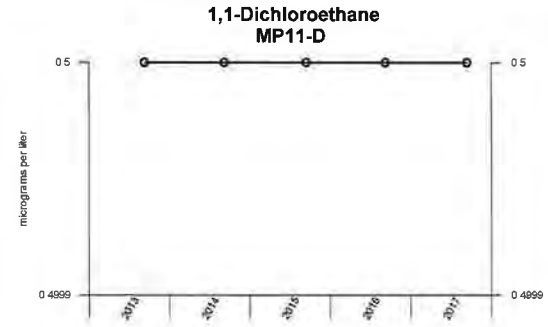
Project Name: MI52 OU1 Effectiveness Report

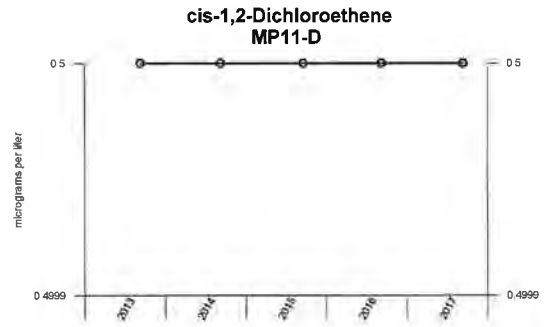
Job No: CC18.1000.00-12 | Date: March 2018

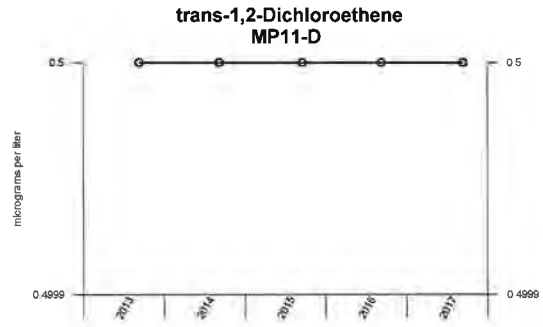
Time-Series Graphs
MP11-C
MI52 OU1 Effectiveness Report
Phoenix, Arizona

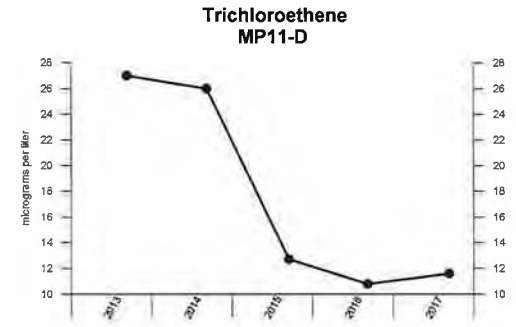


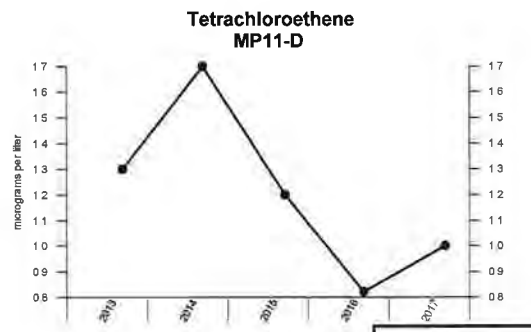


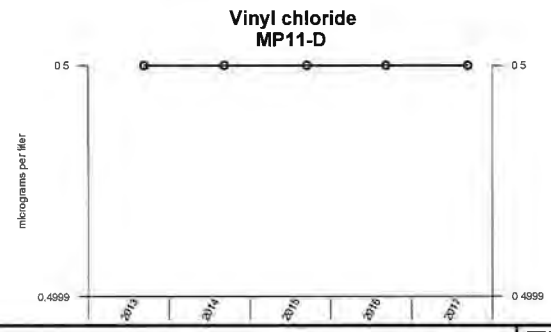


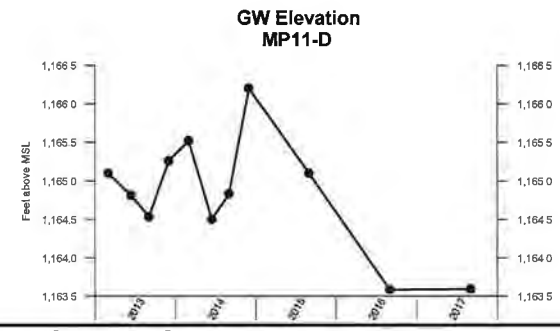












EXPLANATION

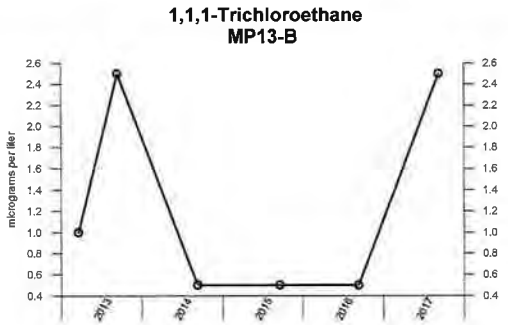
● - Measured Value
○ - Undetected (Displayed at RL)

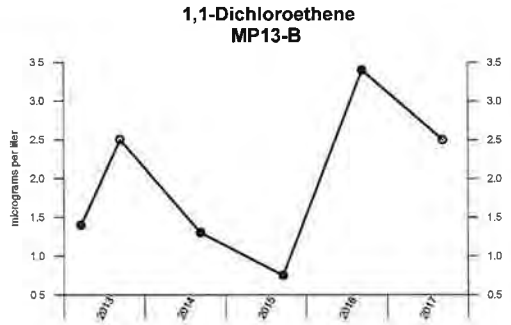
CLEAR CREEK ASSOCIATES

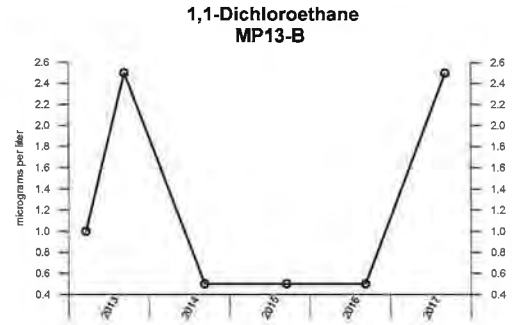
Project Name: MI52 OU1 Effectiveness Report

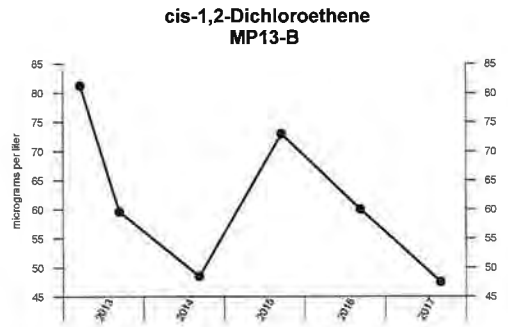
Job No: CC18.1000.00-12 | Date: March 2018

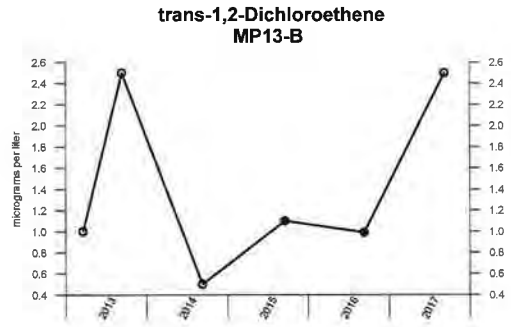
Time-Series Graphs
MP11-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona

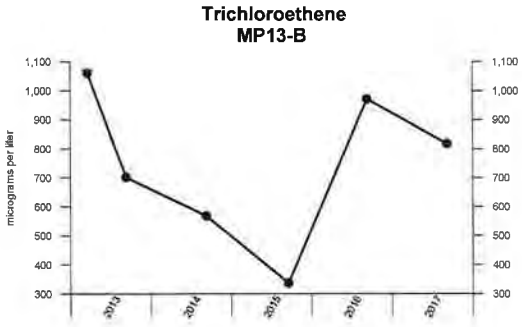


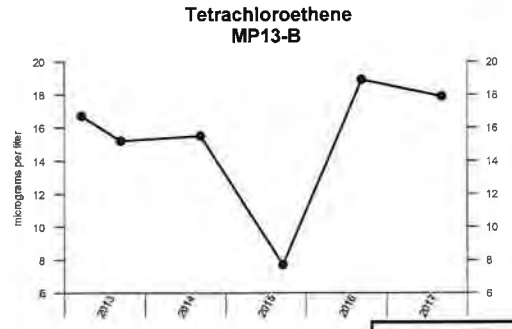


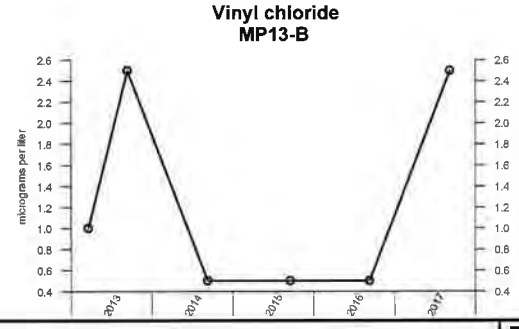


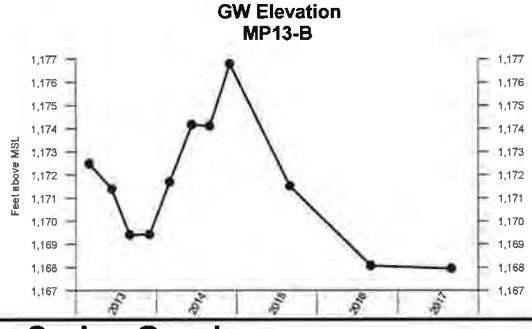












EXPLANATION

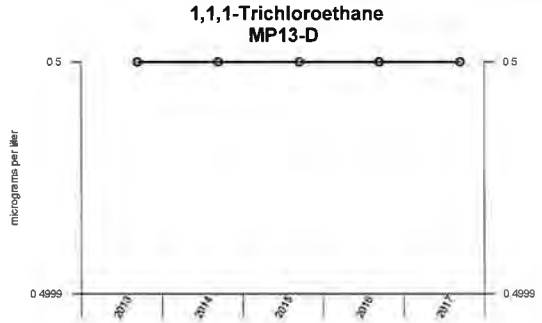
● - Measured Value
○ - Undetected (Displayed at RL)

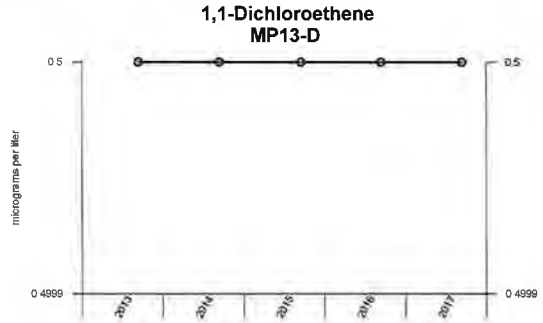
CLEAR CREEK ASSOCIATES

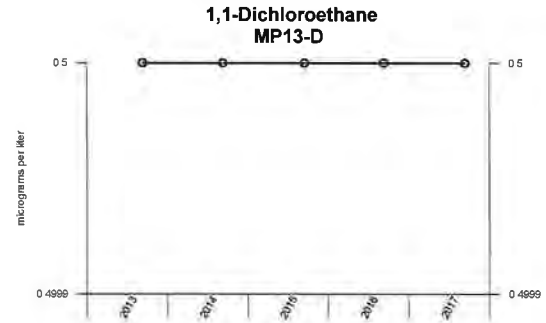
Project Name: MI52 OU1 Effectiveness Report

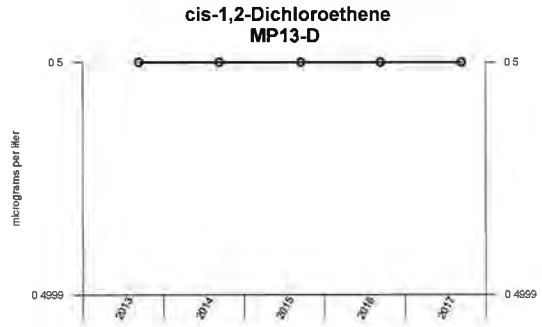
Job No: CC18.1000.00-12 | Date: March 2018

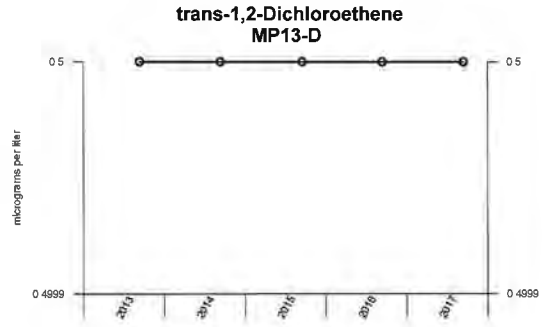
Time-Series Graphs
MP13-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

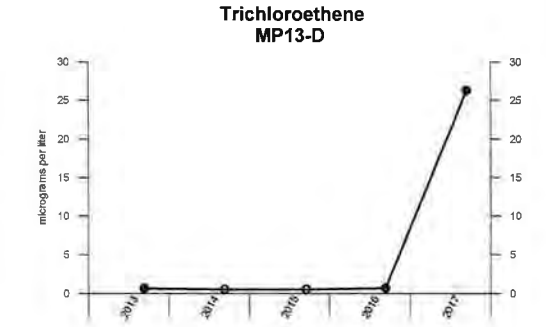


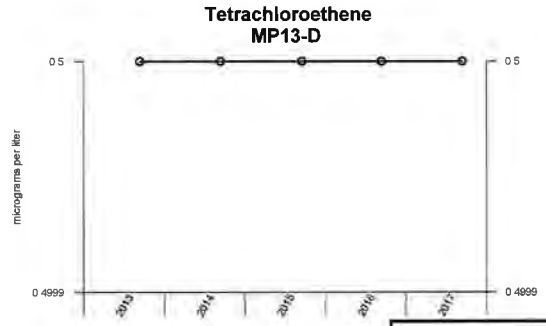


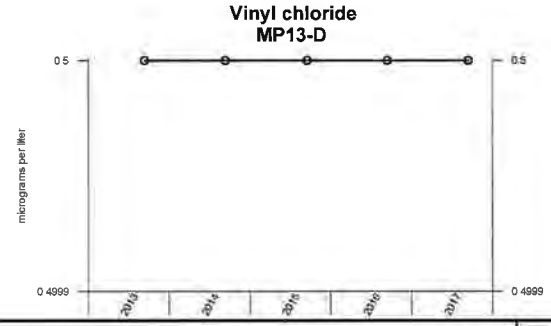


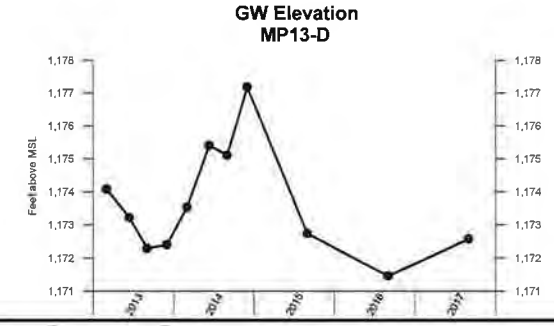












EXPLANATION

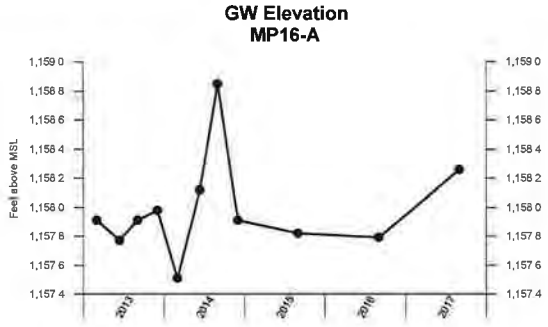
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
MP13-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

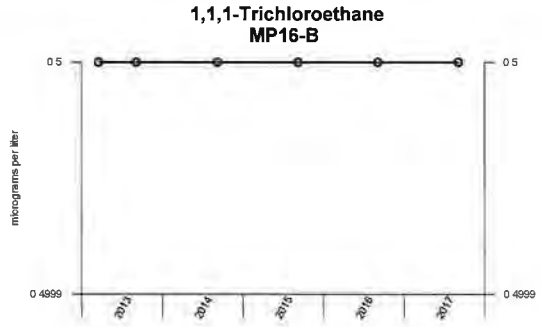
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

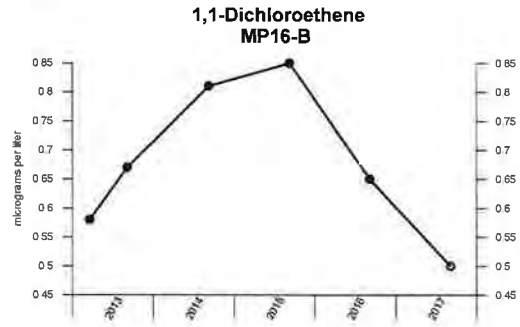
CLEAR CREEK ASSOCIATES

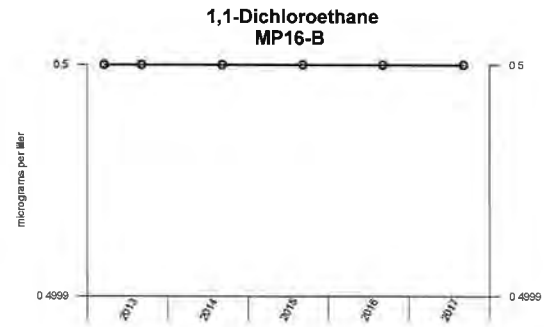
Project Name: MI52 OU1 Effectiveness Report

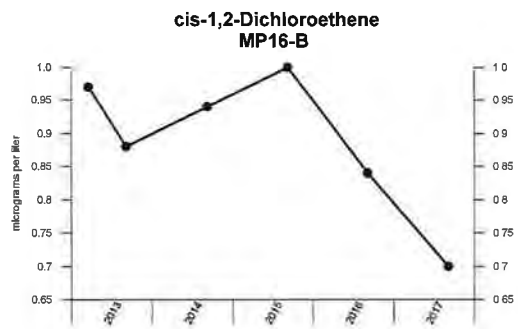
Job No: CC18.1000.00-12 | Date: March 2018

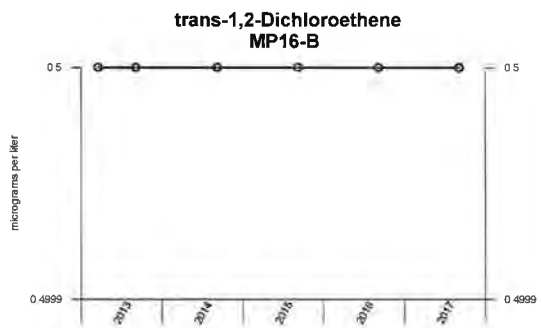
Time-Series Graphs
MP16-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

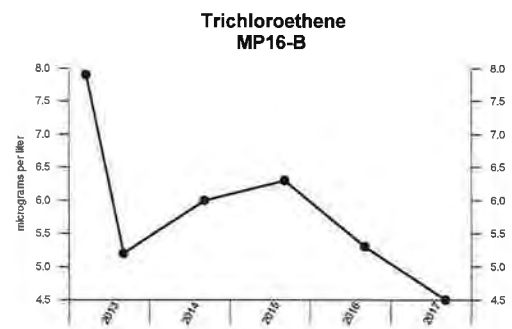


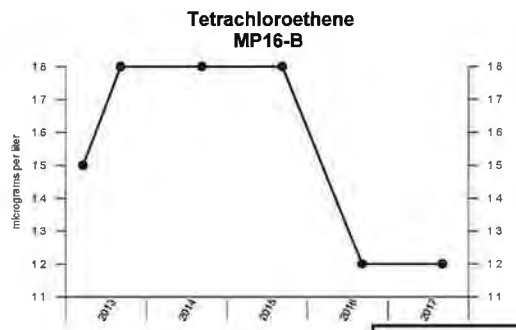


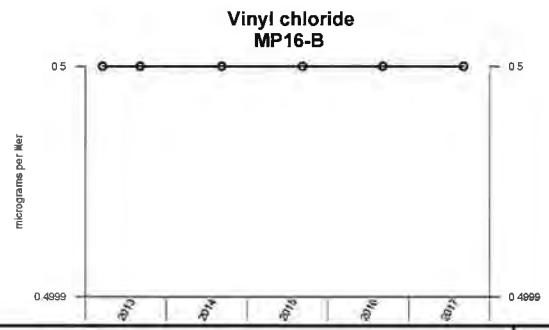


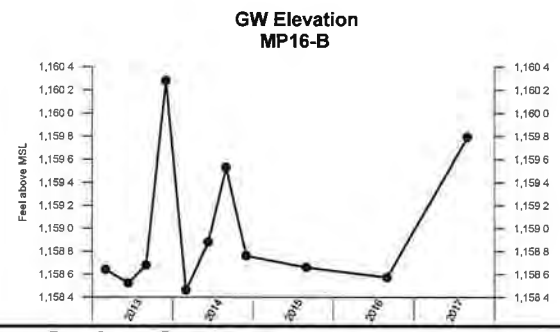












EXPLANATION

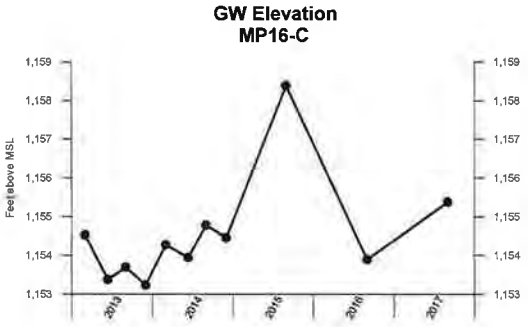
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
MP16-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

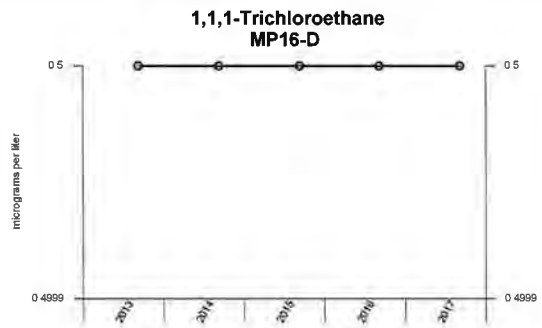
● - Measured Value
○ - Undetected (Displayed at RL)

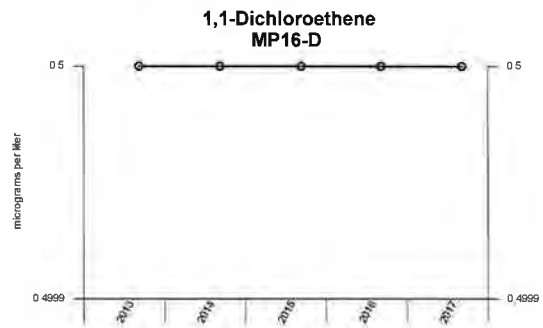
CLEAR CREEK ASSOCIATES

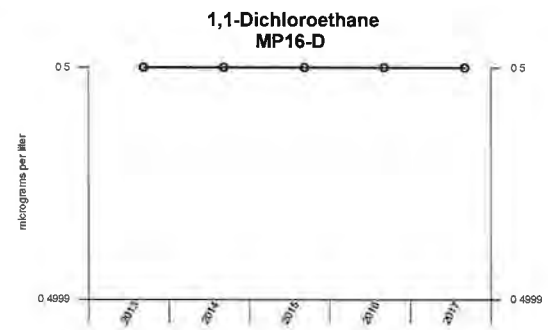
Project Name: MI52 OU1 Effectiveness Report

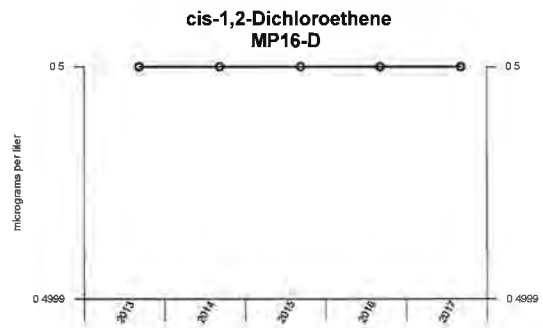
Job No: CC18.1000.00-12 | Date: March 2018

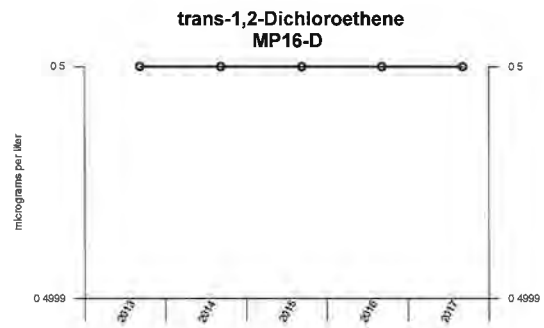
Time-Series Graphs
MP16-C
MI52 OU1 Effectiveness Report
Phoenix, Arizona

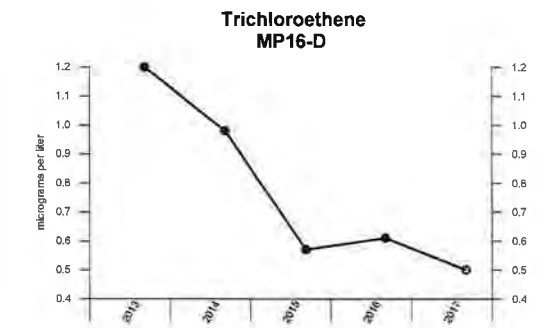


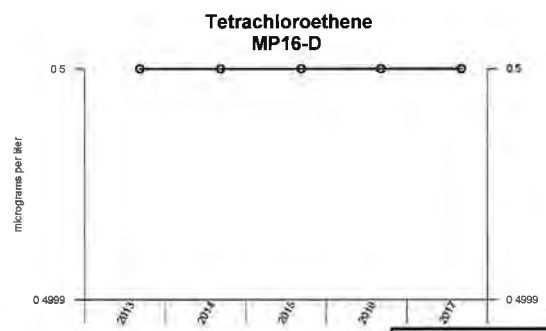


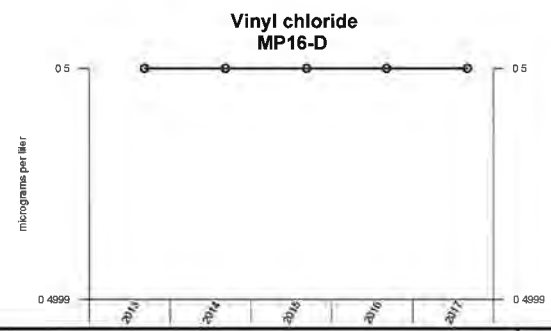


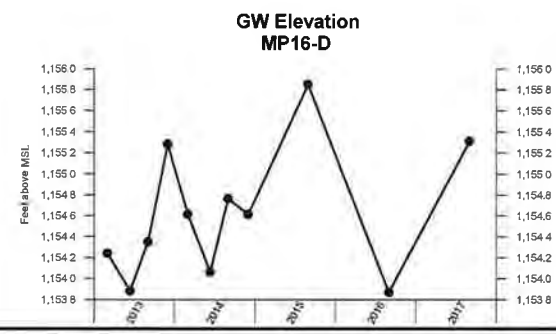












EXPLANATION

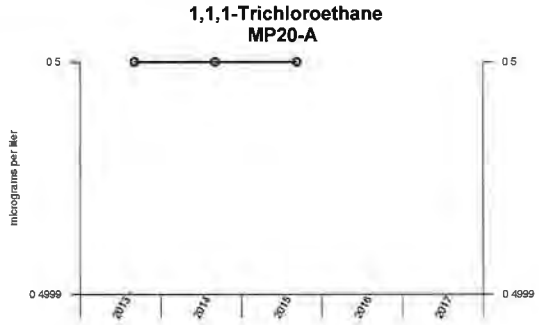
● - Measured Value
○ - Undetected (Displayed at RL)

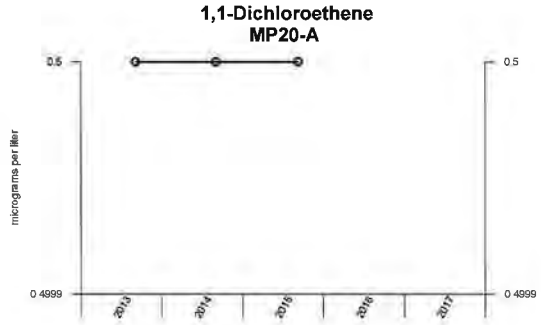
CLEAR CREEK ASSOCIATES

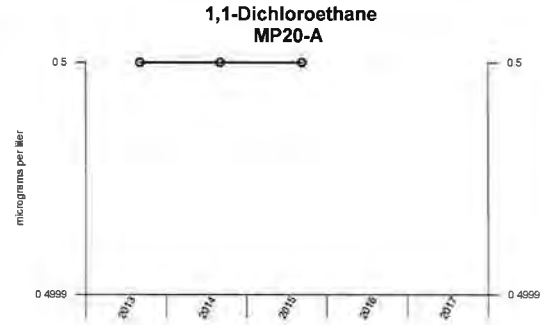
Project Name: MI52 OU1 Effectiveness Report

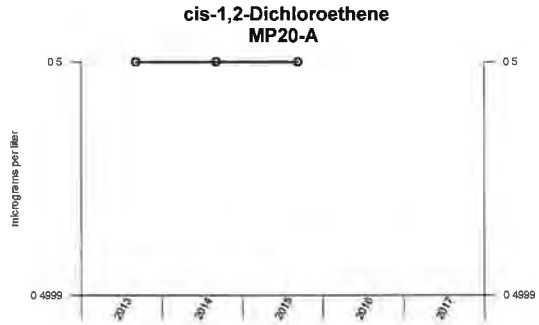
Job No: CC18.1000.00-12 | Date: March 2018

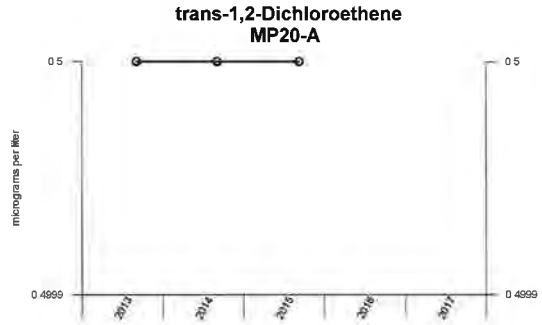
Time-Series Graphs
MP16-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona

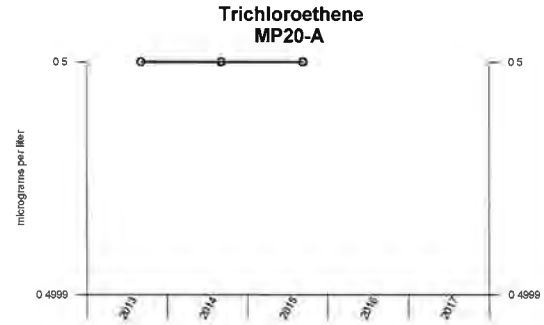


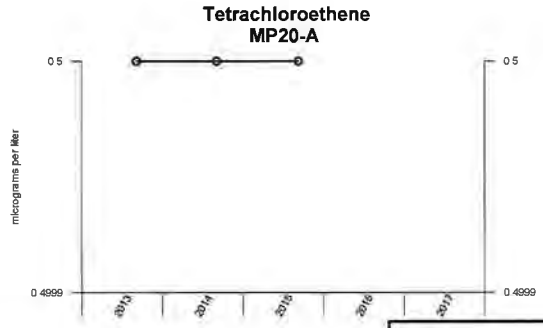


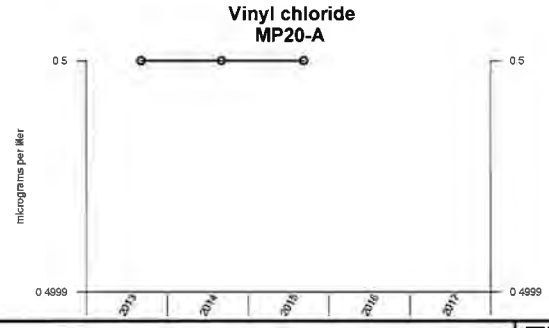


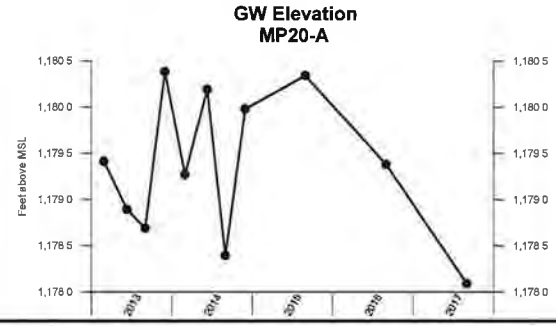












EXPLANATION

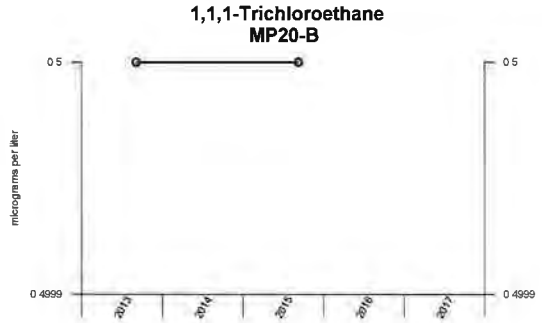
● - Measured Value
○ - Undetected (Displayed at RL)

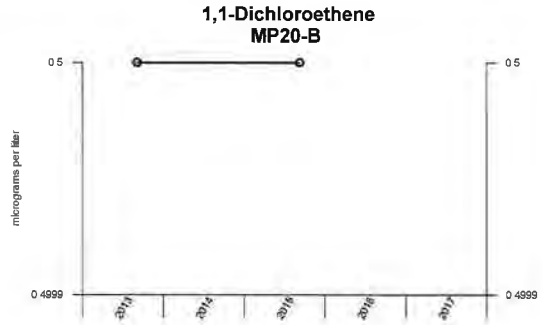
CLEAR CREEK ASSOCIATES

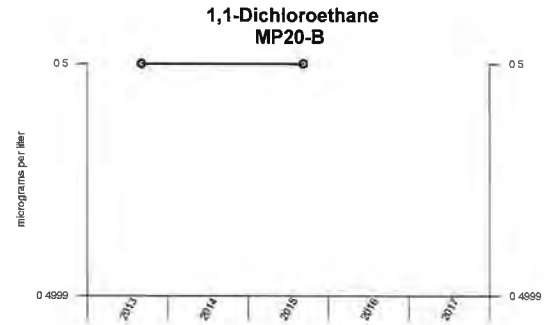
Project Name: MI52 OU1 Effectiveness Report

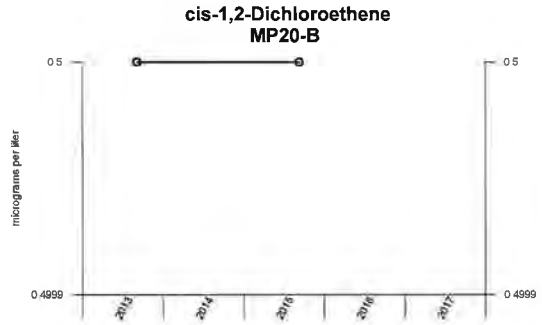
Job No: CC18.1000.00-12 | Date: March 2018

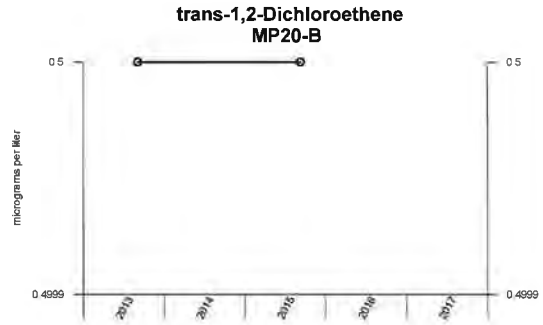
Time-Series Graphs
MP20-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

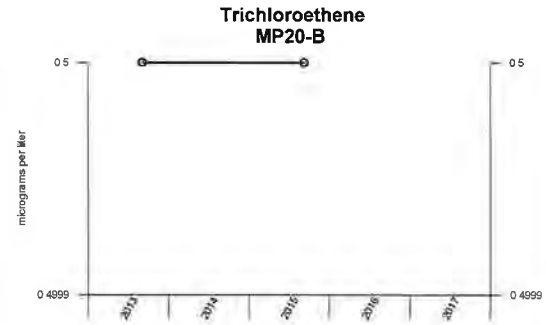


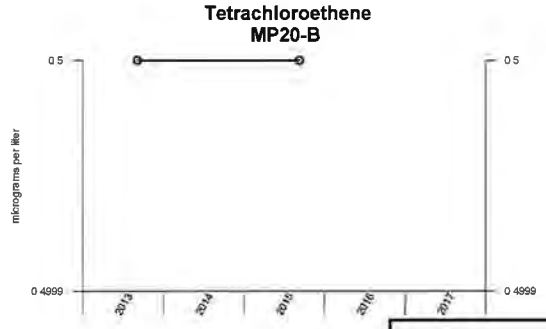


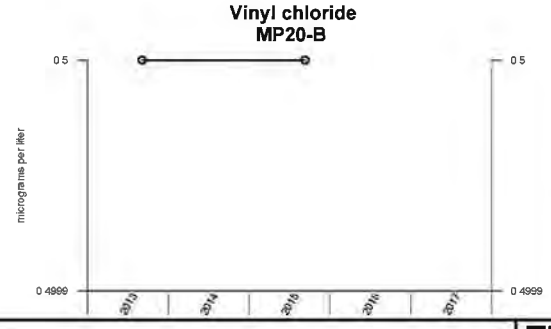


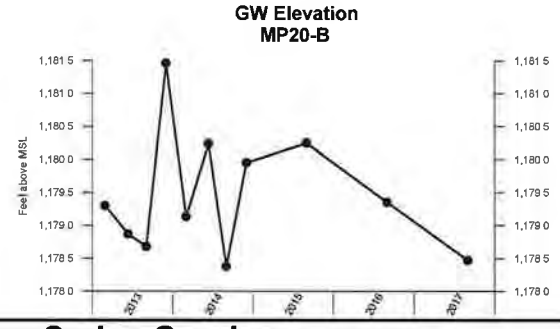












EXPLANATION

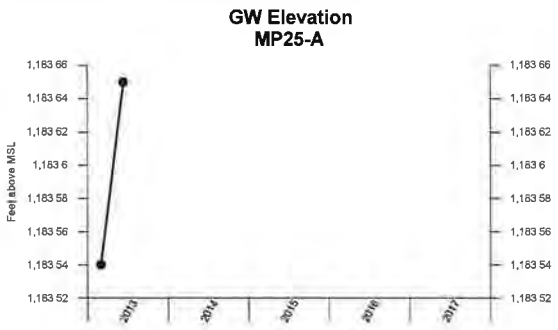
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
MP20-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

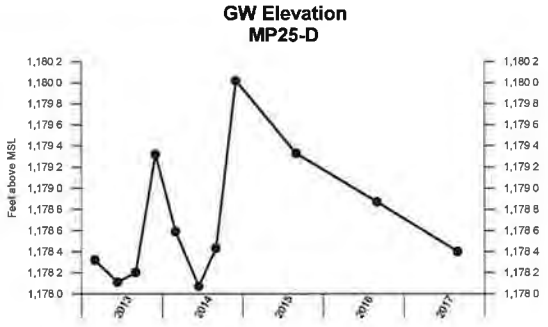
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
MP25-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

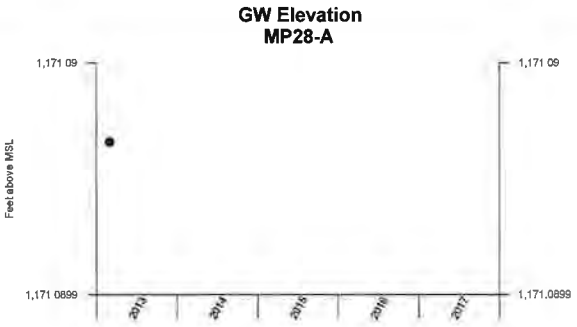
● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
MP25-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona



EXPLANATION

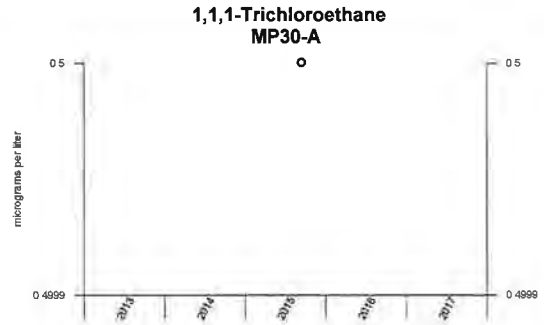
● - Measured Value
○ - Undetected (Displayed at RL)

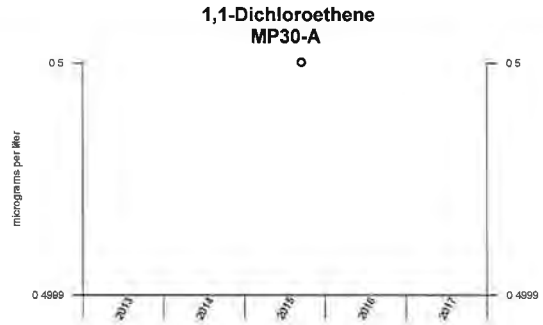
CLEAR CREEK ASSOCIATES

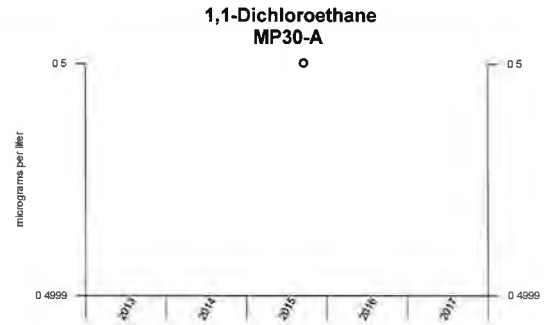
Project Name: MI52 OU1 Effectiveness Report

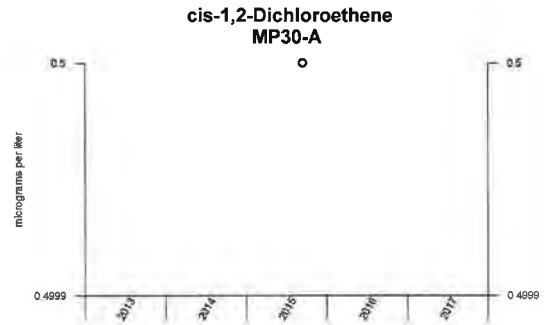
Job No: CC18.1000.00-12 | Date: March 2018

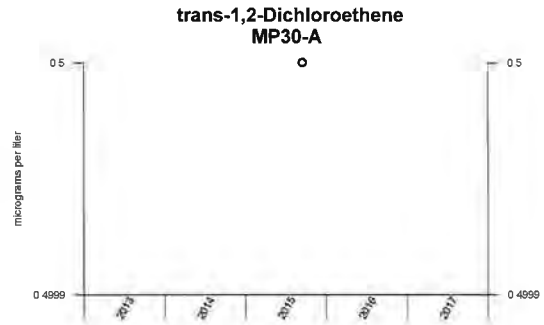
Time-Series Graphs
MP28-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

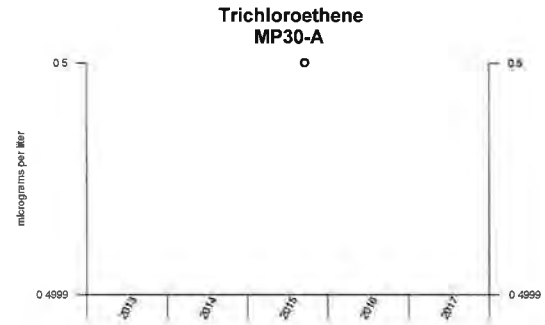


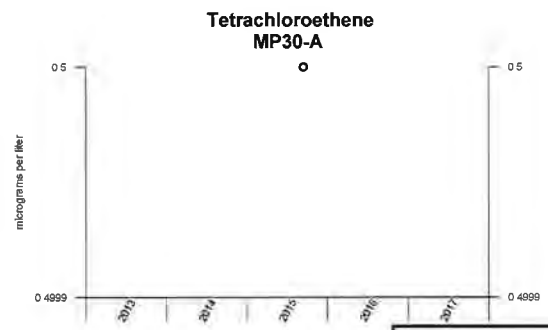


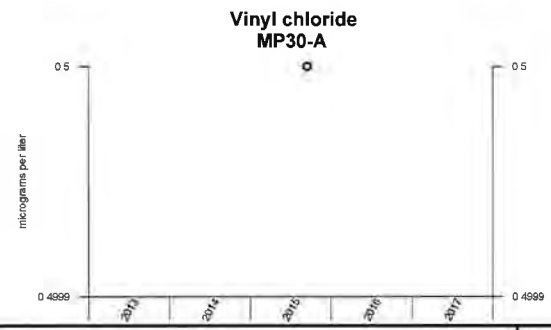


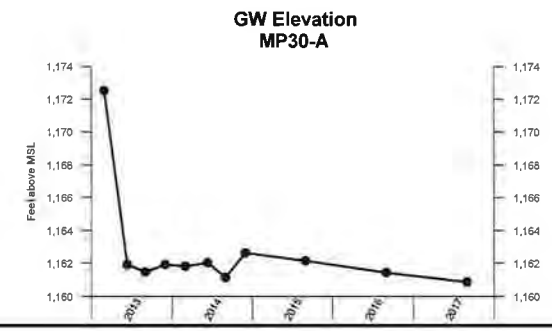












EXPLANATION

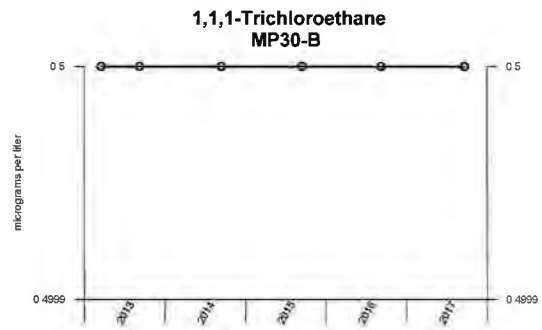
● - Measured Value
○ - Undetected (Displayed at RL)

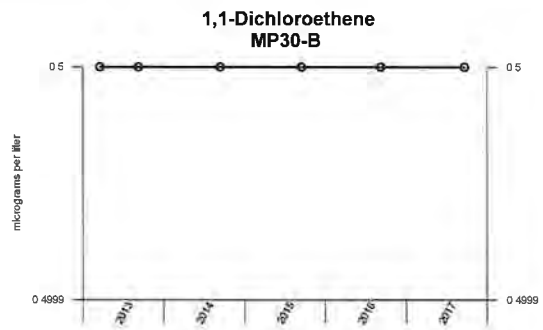
CLEAR CREEK ASSOCIATES

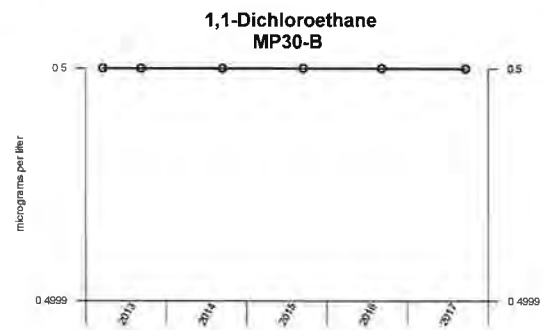
Project Name: MI52 OU1 Effectiveness Report

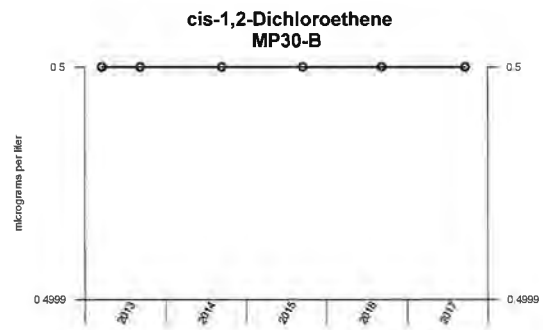
Job No: CC18.1000.00-12 | Date: March 2018

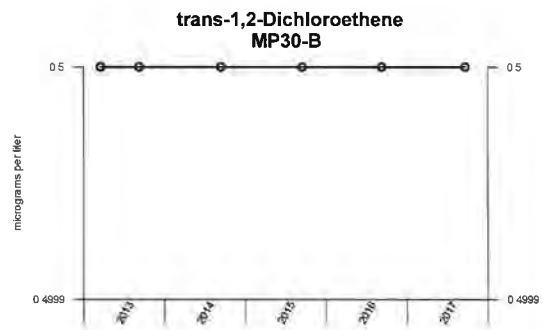
Time-Series Graphs
MP30-A
MI52 OU1 Effectiveness Report
Phoenix, Arizona

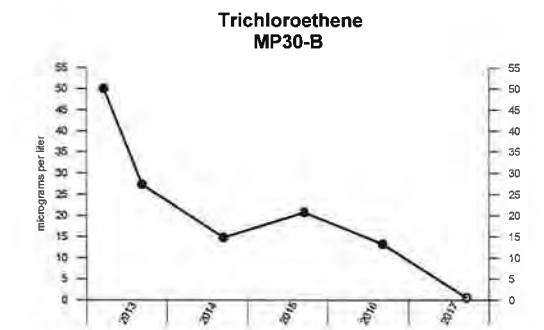


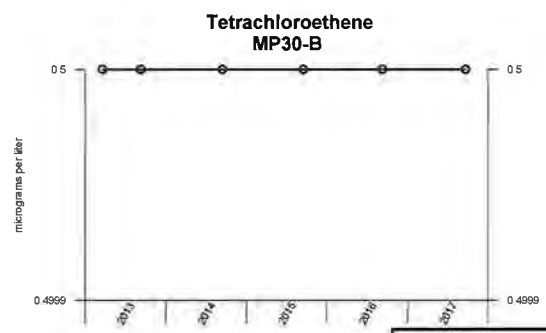


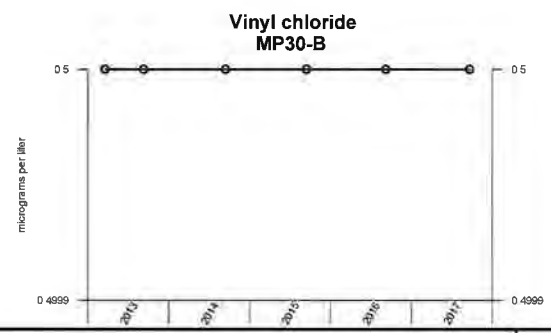


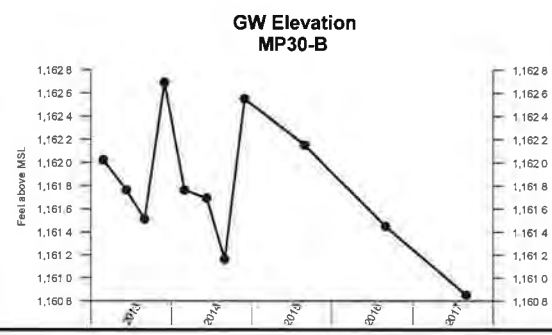












EXPLANATION

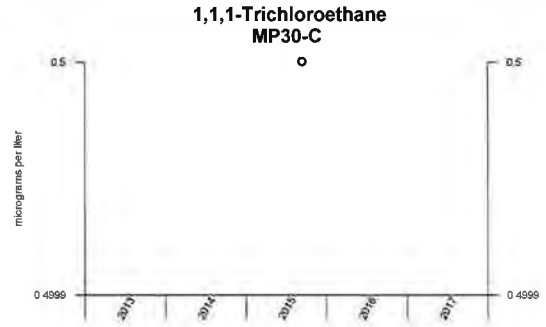
- ● - Measured Value
- ○ - Undetected (Displayed at RL)

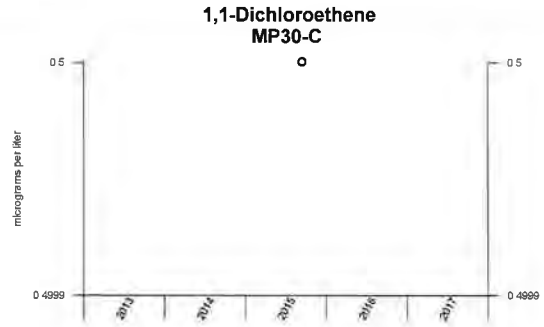
CLEAR CREEK ASSOCIATES

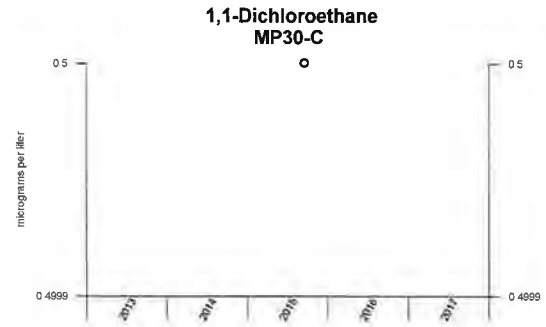
Project Name: MI52 OU1 Effectiveness Report

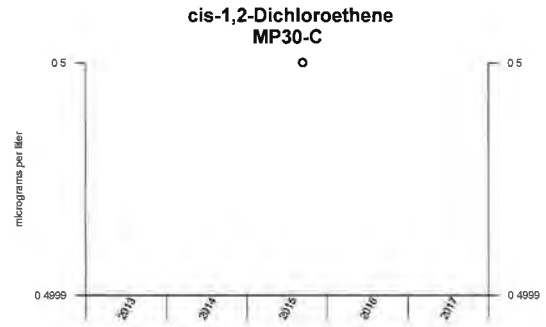
Job No: CC18.1000.00-12 | Date: March 2018

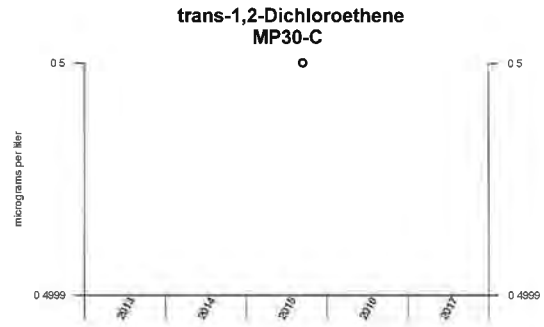
Time-Series Graphs
MP30-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

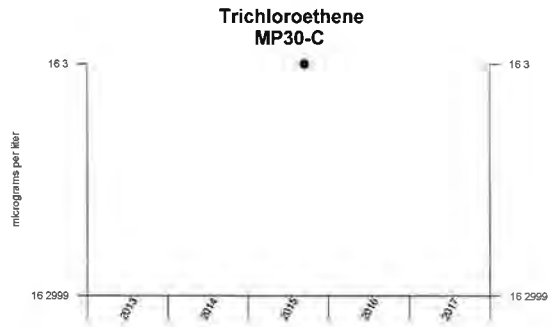


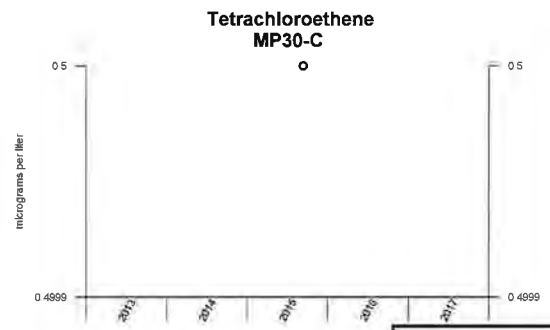


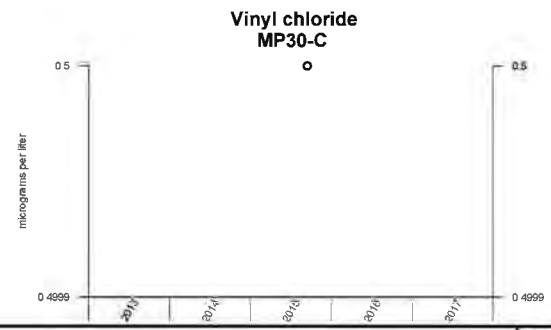


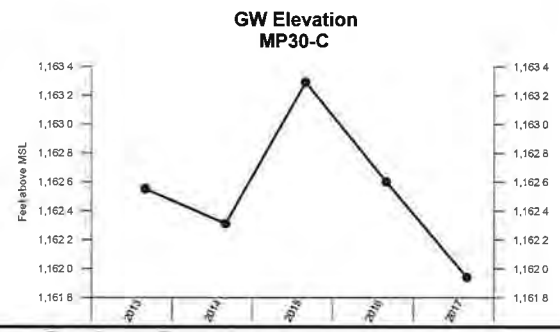












EXPLANATION

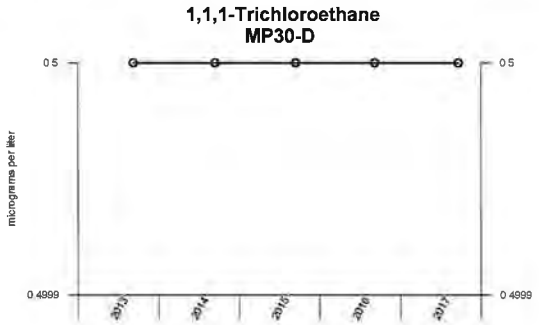
● - Measured Value
○ - Undetected (Displayed at RL)

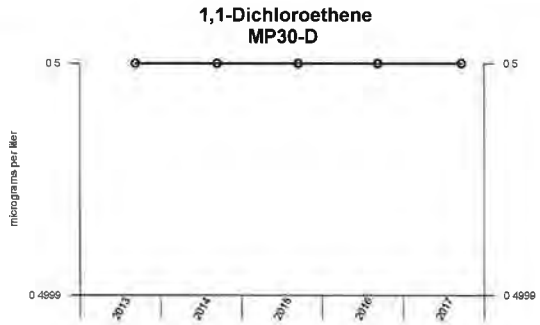
CLEAR CREEK ASSOCIATES

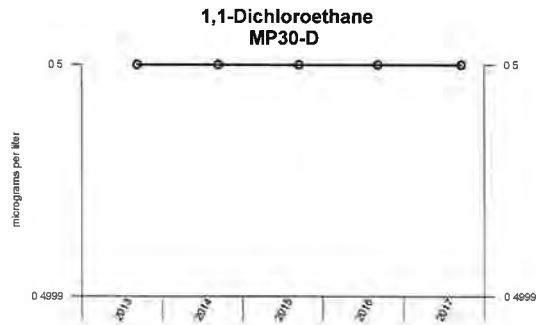
Project Name: MI52 OU1 Effectiveness Report

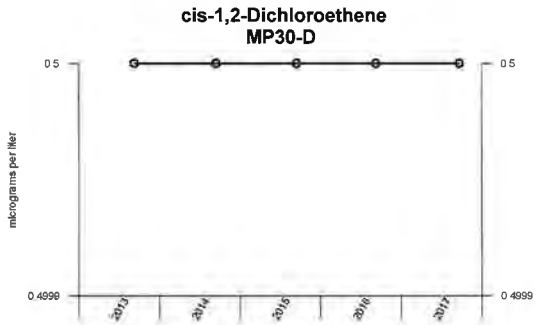
Job No: CC18.1000.00-12 | Date: March 2018

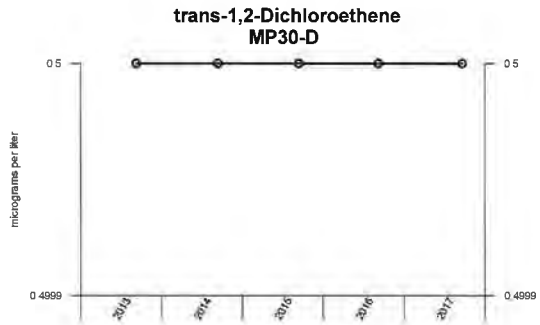
Time-Series Graphs
MP30-C
MI52 OU1 Effectiveness Report
Phoenix, Arizona

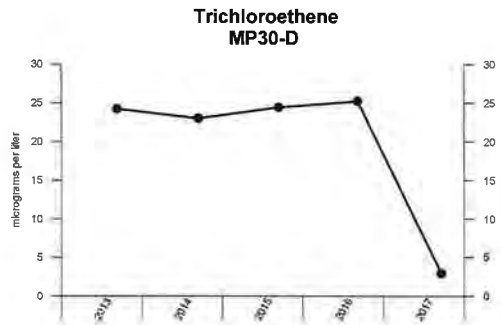


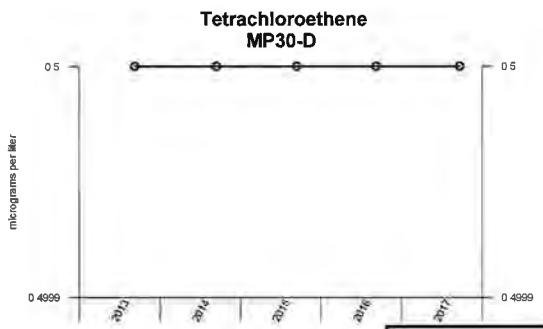


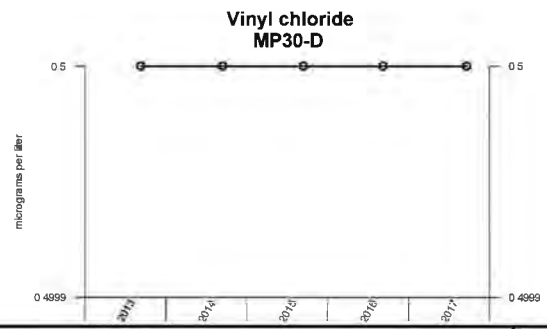


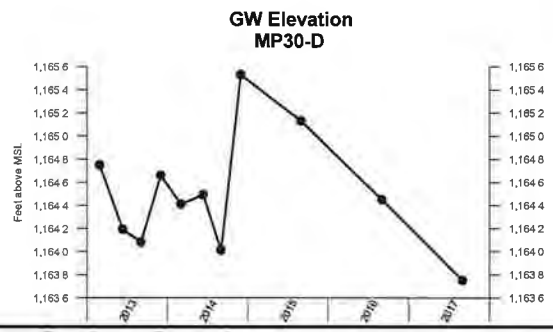












EXPLANATION

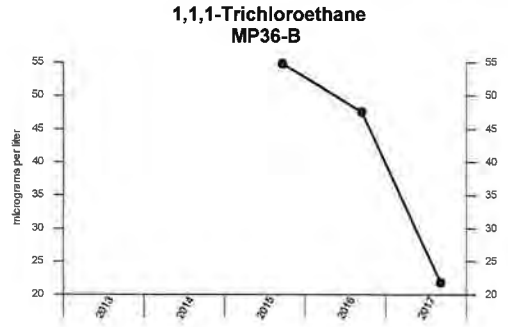
● - Measured Value
○ - Undetected (Displayed at RL)

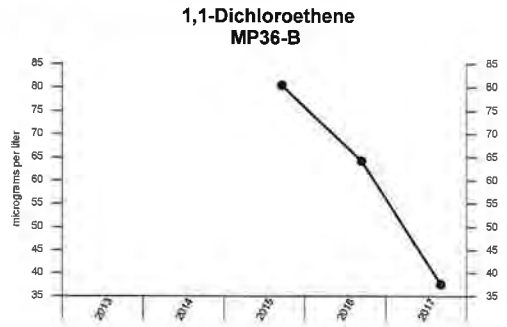
CLEAR CREEK ASSOCIATES

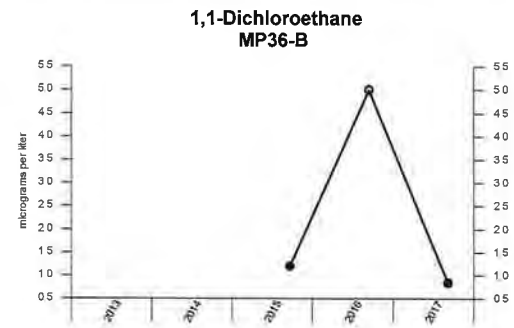
Project Name: MI52 OU1 Effectiveness Report

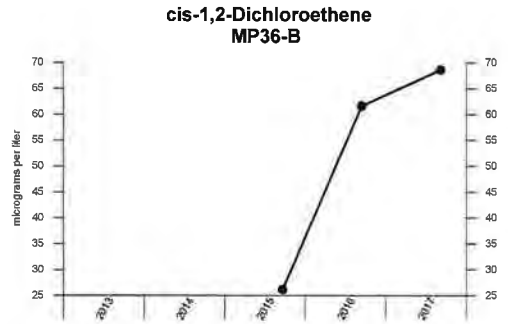
Job No: CC18.1000.00-12 | Date: March 2018

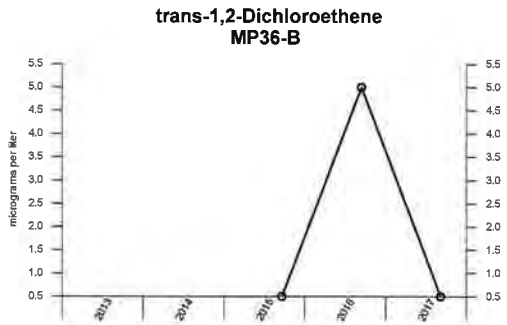
Time-Series Graphs
MP30-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona

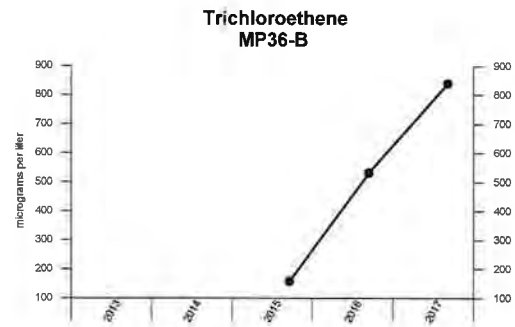


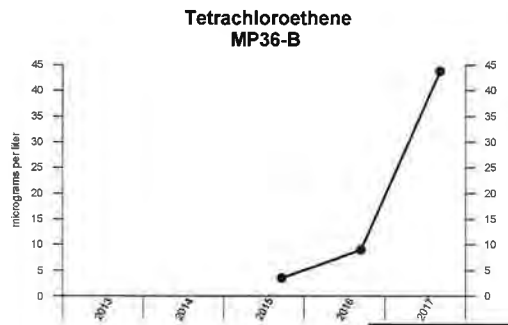


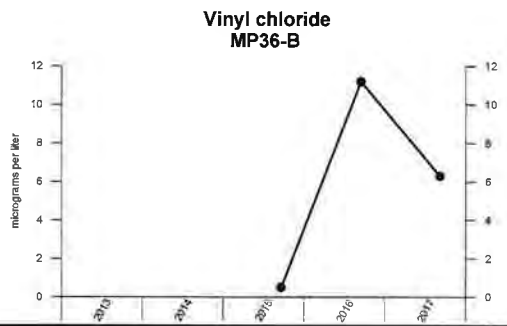


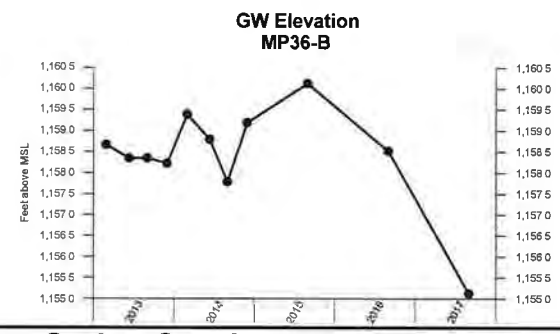












EXPLANATION

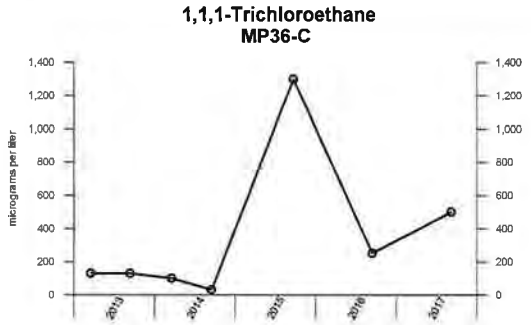
● - Measured Value
○ - Undetected (Displayed at RL)

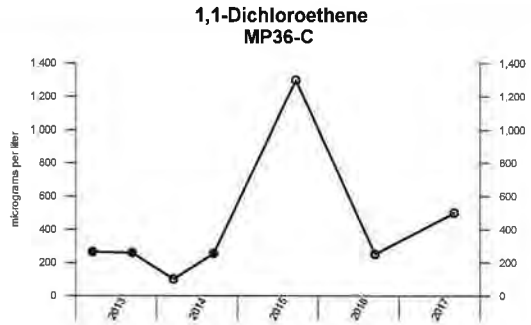
CLEAR CREEK ASSOCIATES

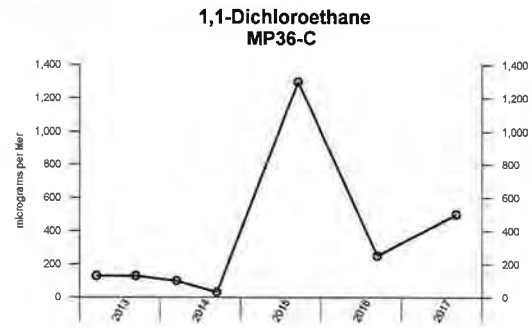
Project Name: MI52 OU1 Effectiveness Report

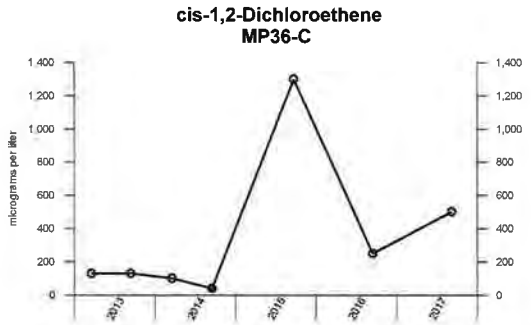
Job No: CC18.1000.00-12 | Date: March 2018

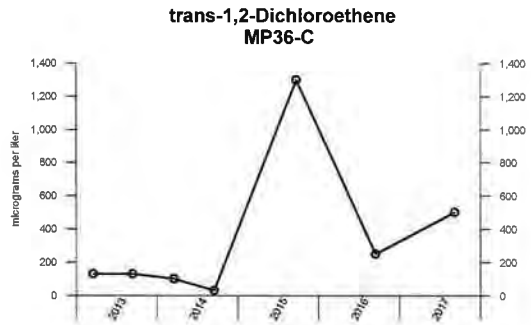
Time-Series Graphs
MP36-B
MI52 OU1 Effectiveness Report
Phoenix, Arizona

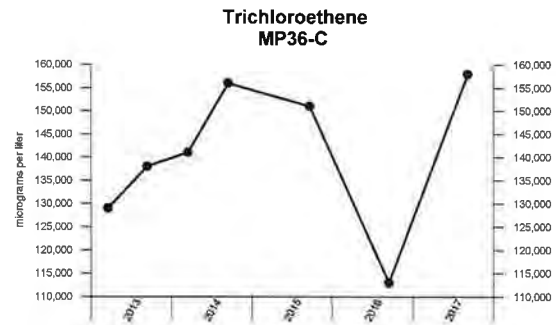


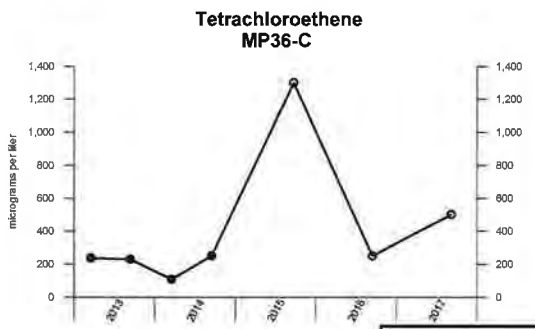


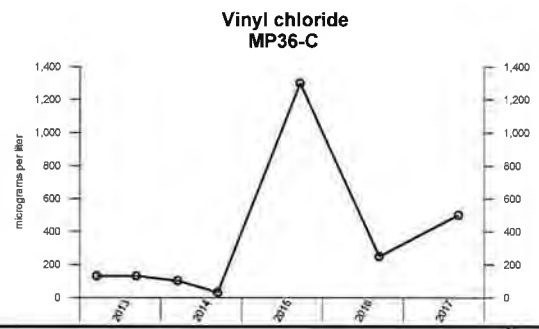


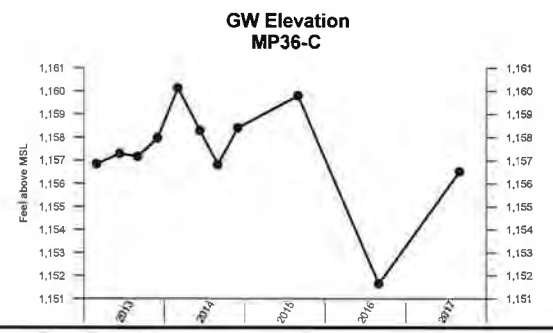












EXPLANATION

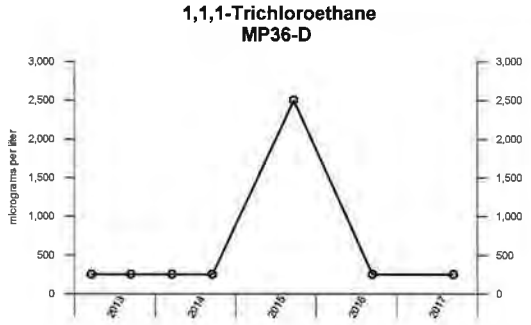
● - Measured Value
○ - Undetected (Displayed at RL)

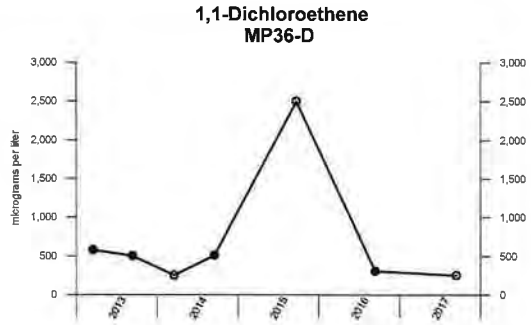
CLEAR CREEK ASSOCIATES

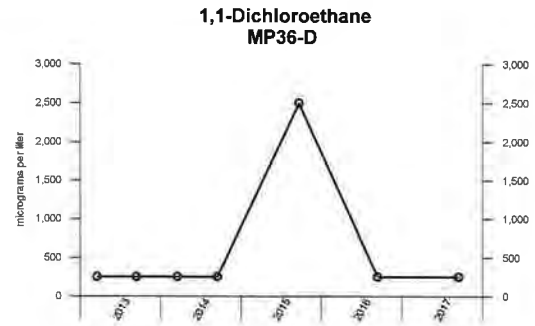
Project Name: MI52 OU1 Effectiveness Report

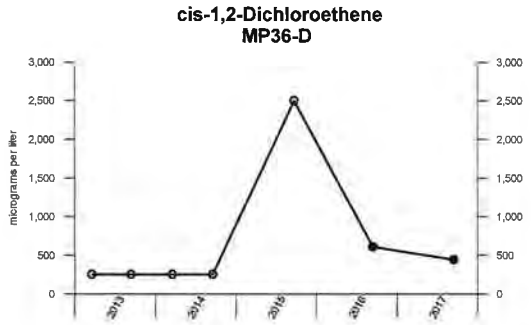
Job No: CC18.1000.00-12 | Date: March 2018

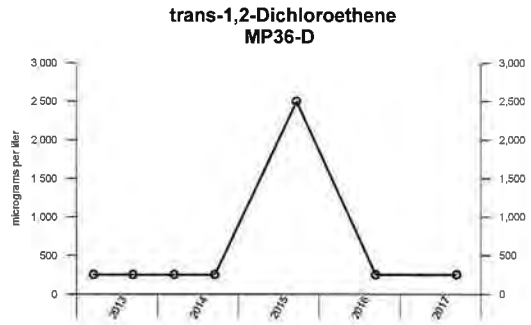
Time-Series Graphs
MP36-C
MI52 OU1 Effectiveness Report
Phoenix, Arizona

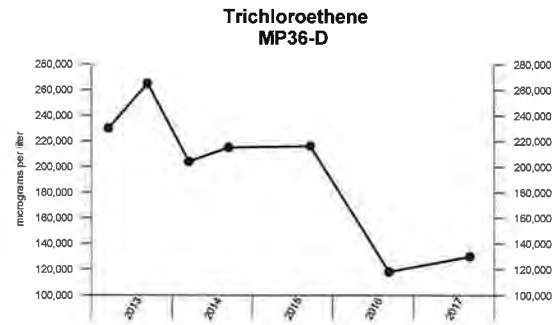


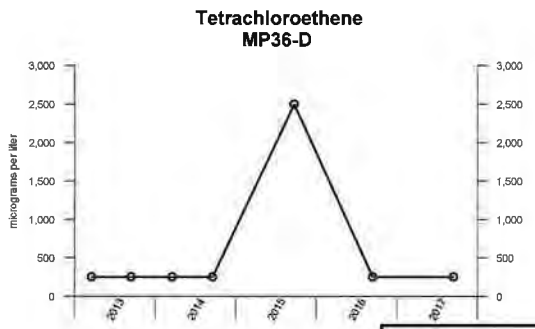


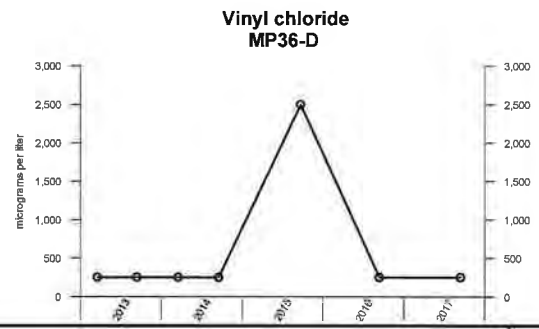


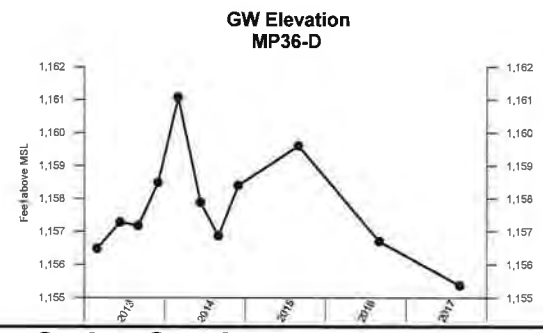












EXPLANATION

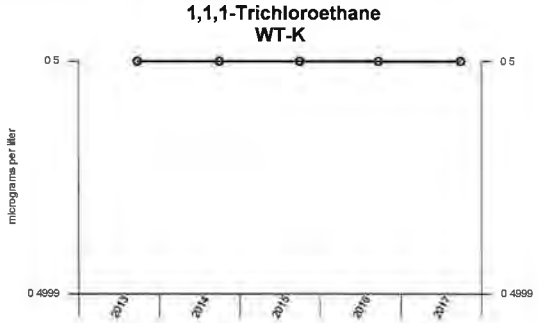
● - Measured Value
○ - Undetected (Displayed at RL)

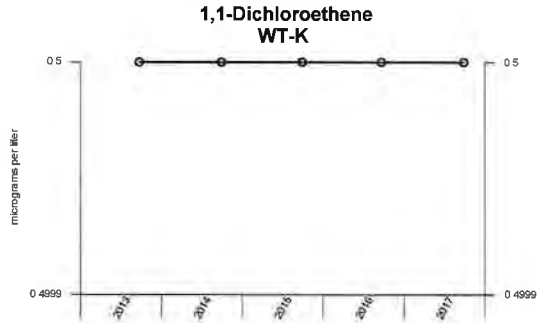
CLEAR CREEK ASSOCIATES

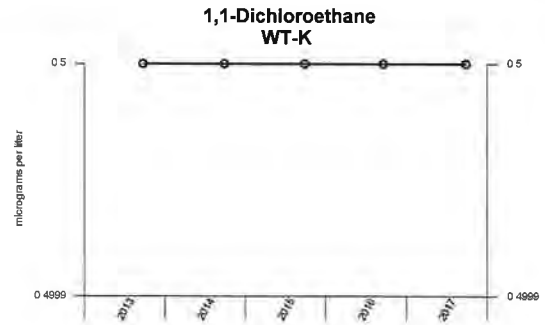
Project Name: MI52 OU1 Effectiveness Report

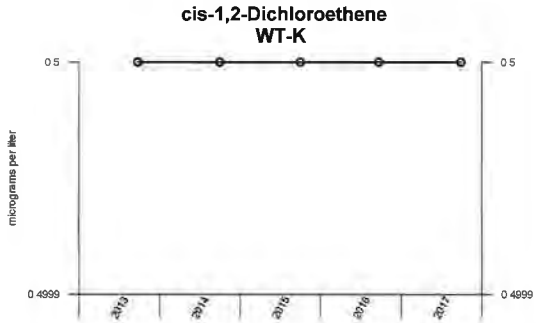
Job No: CC18.1000.00-12 | Date: March 2018

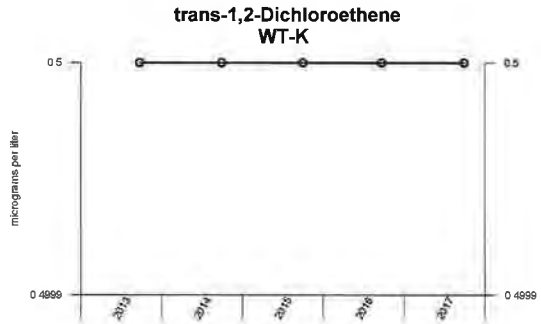
Time-Series Graphs
MP36-D
MI52 OU1 Effectiveness Report
Phoenix, Arizona

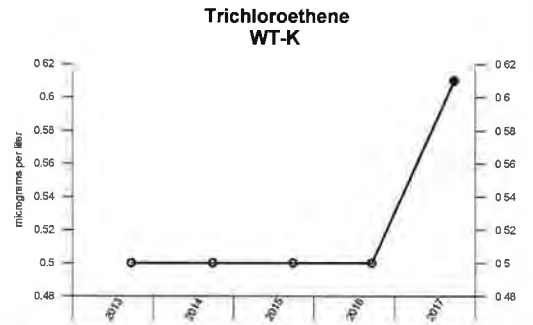


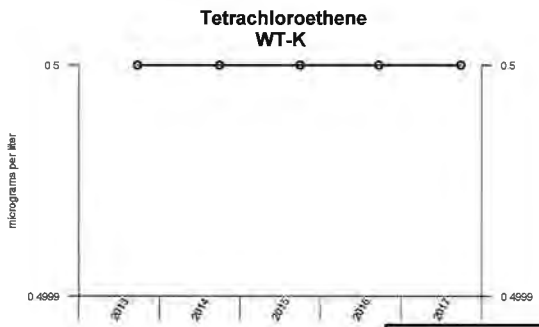


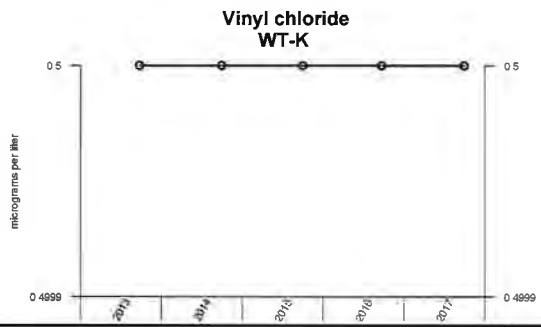


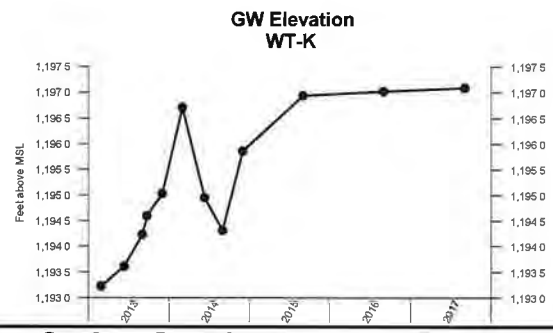












EXPLANATION

● - Measured Value
○ - Undetected (Displayed at RL)

CLEAR CREEK ASSOCIATES

Project Name: MI52 OU1 Effectiveness Report

Job No: CC18.1000.00-12 | Date: March 2018

Time-Series Graphs
WT-K
MI52 OU1 Effectiveness Report
Phoenix, Arizona

APPENDIX E

DATA VALIDATION REVIEW REPORTS
(PROVIDED ON CD VERSION OF REPORT)

Q1/Q2 - DATA VALIDATION REVIEW REPORTS

JANUARY - JUNE 2017 GROUNDWATER DATA

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Clear Creek Associates
6155 E. Indian School Road #200
Scottsdale, AZ 85251
ATTN: Mr. Todd Cruse

August 2, 2017

SUBJECT: 52nd Street Motorola Superfund Site, Data Validation

Dear Mr. Cruse,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on July 18, 2017. Attachment 1 is a summary of the samples that were reviewed for analysis.

LDC Project #39105:

SDG #	**Fraction**
TC97569, TC98756, TD632 TD1659, TD3665, TD4393	Volatiles

The data validation was performed under Level II guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona, March 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, August 2014
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Christina Rink
Project Manager/ Chemist

112 pages-EM

Attachment 1

Level II

LDC #39105 (Clear Creek-Tucson, AZ/ 52nd Street Motorola Superfund Site)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Short VOA (8260C)																																	
Matrix:	Air/Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	TC97569	07/18/17	08/08/17	3	0																																
B	TC98756	07/18/17	08/08/17	3	0																																
C	TD632	07/18/17	08/08/17	3	0																																
D	TD1659	07/18/17	08/08/17	3	0																																
E	TD3665	07/18/17	08/08/17	3	0																																
F	TD4393	07/18/17	08/08/17	3	0																																
Total	J/CR			18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

V:\LOGIN\ClearCreek\Motorola\Accutest\52nd Street\39105ST.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: August 2, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TC97569

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 602	TC97569-1	Water	01/14/17
DM 620	TC97569-2	Water	01/14/17
TRIP BLANK	TC97569-3	Water	01/14/17
DM 602MS	TC97569-1MS	Water	01/14/17
DM 602MSD	TC97569-1MSD	Water	01/14/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TC97569

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TC97569

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TC97569

No Sample Data Qualified in this SDG

LDC #: 39105A1

SDG #: TC97569

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 8/1/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 1	DM 602	TC97569-1	Water	01/14/17
2 1	DM 620	TC97569-2	Water	01/14/17
3 1	TRIP BLANK	TC97569-3	Water	01/14/17
4	DM 602MS	TC97569-1MS	Water	01/14/17
5	DM 602MSD	TC97569-1MSD	Water	01/14/17
6				
7				
8				

Notes:

1	VX3145-MB						

LDC Report# 39105B1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: August 2, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TC98756

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM620	TC98756-1	Water	02/07/17
DM602	TC98756-2	Water	02/07/17
TRIP BLANK	TC98756-3	Water	02/07/17
DM620MS	TC98756-1MS	Water	02/07/17
DM620MSD	TC98756-1MSD	Water	02/07/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM620MS/MSD (DM620)	Trichloroethene	128 (78-123)	129 (78-123)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TC98756

Sample	Compound	Flag	A or P	Reason
DM620	Trichloroethene	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TC98756

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TC98756

No Sample Data Qualified in this SDG

LDC #: 39105B1

SDG #: TC98756

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 8/1/17

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 1	DM620	TC98756-1	Water	02/07/17
2 1	DM602	TC98756-2	Water	02/07/17
3 1	TRIP BLANK	TC98756-3	Water	02/07/17
4	DM620MS	TC98756-1MS	Water	02/07/17
5	DM620MSD	TC98756-1MSD	Water	02/07/17
6				
7				
8				

Notes:

1	VK1885-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39105B1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: M.
2nd Reviewer:

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4/5	S	128 (78-123)	129 (78-123)	( )	1 (det)	J detects/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC Report# 39105C1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: August 2, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD632

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM602	TD632-1	Water	03/15/17
DM620	TD632-2	Water	03/15/17
TRIP BLANK	TD632-3	Water	03/15/17
DM602MS	TD632-1MS	Water	03/15/17
DM602MSD	TD632-1MSD	Water	03/15/17
DM620MS	TD632-2MS	Water	03/15/17
DM620MSD	TD632-2MSD	Water	03/15/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

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U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM620MS/MSD (DM620)	Vinyl chloride	-	147 (57-146)	NA	-

For DM620MS/MSD, no data were qualified for Trichloroethene percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD632

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD632

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD632

No Sample Data Qualified in this SDG

LDC #: 39105C1

SDG #: TD632

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 8/1/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1/2 1	DM602	TD632-1	Water	03/15/17
1 2	DM620	TD632-2	Water	03/15/17
1 3	TRIP BLANK	TD632-3	Water	03/15/17
4	DM602MS	TD632-1MS	Water	03/15/17
5	DM602MSD	TD632-1MSD	Water	03/15/17
6	DM620MS	TD632-2MS	Water	03/15/17
7	DM620MSD	TD632-2MSD	Water	03/15/17
8				

Notes:

1	VG2255-MB						
2	VG2258-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39105C1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: A.A.
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		6/7	S	130 (78-123)	( )	( )	2 (det)	No qual >4x spike amoun
			C	( )	147 (57-146)	( )	(ND)	J detects/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC Report# 39105D1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: August 2, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TC1659

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM602	TD1659-1	Water	04/06/17
DM620	TD1659-2	Water	04/06/17
TRIP BLANK	TD1659-3	Water	04/06/17
DM620MS	TD1659-2MS	Water	04/06/17
DM620MSD	TD1659-2MSD	Water	04/06/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM620MS/MSD (DM620)	1,1-Dichloroethene	126 (66-125)	129 (66-125)	NA	-

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TC1659

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TC1659

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TC1659

No Sample Data Qualified in this SDG

LDC #: 39105D1

SDG #: TD1659

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 8/1/17

Page: 1 of 1

Reviewer: A.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM602	TD1659-1	Water	04/06/17
2	DM620	TD1659-2	Water	04/06/17
3	TRIP BLANK	TD1659-3	Water	04/06/17
4	DM620MS	TD1659-2MS	Water	04/06/17
5	DM620MSD	TD1659-2MSD	Water	04/06/17
6				
7				
8				

Notes:

1	VZ5297-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39105D1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: J.A.
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4|5	H	126 (66-125)	129 (66-125)	( )	2 (ND)	J detects /A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: August 2, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD3665

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM602	TD3665-1	Water	05/17/17
DM620	TD3665-2	Water	05/17/17
TRIP BLANK	TD3665-3	Water	05/17/17
DM620MS	TD3665-2MS	Water	05/17/17
DM620MSD	TD3665-2MSD	Water	05/17/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD3665

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD3665

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD3665

No Sample Data Qualified in this SDG

LDC #: 39105E1

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 8/1/17

SDG #: TD3665

Page: 1 of 1

Laboratory: Accutest Laboratories

Reviewer: A.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:
A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM602	TD3665-1	Water	05/17/17
2	DM620	TD3665-2	Water	05/17/17
3	TRIP BLANK	TD3665-3	Water	05/17/17
4	DM620MS	TD3665-2MS	Water	05/17/17
5	DM620MSD	TD3665-2MSD	Water	05/17/17
6				
7				
8				

Notes:

1	VG2337-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: August 2, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD4393

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM602	TD4393-1	Water	06/02/17
DM620	TD4393-2	Water	06/02/17
TRIP BLANK	TD4393-3	Water	06/02/17
DM620MS	TD4393-2MS	Water	06/02/17
DM620MSD	TD4393-2MSD	Water	06/02/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (August 2014). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM620MS/MSD (DM620)	Trichloroethene	70 (78-123)	66 (78-123)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD4393

Sample	Compound	Flag	A or P	Reason
DM620	Trichloroethene	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD4393

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD4393

No Sample Data Qualified in this SDG

LDC #: 39105F1

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 8/1/17

SDG #: TD4393

Page: 1 of 1

Laboratory: Accutest Laboratories

Reviewer:

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM602	TD4393-1	Water	06/02/17
2	DM620	TD4393-2	Water	06/02/17
3	TRIP BLANK	TD4393-3	Water	06/02/17
4	DM620MS	TD4393-2MS	Water	06/02/17
5	DM620MSD	TD4393-2MSD	Water	06/02/17
6				
7				
8				

Notes:

1	VK2021-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39105F1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: A.A.
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4/5	S	70 (78-123)	66 (78-123)	( )	2 (det)	J/UJ/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

Q3/Q4 - DATA VALIDATION REVIEW REPORTS

SEPTEMBER - OCTOBER 2017 GROUNDWATER DATA

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Clear Creek Associates
6155 E. Indian School Road #200
Scottsdale, AZ 85251
ATTN: Mr. Todd Cruse

November 20, 2017

SUBJECT: 52nd Street Motorola Superfund Site (OU1), Data Validation

Dear Mr. Cruse,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on October 27, 2017. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #39720_39721_OU1:

SDG #	Fraction
TD8618, TD8740, TD8751,TD8956, TD9050, TD9092 TD9093, TD9145, TD9248, TD9249, TD9319, TD9374, TD9409, TD9521, TD9522, TD9538, TD9545, TD9610, TD9691, TD9777, TD9938, TD9959, TD10055, TD10119, TD10185 TD10253, TD10316, TD10453, TD6516	Volatiles

The data validation was performed under Level II guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona, March 2015
- USEPA, National Functional Guidelines for Organic Superfund Methods Data Review, January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Christina Rink
Project Manager/ Chemist

657 pages-EM

Attachment 1

Level II

LDC #39720 (Clear Creek-Tucson, AZ/ 52nd Street Motorola Superfund Site)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Short VOA (8260C)																																	
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	TD8618	10/27/17	11/17/17	3	0																																
B	TD8740	10/27/17	11/17/17	3	0																																
C	TD8751	10/27/17	11/17/17	4	0																																
D	TD8752	10/27/17	11/17/17	4	0																																
E	TD8850	10/27/17	11/17/17	7	0																																
F	TD8956	10/27/17	11/17/17	2	0																																
G	TD8957	10/27/17	11/17/17	9	0																																
H	TD9050	10/27/17	11/17/17	2	0																																
I	TD9051	10/27/17	11/17/17	7	0																																
J	TD9092	10/27/17	11/17/17	3	0																																
K	TD9093	10/27/17	11/17/17	9	0																																
L	TD9145	10/27/17	11/17/17	2	0																																
M	TD9146	10/27/17	11/17/17	6	0																																
N	TD9248	10/27/17	11/17/17	11	0																																
O	TD9249	10/27/17	11/17/17	8	0																																
P	TD9319	10/27/17	11/17/17	7	0																																
Q	TD9374	10/27/17	11/17/17	13	0																																
R	TD9409	10/27/17	11/17/17	12	0																																
S	TD9411	10/27/17	11/17/17	3	0																																
T	TD9521	10/27/17	11/17/17	20	0																																
U	TD9522	10/27/17	11/17/17	2	0																																
V	TD9538	10/27/17	11/17/17	3	0																																
W	TD9545	10/27/17	11/17/17	14	0																																
X	TD9610	10/27/17	11/17/17	5	0																																
Y	TD9691	10/27/17	11/17/17	5	0																																
Z	TD9777	10/27/17	11/17/17	8	0																																
Total	T/CR			172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	172

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

V:\LOGIN\ClearCreek\Motorola\Accutest\52nd Street\39720ST.wpd

175 pages-EM R1 (added I)

Attachment 1

Level II

LDC #39721 (Clear Creek-Tucson, AZ/ 52nd Street Motorola Superfund Site)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Short VOA (8260C)																																	
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	TD9938	10/27/17	11/17/17	5	0																																
B	TD9959	10/27/17	11/17/17	3	0																																
C	TD10055	10/27/17	11/17/17	3	0																																
D	TD10119	10/27/17	11/17/17	5	0																																
E	TD10185	10/27/17	11/17/17	6	0																																
F	TD10253	10/27/17	11/17/17	3	0																																
G	TD10316	10/27/17	11/17/17	4	0																																
H	TD10453	10/27/17	11/17/17	2	0																																
I	TD6516	11/09/17	11/17/17	3	0																																
Total	T/CR			34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

V:\LOGIN\ClearCreek\Motorola\Accutest\52nd Street\39721ST.wpd

LDC Report# 39720A1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD8618

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP16-D	TD8618-1	Water	09/06/17
MP16-B	TD8618-2	Water	09/06/17
TRIP BLANK	TD8618-3	Water	09/06/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD8618

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD8618

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD8618

No Sample Data Qualified in this SDG

LDC #: 39720A1

SDG #: TD8618

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	MP16-D	TD8618-1	Water	09/06/17
2	MP16-B	TD8618-2	Water	09/06/17
3	TRIP BLANK	TD8618-3	Water	09/06/17
4				
5				
6				
7				
8				

Notes:

1	VX3332-MB						

LDC Report# 39720B1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD8740

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP36-B	TD8740-1	Water	09/07/17
MP36-C	TD8740-2	Water	09/07/17
TRIP BLANK	TD8740-3	Water	09/07/17
MP36-BMS	TD8740-1MS	Water	09/07/17
MP36-BMSD	TD8740-1MSD	Water	09/07/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
MP36-BMS/MSD (MP36-B)	Trichloroethene	37 (78-123)	58 (78-123)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD8740

Sample	Compound	Flag	A or P	Reason
MP36-B	Trichloroethene	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD8740

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD8740

No Sample Data Qualified in this SDG

LDC #: 39720B1

SDG #: TC8740

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	No samples associated, NG (TD9013-4MS/D) = %R & RPD OUT
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 1/2	MP36-B	TD8740-1	Water	09/07/17
2 2	MP36-C	TD8740-2	Water	09/07/17
3 1	TRIP BLANK	TD8740-3	Water	09/07/17
4 1	MP36-BMS	TD8740-1MS	Water	09/07/17
5 1	MP36-BMSD	TD8740-1MSD	Water	09/07/17
6				
7				
8				

Notes:

1	VG2462-MB						
2	VZ5406-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39720B1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: A.A.
2nd Reviewer: [signature]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4/5	S	37 (78-123)	58 (78-123)	( )	1 (det)	J/UJ/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC Report# 39720C1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD8751

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP13-B	TD8751-1	Water	09/08/17
MORGAN WELL TANK	TD8751-2	Water	09/08/17
MORGAN WELL	TD8751-3	Water	09/08/17
TRIP BLANK	TD8751-4	Water	09/08/17
MP13-BMS	TD8751-1MS	Water	09/08/17
MP13-BMSD	TD8751-1MSD	Water	09/08/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
MP13-BMS/MSD (MP13-B)	Trichloroethene	73 (78-123)	39 (78-123)	J (all detects)	A
MP13-BMS/MSD (MP13-B)	Vinyl chloride	150 (57-146)	-	NA	-

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD8751

Sample	Compound	Flag	A or P	Reason
MP13-B	Trichloroethene	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD8751

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD8751

No Sample Data Qualified in this SDG

LDC #: 39720C1

SDG #: TC8751

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: A.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 4
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note:
A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	MP13-B	TD8751-1	Water	09/08/17
2	MORGAN WELL TANK	TD8751-2	Water	09/08/17
3	MORGAN WELL	TD8751-3	Water	09/08/17
4	TRIP BLANK	TD8751-4	Water	09/08/17
5	MP13-BMS	TD8751-1MS	Water	09/08/17
6	MP13-BMSD	TD8751-1MSD	Water	09/08/17
7				
8				

Notes:

1	VE2804-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39720C1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: A.A.
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		5/6	S	73 (78-123)	39 (78-123)	( )	1 (det)	J/UJ/A
			C	150 (57-146)	( )	( )	(ND)	J detects/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC Report# 39720F1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD8956

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP11-B	TD8956-1	Water	09/12/17
TRIP BLANK	TD8956-2	Water	09/12/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD8956

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD8956

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD8956

No Sample Data Qualified in this SDG

LDC #: 39720F1

SDG #: TC8956

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 2
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	(TD9409-6MS/D)
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	MP11-B	TD8956-1	Water	09/12/17
2	TRIP BLANK	TD8956-2	Water	09/12/17
3				
4				
5				
6				
7				
8				

Notes:

1	VG2479-MB						

LDC Report# 39720H1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9050

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP11-D	TD9050-1	Water	09/13/17
TRIP BLANK	TD9050-2	Water	09/13/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9050

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9050

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9050

No Sample Data Qualified in this SDG

LDC #: 39720H1

SDG #: TC9050

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 2
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS / D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	MP11-D	TD9050-1	Water	09/13/17
2	TRIP BLANK	TD9050-2	Water	09/13/17
3				
4				
5				
6				
7				
8				

Notes:

1	VZ5484-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9092

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP36-D	TD9092-1	Water	09/14/17
DM2000	TD9092-2	Water	09/14/17
TRIP BLANK	TD9092-3	Water	09/14/17
MP36-DMS	TD9092-1MS	Water	09/14/17
MP36-DMSD	TD9092-1MSD	Water	09/14/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
MP36-DMS/MSD (MP36-D)	Tetrachloroethene	158 (69-127)	160 (69-127)	NA	-
MP36-DMS/MSD (MP36-D)	Trichloroethene	-	130 (78-123)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples MP36-D and DM2000 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	MP36-D	DM2000	
cis-1,2-Dichloroethene	443	500U	Not calculable
Trichloroethene	130000	159000	20 (≤30)

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9092

Sample	Compound	Flag	A or P	Reason
MP36-D	Trichloroethene	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9092

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9092

No Sample Data Qualified in this SDG

LDC #: 39720J1

SDG #: TC9092

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~A~~	No samples associated, NQ
VIII.	Matrix spike/Matrix spike duplicates	SW	(TD9093-4MS/D) = %R & RPD out
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D_1 = 1 + 2
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

		Client ID	Lab ID	Matrix	Date
1	1	MP36-D D_1	TD9092-1	Water	09/14/17
2	1	DM2000 D_1	TD9092-2	Water	09/14/17
3	2	TRIP BLANK	TD9092-3	Water	09/14/17
4	1	MP36-DMS	TD9092-1MS	Water	09/14/17
5	1	MP36-DMSD	TD9092-1MSD	Water	09/14/17
6					
7					
8					

Notes:

1	VG2462-MB						
2	VZ5406-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39720J1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: J.A.
2nd Reviewer: [signature]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4/5	AA	158 (69-127)	160 (69-127)	( )	1 (ND)	J detects/A
			S	( )	130 (78-123)	( )	(det)	↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC#: 39720J1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer: [signature]

METHOD: GC/MS VOA (EPA SW 846 Method 8260~~B~~C)
Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	1	2	
QQQ	443	500U	NC
S	130000	159000	20

V:\Janny\FD calculations\39720J1-clear creek 52nd.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9093

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 603-68-BRI	TD9093-1	Water	09/14/17
DM 603-115	TD9093-2	Water	09/14/17
DM 603-245	TD9093-3	Water	09/14/17
DM 603-170	TD9093-4	Water	09/14/17
DM 502-161-BRI	TD9093-5	Water	09/14/17
DM 502-161	TD9093-6	Water	09/14/17
DM 502-119	TD9093-7	Water	09/14/17
DM 1001	TD9093-8	Water	09/14/17
TRIP BLANK	TD9093-9	Water	09/14/17
DM 603-170MS	TD9093-4MS	Water	09/14/17
DM 603-170MSD	TD9093-4MSD	Water	09/14/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

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U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM 603-170MS/MSD (DM 603-170)	1,1-Dichloroethane	64 (71-125)	-	J (all detects) UJ (all non-detects)	A
	1,1-Dichloroethene	64 (66-125)	-		
	1,2-Dichloroethane	70 (71-131)	-		
	trans-1,2-Dichloroethene	64 (71-126)	-		
	1,1,1-Trichloroethane	60 (74-128)	-		
	cis-1,2-Dichloroethene	64 (73-126)	-		
	Trichloroethene	- 20 (78-123)	32 (78-123)		

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
DM 603-170MS/MSD (DM 603-170)	1,1-Dichloroethane 1,1,1-Trichloroethane Tetrachloroethene	19 (≤17) 20 (≤19) 23 (≤20)	NA	-

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples DM 603-115 and DM 1001 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	DM 603-115	DM 1001	
cis-1,2-Dichloroethene	2.4	3.1	25 (≤30)
Trichloroethene	6.5	7.3	12 (≤30)

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in one sample

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9093

Sample	Compound	Flag	A or P	Reason
DM 603-170	1,1-Dichloroethane 1,1-Dichloroethene 1,2-Dichloroethane trans-1,2-Dichloroethene 1,1,1-Trichloroethane cis-1,2-Dichloroethene Trichloroethene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9093

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9093

No Sample Data Qualified in this SDG

LDC #: 39720K1 **VALIDATION COMPLETENESS WORKSHEET** Date: 11/10/17
SDG #: TC9093 Level II Page: 1 of 1
Laboratory: Accutest Laboratories Reviewer: A.A.
2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 9
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D_1 = 2 + 8
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 1	DM 603-68-BRI	TD9093-1	Water	09/14/17
2 1	DM 603-115 D_1	TD9093-2	Water	09/14/17
3 2	DM 603-245	TD9093-3	Water	09/14/17
4 3	DM 603-170	TD9093-4	Water	09/14/17
5 2	DM 502-161-BRI	TD9093-5	Water	09/14/17
6 2	DM 502-161	TD9093-6	Water	09/14/17
7 2	DM 502-119	TD9093-7	Water	09/14/17
8 2	DM 1001 D_1	TD9093-8	Water	09/14/17
9 4	TRIP BLANK	TD9093-9	Water	09/14/17
10 3	DM 603-170MS	TD9093-4MS	Water	09/14/17
11 3	DM 603-170MSD	TD9093-4MSD	Water	09/14/17
12				
13				

(1) VX3350-MB (4) VX3365-MB
(2) VZ5405-MB
(3) VZ5406-MB

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39720K1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: A.A.
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		10/11	I	64 (71-125)	( )	( )	4 (ND)	J/UJ/A
			H	64 (66-125)	( )	( )		
			L	70 (71-131)	( )	( )		
			QQQ	64 (73-126)	( )	( )	(det)	
			PPP	64 (71-126)	( )	( )	(ND)	
			N	60 (74-128)	( )	( )		
			S	-20 (78-123)	32 (78-123)	( )	(det)	
			I	( )	( )	19 (≤17)	(ND)	J detects/A
			N	( )	( )	20 (≤19)		
			AA	( )	( )	23 (≤20)		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC#: 39720K1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)
Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	2	8	
QQQ	2.4	3.1	25
S	6.5	7.3	12

V:\Janny\FD calculations\39720K1-clear creek 52nd.wpd

LDC Report# 39720L1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9145

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP13-D	TD9145-1	Water	09/15/17
TRIP BLANK	TD9145-2	Water	09/15/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were not within QC limits. No data were qualified since there were no associated samples in this SDG. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9145

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9145

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9145

No Sample Data Qualified in this SDG

LDC #: 39720L1

SDG #: TC9145

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: A.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 2
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	SW	No samples associated, NQ (TD8740-1MS/D) = %R OUT, (TD9409-6MS/D)
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 2	MP13-D	TD9145-1	Water	09/15/17
2 1	TRIP BLANK	TD9145-2	Water	09/15/17
3				
4				
5				
6				
7				
8				

Notes:

1	VG2462-MB						
2	VG2475-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9248

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TRIP BLANK	TD9248-1	Water	09/18/17
DM 305	TD9248-2	Water	09/18/17
DM 306	TD9248-3	Water	09/18/17
DM 307	TD9248-4	Water	09/18/17
DM 308	TD9248-5	Water	09/18/17
DM 309	TD9248-6	Water	09/18/17
DM 2001	TD9248-7	Water	09/18/17
DM 310	TD9248-8	Water	09/18/17
DM 313	TD9248-9	Water	09/18/17
DM 312	TD9248-10	Water	09/18/17
DM 311	TD9248-11	Water	09/18/17
DM 2001MS	TD9248-7MS	Water	09/18/17
DM 2001MSD	TD9248-7MSD	Water	09/18/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM 2001MS/MSD (DM 2001)	Tetrachloroethene Trichloroethene	66 (69-127) 66 (78-123)	- -	J (all detects) J (all detects)	A

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
DM 2001MS/MSD (DM 2001)	1,1-Dichloroethene	23 (≤20)	NA	-

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	%R (Limits)	Flag	A or P
VX3353-BS (TRIP BLANK DM 313 DM 312 DM 311)	1,1-Dichloroethene	137 (66-125)	NA	-

X. Field Duplicates

Samples DM 309 and DM 2001 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	DM 309	DM 2001	
cis-1,2-Dichloroethene	8.9	7.9	12 (≤30)
Tetrachloroethene	5.0	4.3	15 (≤30)
Trichloroethene	111	97.7	13 (≤30)

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due MS/MSD %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9248

Sample	Compound	Flag	A or P	Reason
DM 2001	Tetrachloroethene Trichloroethene	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9248

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9248

No Sample Data Qualified in this SDG

LDC #: 39720N1

SDG #: TC9248

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 2

Reviewer:

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	SW	LCS
X.	Field duplicates	SW	D_1 = 6+7
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 1	TRIP BLANK	TD9248-1	Water	09/18/17
2 3	DM 305	TD9248-2	Water	09/18/17
3 3	DM 306	TD9248-3	Water	09/18/17
4 2	DM 307	TD9248-4	Water	09/18/17
5 2	DM 308	TD9248-5	Water	09/18/17
6 3	DM 309 D_1	TD9248-6	Water	09/18/17
7 2	DM 2001 D_1	TD9248-7	Water	09/18/17
8 2	DM 310	TD9248-8	Water	09/18/17
9 1	DM 313	TD9248-9	Water	09/18/17
10 1	DM 312	TD9248-10	Water	09/18/17
11 1	DM 311	TD9248-11	Water	09/18/17
12 2	DM 2001MS	TD9248-7MS	Water	09/18/17
13 2	DM 2001MSD	TD9248-7MSD	Water	09/18/17

LDC #: 39720N1 **VALIDATION COMPLETENESS WORKSHEET** Date: 11/10/17

SDG #: TC9248 Level II Page: 2 of 2

Laboratory: Accutest Laboratories Reviewer: AA.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

	Client ID	Lab ID	Matrix	Date
14				
15				
16				
17				
18				

Notes:

1	VX3353-MB						
2	VZ5406-MB						
3	VZ5408-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39720N1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: J.R.
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		12/13	H	( )	( )	23 (≤20)	7 (ND)	J detects/A
			AA	66 (69-127)	( )	( )	(det)	J/UJ/A
			S	66 (78-123)	( )	( )	↓	↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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LDC #: 39720N1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: A.A.
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		VX3353-BS	H	137 (66-125)	( )	( )	1, 9-11, MB (ND)	J detects/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC#: 39720N1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260~~B~~C)
Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	6	7	
QQQ	8.9	7.9	12
AA	5.0	4.3	15
S	111	97.7	13

V:\Janny\FD calculations\39720N1.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9249

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 729-50-BRI	TD9249-1	Water	09/18/17
DM 729-50	TD9249-2	Water	09/18/17
DM 119-204-BRI	TD9249-3	Water	09/18/17
DM 119-204	TD9249-4	Water	09/18/17
DM 119-98	TD9249-5	Water	09/18/17
DM 119-137	TD9249-6	Water	09/18/17
DM 119-72	TD9249-7	Water	09/18/17
TRIP BLANK	TD9249-8	Water	09/18/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9249

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9249

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9249

No Sample Data Qualified in this SDG

LDC #: 39720O1

SDG #: TC9249

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB =8
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 729-50-BRI	TD9249-1	Water	09/18/17
2	DM 729-50	TD9249-2	Water	09/18/17
3	DM 119-204-BRI	TD9249-3	Water	09/18/17
4	DM 119-204	TD9249-4	Water	09/18/17
5	DM 119-98	TD9249-5	Water	09/18/17
6	DM 119-137	TD9249-6	Water	09/18/17
7	DM 119-72	TD9249-7	Water	09/18/17
8	TRIP BLANK	TD9249-8	Water	09/18/17

Notes:

1	VZ5405-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9319

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TRIP BLANK	TD9319-1	Water	09/19/17
DM 304	TD9319-2	Water	09/19/17
DM 303	TD9319-3	Water	09/19/17
DM 314	TD9319-4	Water	09/19/17
DM 611	TD9319-5	Water	09/19/17
DM 301	TD9319-6	Water	09/19/17
DM 302	TD9319-7	Water	09/19/17
DM 302MS	TD9319-7MS	Water	09/19/17
DM 302MSD	TD9319-7MSD	Water	09/19/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM 302MS/MSD (DM 302)	1,1-Dichloroethene	63 (66-125)	-	J (all detects)	A
	1,1,1-Trichloroethane	64 (74-128)	136 (74-128)	J (all detects)	
	Trichloroethene	68 (78-123)	136 (78-123)	J (all detects)	

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9319

Sample	Compound	Flag	A or P	Reason
DM 302	1,1-Dichloroethene 1,1,1-Trichloroethane Trichloroethene	J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9319

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9319

No Sample Data Qualified in this SDG

LDC #: 39720P1

SDG #: TC9319

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: A.R.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1
VII.	Surrogate spikes	~~N~~A	No samples associated, NO
VIII.	Matrix spike/Matrix spike duplicates	SW	(TD9409-7MS/D) = %R OUT
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 1	TRIP BLANK	TD9319-1	Water	09/19/17
2 2	DM 304	TD9319-2	Water	09/19/17
3 1	DM 303	TD9319-3	Water	09/19/17
4 1	DM 314	TD9319-4	Water	09/19/17
5 2	DM 611	TD9319-5	Water	09/19/17
6 2	DM 301	TD9319-6	Water	09/19/17
7 2	DM 302	TD9319-7	Water	09/19/17
8 2	DM 302MS	TD9319-7MS	Water	09/19/17
9 2	DM 302MSD	TD9319-7MSD	Water	09/19/17
10				
11				
12				
13	(1) VG2470-MB (2) VG2488-MB			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39720P1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		8/9	H	63 (66-125)	( )	( )	7 (det)	J/UJ/A
			N	64 (74-128)	136 (74-128)	( )		
			S	68 (78-123)	136 (78-123)	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9374

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 1002	TD9374-1	Water	09/19/17
DM 125-270-BRI	TD9374-2	Water	09/19/17
DM 125-270	TD9374-3	Water	09/19/17
DM 125-76	TD9374-4	Water	09/19/17
DM 125-125	TD9374-5	Water	09/19/17
DM 125-185	TD9374-6	Water	09/19/17
DM 125-155	TD9374-7	Water	09/19/17
DM 605-240-BRI	TD9374-8	Water	09/19/17
DM 605-240	TD9374-9	Water	09/19/17
DM 605-290	TD9374-10	Water	09/19/17
DM 605-105	TD9374-11	Water	09/19/17
DM 605-170	TD9374-12	Water	09/19/17
TRIP BLANK	TD9374-13	Water	09/19/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

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U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were not within QC limits. No data were qualified since there were no associated samples in this SDG. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples DM 1002 and DM 125-185 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	DM 1002	DM 125-185	
1,1-Dichloroethene	0.50U	0.66	Not calculable
cis-1,2-Dichloroethene	87.9	402	128 (≤30)
trans-1,2-Dichloroethene	10.7	12.0	11 (≤30)
Trichloroethene	92.9	70.6	27 (≤30)
Vinyl chloride	1.4	0.50U	Not calculable

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

All compound quantitations met validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
DM 125-185	cis-1,2-Dichloroethene	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	P

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results exceeding calibration range, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9374

Sample	Compound	Flag	A or P	Reason
DM 125-185	cis-1,2-Dichloroethene	J (all detects)	P	Compound quantitation (exceeded range)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9374

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9374

No Sample Data Qualified in this SDG

LDC #: 39720Q1

SDG #: TC9374

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 2

Reviewer: J.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 13
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	SW	~~No samples associated, NQ~~ (TD9409-10MS/D) = % R OUT
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D_1 = 1 + 6
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	SW	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 1002 D_1	TD9374-1	Water	09/19/17
2	DM 125-270-BRI	TD9374-2	Water	09/19/17
3	DM 125-270	TD9374-3	Water	09/19/17
4	DM 125-76	TD9374-4	Water	09/19/17
5	DM 125-125	TD9374-5	Water	09/19/17
6	DM 125-185 D_1	TD9374-6	Water	09/19/17
7	DM 125-155	TD9374-7	Water	09/19/17
8	DM 605-240-BRI	TD9374-8	Water	09/19/17
9	DM 605-240	TD9374-9	Water	09/19/17
10	DM 605-290	TD9374-10	Water	09/19/17
11	DM 605-105	TD9374-11	Water	09/19/17
12	DM 605-170	TD9374-12	Water	09/19/17
13	TRIP BLANK	TD9374-13	Water	09/19/17

LDC #: 39720Q1 **VALIDATION COMPLETENESS WORKSHEET** Date: 11/10/17

SDG #: TC9374 Level II Page: 2 of 2

Laboratory: Accutest Laboratories Reviewer: A.A.

2nd Reviewer: ✓

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

	Client ID	Lab ID	Matrix	Date
14				
15				
16				
17				
18				

Notes:

1	V25409-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC#: 39720Q1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)
Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	1	6	
H	0.50U	0.66	NC
QQQ	87.9	402	128
PPP	10.7	12.0	11
S	92.9	70.6	27
C	1.4	0.50U	NC

V:\Janny\FD calculations\39720Q1.wpd

LDC #: 39720Q1

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and RLs

Reviewer: J.A.
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Date	Sample ID	Finding	Associated Samples	Qualifications
		6	QQQ	>cal Range	J detects /A P

Comments: See sample calculation verification worksheet for recalculations

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9409

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 1003	TD9409-1	Water	09/20/17
DM 606-370-BRI	TD9409-2	Water	09/20/17
DM 606-370	TD9409-3	Water	09/20/17
DM 606-330	TD9409-4	Water	09/20/17
DM 606-102	TD9409-5	Water	09/20/17
DM 606-185	TD9409-6	Water	09/20/17
DM 606-250	TD9409-7	Water	09/20/17
DM 601-85-BRI	TD9409-8	Water	09/20/17
DM 601-85	TD9409-9	Water	09/20/17
DM 601-135	TD9409-10	Water	09/20/17
DM 601-200	TD9409-11	Water	09/20/17
TRIP BLANK	TD9409-12	Water	09/20/17
DM 1003MS	TD9409-1MS	Water	09/20/17
DM 1003MSD	TD9409-1MSD	Water	09/20/17
DM 606-185MS	TD9409-6MS	Water	09/20/17
DM 606-185MSD	TD9409-6MSD	Water	09/20/17
DM 606-250MS	TD9409-7MS	Water	09/20/17
DM 606-250MSD	TD9409-7MSD	Water	09/20/17
DM 601-135MS	TD9409-10MS	Water	09/20/17
DM 601-135MSD	TD9409-10MSD	Water	09/20/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM 606-250MS/MSD (DM 606-250)	Trichloroethene Vinyl chloride	56 (78-123) -	128 (78-123) 154 (57-146)	J (all detects) J (all detects)	A
DM 601-135MS/MSD (DM601-135)	Trichloroethene	-	38 (78-123)	J (all detects)	A

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
DM 1003MS/MSD (DM 1003)	Trichloroethene	-	128 (78-123)	J (all detects)	A

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples DM 1003 and DM 601-135 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	DM 1003	DM 601-135	
1,1-Dichloroethene	24.1	50U	Not calculable
cis-1,2-Dichloroethene	29.4	50U	Not calculable
Tetrachloroethene	47.5	50U	Not calculable
Trichloroethene	11000	9040	20 (≤30)

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9409

Sample	Compound	Flag	A or P	Reason
DM 606-250	Trichloroethene Vinyl chloride	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
DM 601-135 DM 1003	Trichloroethene	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9409

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9409

No Sample Data Qualified in this SDG

LDC #: 39720R1 **VALIDATION COMPLETENESS WORKSHEET** Date: 11/10/17
SDG #: TC9409 Level II Page: 1 of 2
Laboratory: Accutest Laboratories Reviewer: J.A.
2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB=12
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D_1 = 1+10
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

* = reported for S only * = reported for QQQ & S only

	Client ID	Lab ID	Matrix	Date
1 1/4	DM 1003 D_1	TD9409-1	Water	09/20/17
2 1/4	DM 606-370-BRI	TD9409-2	Water	09/20/17
3 1/4	DM 606-370	TD9409-3	Water	09/20/17
4 1	DM 606-330	TD9409-4	Water	09/20/17
5 1	DM 606-102	TD9409-5	Water	09/20/17
6 1/3	DM 606-185	TD9409-6	Water	09/20/17
7 1	DM 606-250	TD9409-7	Water	09/20/17
8 1	DM 601-85-BRI	TD9409-8	Water	09/20/17
9 2	DM 601-85	TD9409-9	Water	09/20/17
10 2	DM 601-135 D_1	TD9409-10	Water	09/20/17
11 2	DM 601-200	TD9409-11	Water	09/20/17
12 2	TRIP BLANK	TD9409-12	Water	09/20/17
13 4	DM 1003MS *	TD9409-1MS	Water	09/20/17

LDC #: 39720R1 **VALIDATION COMPLETENESS WORKSHEET** Date: 11/10/17

SDG #: TC9409 Level II Page: 2 of 2

Laboratory: Accutest Laboratories Reviewer: A.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

	Client ID	Lab ID	Matrix	Date
14 4	DM 1003MSD *	TD9409-1MSD	Water	09/20/17
15 3	DM 606-185MS *	TD9409-6MS	Water	09/20/17
16 3	DM 606-185MSD *	TD9409-6MSD	Water	09/20/17
17 1	DM 606-250MS	TD9409-7MS	Water	09/20/17
18 1	DM 606-250MSD	TD9409-7MSD	Water	09/20/17
19 2	DM 601-135MS	TD9409-10MS	Water	09/20/17
20 2	DM 601-135MSD	TD9409-10MSD	Water	09/20/17
21				
22				
23				
24				
25				

Notes:

1	VG2470-MB						
2	VZ5409-MB						
3	~~MB~~ VG2475-MB						
4	VZ5415-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 39720R1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: J.A.
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		17|18	S	56 (78-123)	128 (78-123)	( )	7 (det)	J/UJ/A
			C	( )	154 (57-146)	( )	↓	J detects/A
				( )	( )	( )		
				( )	( )	( )		
		19|20	S	( )	38 (78-123)	( )	10 (det)	J/UJ/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
		13|14	S	( )	128 (78-123)	( )	1 (det)	J detects/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC#: 39720R1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)
Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	1	10	
H	24.1	50U	NC
QQQ	29.4	50U	NC
AA	47.5	50U	NC
S	11000	9040	20

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9521

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 1004	TD9521-1	Water	09/21/17
DM 607A	TD9521-2	Water	09/21/17
DM 607B	TD9521-3	Water	09/21/17
DM 607C	TD9521-4	Water	09/21/17
DM 607D	TD9521-5	Water	09/21/17
DM 624A	TD9521-6	Water	09/21/17
DM 624B	TD9521-7	Water	09/21/17
DM 625	TD9521-8	Water	09/21/17
DM 626A	TD9521-9	Water	09/21/17
DM 626B	TD9521-10	Water	09/21/17
DM 627A	TD9521-11	Water	09/21/17
DM 627B	TD9521-12	Water	09/21/17
DM 628	TD9521-13	Water	09/21/17
DM 631A	TD9521-14	Water	09/21/17
DM 631B	TD9521-15	Water	09/21/17
DM 629A	TD9521-16	Water	09/21/17
DM 629B	TD9521-17	Water	09/21/17
DM 630A	TD9521-18	Water	09/21/17
DM 630B	TD9521-19	Water	09/21/17
TRIP BLANK	TD9521-20	Water	09/21/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were not within QC limits. No data were qualified since there were no associated samples in this SDG. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples DM 1004 and DM 625 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	DM 1004	DM 625	
1,1-Dichloroethene	1.5	1.7	12 (≤30)
cis-1,2-Dichloroethene	33.6	35.3	5 (≤30)
trans-1,2-Dichloroethene	1.6	1.7	6 (≤30)
Trichloroethene	89.7	94.9	6 (≤30)
Vinyl chloride	6.4	6.9	8 (≤30)

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9521

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9521

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9521

No Sample Data Qualified in this SDG

LDC #: 39720T1

SDG #: TC9521

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 2

Reviewer: J.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 20
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	SW	No samples associated, NQ (TD9519 MS/D) = %R OUT
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D_1 = 1 + 8
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 2	DM 1004 D_1	TD9521-1	Water	09/21/17
2 2	DM 607A	TD9521-2	Water	09/21/17
3 2	DM 607B	TD9521-3	Water	09/21/17
4 2	DM 607C	TD9521-4	Water	09/21/17
5 2	DM 607D	TD9521-5	Water	09/21/17
6 2	DM 624A	TD9521-6	Water	09/21/17
7	DM 624B	TD9521-7	Water	09/21/17
8 2	DM 625 D_1	TD9521-8	Water	09/21/17
9	DM 626A	TD9521-9	Water	09/21/17
10	DM 626B	TD9521-10	Water	09/21/17
11	DM 627A	TD9521-11	Water	09/21/17
12	DM 627B	TD9521-12	Water	09/21/17
13	DM 628	TD9521-13	Water	09/21/17

LDC #: 39720T1

SDG #: TC9521

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Reviewer: J.R.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

	Client ID	Lab ID	Matrix	Date
14	DM 631A	TD9521-14	Water	09/21/17
15	DM 631B	TD9521-15	Water	09/21/17
16	DM 629A	TD9521-16	Water	09/21/17
17	DM 629B	TD9521-17	Water	09/21/17
18	DM 630A	TD9521-18	Water	09/21/17
19	DM 630B	TD9521-19	Water	09/21/17
20	TRIP BLANK	TD9521-20	Water	09/21/17
21				
22				
23				
24				
25				

Notes:

1	VK2104-MB						
2	VG2488-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC#: 39720T1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)
Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	1	8	
H	1.5	1.7	12
QQQ	33.6	35.3	5
PPP	1.6	1.7	6
S	89.7	94.9	6
C	6.4	6.9	8

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9522

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP 30-D	TD9522-1	Water	09/21/17
TRIP BLANK	TD9522-2	Water	09/21/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9522

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9522

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9522

No Sample Data Qualified in this SDG

LDC #: 39720U1

SDG #: TC9522

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 2
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	MP 30-D	TD9522-1	Water	09/21/17
2	TRIP BLANK	TD9522-2	Water	09/21/17
3				
4				
5				
6				
7				
8				

Notes:

1	VK2104-MB						

LDC Report# 39720V1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9538

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
MP 30-B	TD9538-1	Water	09/22/17
DM 2003	TD9538-2	Water	09/22/17
TRIP BLANK	TD9538-3	Water	09/22/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples MP 30-B and DM 2003 were identified as field duplicates. No results were detected in any of the samples.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9538

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9538

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9538

No Sample Data Qualified in this SDG

LDC #: 39720V1

SDG #: TC9538

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: A.A.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	ND	D_1 = 1+2
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	MP 30-B D_1	TD9538-1	Water	09/22/17
2	DM 2003 D_1	TD9538-2	Water	09/22/17
3	TRIP BLANK	TD9538-3	Water	09/22/17
4				
5				
6				
7				
8				

Notes:

1	VX3375-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9545

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 702	TD9545-1	Water	09/22/17
DM 703	TD9545-2	Water	09/22/17
DM 1005	TD9545-3	Water	09/22/17
DM 1006	TD9545-4	Water	09/22/17
DM 1007	TD9545-5	Water	09/22/17
DM 704	TD9545-6	Water	09/22/17
DM 705	TD9545-7	Water	09/22/17
DM 706	TD9545-8	Water	09/22/17
DM 707	TD9545-9	Water	09/22/17
DM 713	TD9545-10	Water	09/22/17
DM 714	TD9545-11	Water	09/22/17
DM 718	TD9545-12	Water	09/22/17
DM 724	TD9545-13	Water	09/22/17
TRIP BLANK	TD9545-14	Water	09/22/17
DM 718MS	TD9545-12MS	Water	09/22/17
DM 718MSD	TD9545-12MSD	Water	09/22/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

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U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples DM 702 and DM 1005, samples DM 1006 and DM 704 and samples DM 1007 and DM 706 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	DM 702	DM 1005	
1,1-Dichloroethene	17.0	33.3	65 (≤30)
cis-1,2-Dichloroethene	6.7	8.3	21 (≤30)
Tetrachloroethene	54.3	87.9	47 (≤30)
Trichloroethene	95.8	159	50 (≤30)

Compound	Concentration (ug/L)		RPD (Limits)
	DM 1006	DM 704	
1,1-Dichloroethene	3.7	3.5	6 (≤30)
cis-1,2-Dichloroethene	4.1	4.6	11 (≤30)
Tetrachloroethene	7.4	6.5	13 (≤30)
Trichloroethene	45.0	47.3	5 (≤30)

Compound	Concentration (ug/L)		RPD (Limits)
	DM 1007	DM 706	
1,1-Dichloroethene	0.91	1.0	9 (≤30)
Tetrachloroethene	2.4	2.5	4 (≤30)
Trichloroethene	2.3	2.1	9 (≤30)

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9545

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9545

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9545

No Sample Data Qualified in this SDG

LDC #: 39720W1 **VALIDATION COMPLETENESS WORKSHEET** Date: 11/10/17
SDG #: TC9545 Level II Page: 1 of 2
Laboratory: Accutest Laboratories Reviewer: A.A.
2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB=14
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	A	only reported for compound; tetrachloroethylene
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D_1=1+3 D_2=4+6 D_3=5+8
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID		Lab ID	Matrix	Date
1	DM 702	D_1	TD9545-1	Water	09/22/17
2	DM 703		TD9545-2	Water	09/22/17
3	DM 1005	D_1	TD9545-3	Water	09/22/17
4	DM 1006	D_2	TD9545-4	Water	09/22/17
5	DM 1007	D_3	TD9545-5	Water	09/22/17
6	DM 704	D_2	TD9545-6	Water	09/22/17
7	DM 705		TD9545-7	Water	09/22/17
8	DM 706	D_3	TD9545-8	Water	09/22/17
9	DM 707		TD9545-9	Water	09/22/17
10	DM 713		TD9545-10	Water	09/22/17
11 2	DM 714		TD9545-11	Water	09/22/17
12 2	DM 718		TD9545-12	Water	09/22/17
13	DM 724		TD9545-13	Water	09/22/17

LDC #: 39720W1 **VALIDATION COMPLETENESS WORKSHEET** Date: 11/10/17

SDG #: TC9545 Level II Page: 2 of 2

Laboratory: Accutest Laboratories Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

	Client ID	Lab ID	Matrix	Date
14	TRIP BLANK	TD9545-14	Water	09/22/17
15 2	DM 718MS	TD9545-12MS	Water	09/22/17
16 2	DM 718MSD	TD9545-12MSD	Water	09/22/17
17				
18				
19				
20				
21				

Notes:

1	VR1560-MB						
2	VZ5435-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC#: 39720W1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	1	3	
H	17.0	33.3	65
QQQ	6.7	8.3	21
AA	54.3	87.9	47
S	95.8	159	50

Compound	Concentration (ug/L)		RPD (≤30%)
	4	6	
H	3.7	3.5	6
QQQ	4.1	4.6	11
AA	7.4	6.5	13
S	45.0	47.3	5

Compound	Concentration (ug/L)		RPD (≤30%)
	5	8	
H	0.91	1.0	9
AA	2.4	2.5	4
S	2.3	2.1	9

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9610

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 726	TD9610-1	Water	09/25/17
DM 122 B	TD9610-2	Water	09/25/17
DM 120	TD9610-3	Water	09/25/17
TRIP BLANK	TD9610-4	Water	09/25/17
DM 726-BRI	TD9610-5	Water	09/25/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9610

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9610

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9610

No Sample Data Qualified in this SDG

LDC #: 39720X1

SDG #: TC9610

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 4
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS / D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 726	TD9610-1	Water	09/25/17
2	DM 122 B	TD9610-2	Water	09/25/17
3	DM 120	TD9610-3	Water	09/25/17
4	TRIP BLANK	TD9610-4	Water	09/25/17
5	DM 726-BRI	TD9610-5	Water	09/25/17
6				
7				
8				

Notes:

1	VX3375-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9691

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 201	TD9691-1	Water	09/26/17
DM 723-BRI	TD9691-2	Water	09/26/17
DM 1008	TD9691-3	Water	09/26/17
DM 610	TD9691-4	Water	09/26/17
TRIP BLANK	TD9691-5	Water	09/26/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples DM 1008 and DM 610 were identified as field duplicates. No results were detected in any of the samples.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9691

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9691

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9691

No Sample Data Qualified in this SDG

LDC #: 39720Y1

SDG #: TC9691

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB=5
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	ND	D_1 = 3+4
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 201	TD9691-1	Water	09/26/17
2	DM 723-BRI	TD9691-2	Water	09/26/17
3	DM 1008 D_1	TD9691-3	Water	09/26/17
4	DM 610 D_1	TD9691-4	Water	09/26/17
5	TRIP BLANK	TD9691-5	Water	09/26/17
6				
7				
8				

Notes:

1	VG2496-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9777

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 1009	TD9777-1	Water	09/27/17
DM 1010	TD9777-2	Water	09/27/17
DM 723	TD9777-3	Water	09/27/17
DM 602	TD9777-4	Water	09/27/17
DM 620-BRI	TD9777-5	Water	09/27/17
DM 620	TD9777-6	Water	09/27/17
DM 609	TD9777-7	Water	09/27/17
TRIP BLANK	TD9777-8	Water	09/27/17
DM 1009MS	TD9777-1MS	Water	09/27/17
DM 1009MSD	TD9777-1MSD	Water	09/27/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
DM 1009	1,2-Dichloroethane-d4	142 (70-130)	All compounds except Trichloroethene	J (all detects)	A

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples DM 1009 and DM 602 and samples DM 1010 and DM 609 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	DM 1009	DM 602	
1,1-Dichloroethene	1.4	1.1	24 (≤30)
Tetrachloroethene	1.4	1.2	15 (≤30)
Trichloroethene	747	740	1 (≤30)

Compound	Concentration (ug/L)		RPD (Limits)
	DM 1010	DM 609	
Tetrachloroethene	22.4	21.9	2 (≤30)
Trichloroethene	0.51	0.73	35 (≤30)

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to surrogates %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9777

Sample	Compound	Flag	A or P	Reason
DM 1009	All compounds except Trichloroethene	J (all detects)	A	Surrogates (%R)

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9777

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9777

No Sample Data Qualified in this SDG

LDC #: 39720Z1
SDG #: TC9777
Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level II

Date: 11/10/17
Page: 1 of 1
Reviewer: J.R.
2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 8
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D_1 = 1+4 D_2 = 2+7
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 1/2	DM 1009 D_1	TD9777-1	Water	09/27/17
2 2	DM 1010 D_2	TD9777-2	Water	09/27/17
3 1	DM 723	TD9777-3	Water	09/27/17
4 1/2	DM 602 D_1	TD9777-4	Water	09/27/17
5 2	DM 620-BRI	TD9777-5	Water	09/27/17
6 2	DM 620	TD9777-6	Water	09/27/17
7 2	DM 609 D_2	TD9777-7	Water	09/27/17
8 3	TRIP BLANK	TD9777-8	Water	09/27/17
9 1	DM 1009MS	TD9777-1MS	Water	09/27/17
10 1	DM 1009MSD	TD9777-1MSD	Water	09/27/17
11				
12				
13	① VX3379-MB ③ VX3388-MB ② VX3385-MB			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC #: 3972021

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Reviewer: A.A.
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all surrogate %R within QC limits?

(Y) N N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
		1 (ND + DETS)	DCE	142 (70-130)	J detects / A *qual all except S
				( )	
				( )	
				( )	
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(TOL) = Toluene-d8 (DCE) = 1,2-Dichloroethane-d4
(BFB) = Bromofluorobenzene (DFM) = Dibromofluoromethane

LDC#: 39720Z1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)
Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	1	4	
H	1.4	1.1	24
AA	1.4	1.2	15
S	747	740	1

Compound	Concentration (ug/L)		RPD (≤30%)
	2	7	
AA	22.4	21.9	2
S	0.51	0.73	35

V:\Janny\FD calculations\39720Z1.wpd

175 pages-EM R1 (added I)

Attachment 1

Level II

LDC #39721 (Clear Creek-Tucson, AZ/ 52nd Street Motorola Superfund Site)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Short VOA (8260C)																																			
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	TD9938	10/27/17	11/17/17	5	0																																		
B	TD9959	10/27/17	11/17/17	3	0																																		
C	TD10055	10/27/17	11/17/17	3	0																																		
D	TD10119	10/27/17	11/17/17	5	0																																		
E	TD10185	10/27/17	11/17/17	6	0																																		
F	TD10253	10/27/17	11/17/17	3	0																																		
G	TD10316	10/27/17	11/17/17	4	0																																		
H	TD10453	10/27/17	11/17/17	2	0																																		
I	TD6516	11/09/17	11/17/17	3	0																																		
Total	T/CR			34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9938

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
WT-K-BRI	TD9938-1	Water	09/28/17
DM 621	TD9938-2	Water	09/28/17
EW-18	TD9938-3	Water	09/28/17
DM 622	TD9938-4	Water	09/28/17
TRIP BLANK	TD9938-5	Water	09/28/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9938

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9938

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9938

No Sample Data Qualified in this SDG

LDC #: 39721A1

SDG #: TD9938

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 5
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	WT-K-BRI	TD9938-1	Water	09/28/17
2	DM 621	TD9938-2	Water	09/28/17
3	EW-18	TD9938-3	Water	09/28/17
4	DM 622	TD9938-4	Water	09/28/17
5	TRIP BLANK	TD9938-5	Water	09/28/17
6				
7				
8				

Notes:

1	VX3385-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD9959

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
WT-K	TD9959-1	Water	09/29/17
DM 616	TD9959-2	Water	09/29/17
TRIP BLANK	TD9959-3	Water	09/29/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD9959

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD9959

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD9959

No Sample Data Qualified in this SDG

LDC #: 39721B1

SDG #: TD9959

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.N.

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	WT-K	TD9959-1	Water	09/29/17
2	DM 616	TD9959-2	Water	09/29/17
3	TRIP BLANK	TD9959-3	Water	09/29/17
4				
5				
6				
7				
8				

Notes:

1	VX3385-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD10055

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 619	TD10055-1	Water	10/02/17
DM 604	TD10055-2	Water	10/02/17
TRIP BLANK	TD10055-3	Water	10/02/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were not performed for this SDG.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD10055

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD10055

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD10055

No Sample Data Qualified in this SDG

LDC #: 39721C1
SDG #: TD10055
Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level II

Date: 11/10/17
Page: 1 of 1
Reviewer: J.A.
2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 619	TD10055-1	Water	10/02/17
2	DM 604	TD10055-2	Water	10/02/17
3	TRIP BLANK	TD10055-3	Water	10/02/17
4				
5				
6				
7				
8				

Notes:

1	VX3388-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD10119

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 618	TD10119-1	Water	10/03/17
DM 623	TD10119-2	Water	10/03/17
DM 735-BRI	TD10119-3	Water	10/03/17
DM 733-BRI	TD10119-4	Water	10/03/17
TRIP BLANK	TD10119-5	Water	10/03/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD10119

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD10119

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD10119

No Sample Data Qualified in this SDG

LDC #: 39721D1
SDG #: TD10119
Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level II

Date: 11/10/17
Page: 1 of 1
Reviewer: J.A.
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 5
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 618	TD10119-1	Water	10/03/17
2	DM 623	TD10119-2	Water	10/03/17
3	DM 735-BRI	TD10119-3	Water	10/03/17
4	DM 733-BRI	TD10119-4	Water	10/03/17
5	TRIP BLANK	TD10119-5	Water	10/03/17
6				
7				
8				

Notes:

1	VX3388-MB						

LDC Report# 39721E1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD10185

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 201-OBI	TD10185-1	Water	10/04/17
DM 733	TD10185-2	Water	10/04/17
DM 118	TD10185-3	Water	10/04/17
DM 617	TD10185-4	Water	10/04/17
TRIP BLANK	TD10185-5	Water	10/04/17
DM 735	TD10185-6	Water	10/04/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD10185

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD10185

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD10185

No Sample Data Qualified in this SDG

LDC #: 39721E1

SDG #: TD10185

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB=5
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	(TD10253-2 MS/D) from SDG#TC10253
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 201-OBI	TD10185-1	Water	10/04/17
2	DM 733	TD10185-2	Water	10/04/17
3	DM 118	TD10185-3	Water	10/04/17
4	DM 617	TD10185-4	Water	10/04/17
5	TRIP BLANK	TD10185-5	Water	10/04/17
6	DM 735	TD10185-6	Water	10/04/17
7				
8				

Notes:

1	VZ5444-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD10253

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 114	TD10253-1	Water	10/05/17
DM 614	TD10253-2	Water	10/05/17
TRIP BLANK	TD10253-3	Water	10/05/17
DM 614MS	TD10253-2MS	Water	10/05/17
DM 614MSD	TD10253-2MSD	Water	10/05/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were not performed for this SDG.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD10253

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD10253

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD10253

No Sample Data Qualified in this SDG

LDC #: 39721F1

SDG #: TC10253

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: A.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 114	TD10253-1	Water	10/05/17
2	DM 614	TD10253-2	Water	10/05/17
3	TRIP BLANK	TD10253-3	Water	10/05/17
4	DM 614MS	TD10253-2MS	Water	10/05/17
5	DM 614MSD	TD10253-2MSD	Water	10/05/17
6				
7				
8				

Notes:

1	VZ5444-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD10316

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 615	TD10316-1	Water	10/06/17
DM 612	TD10316-2	Water	10/06/17
DM 613	TD10316-3	Water	10/06/17
TRIP BLANK	TD10316-4	Water	10/06/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD10316

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD10316

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD10316

No Sample Data Qualified in this SDG

LDC #: 39721G1

SDG #: TD10316

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: A.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 4
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	A	(TD10253-2 MS/D) from SDG # TC10253
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 1	DM 615	TD10316-1	Water	10/06/17
2 2	DM 612	TD10316-2	Water	10/06/17
3 1	DM 613	TD10316-3	Water	10/06/17
4 1	TRIP BLANK	TD10316-4	Water	10/06/17
5				
6				
7				
8				

Notes:

1	VZ5444-MB						
2	VG2511-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 15, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD10453

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM 603-205	TD10453-1	Water	10/10/17
TRIP BLANK	TD10453-2	Water	10/10/17
DM 603-205MS	TD10453-1MS	Water	10/10/17
DM 603-205MSD	TD10453-1MSD	Water	10/10/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD10453

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD10453

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD10453

No Sample Data Qualified in this SDG

LDC #: 39721H1

SDG #: TD10453

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: A.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 2
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	DM 603-205	TD10453-1	Water	10/10/17
2	TRIP BLANK	TD10453-2	Water	10/10/17
3	DM 603-205MS	TD10453-1MS	Water	10/10/17
4	DM 603-205MSD	TD10453-1MSD	Water	10/10/17
5				
6				
7				
8				

Notes:

1	VX3402-MB						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: November 13, 2017

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): TD6516

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
DM602	TD6516-1	Water	07/19/17
DM620	TD6516-2	Water	07/19/17
TRIP BLANK	TD6516-3	Water	07/19/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) (Short List) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance check data were not reviewed for Level II validation.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TRIP BLANK was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples DM602 and DM 1009 (from SDG TD9777) were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	DM602	DM 1009	
1,1-Dichloroethene	2.5U	1.4	Not calculable
Tetrachloroethene	2.5U	1.4	Not calculable
Trichloroethene	667	747	11 (≤30)

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG TD6516

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG TD6516

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG TD6516

No Sample Data Qualified in this SDG

LDC #: 39721I1

SDG #: TD6516

Laboratory: Accutest Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level II

Date: 11/10/17

Page: 1 of 1

Reviewer: J.A.

2nd Reviewer:

METHOD: GC/MS Volatiles (Short List)(EPA SW846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 3
VII.	Surrogate spikes	~~N~~A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D_1 = 1 + ~~TD9777-1~~ (FROM SDG#TD9777) DM 1009
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1*	DM602 D_1	TD6516-1	Water	07/19/17
2	DM620	TD6516-2	Water	07/19/17
3	TRIP BLANK	TD6516-3	Water	07/19/17
4				
5				
6				
7				
8				

Notes:

1	VG2390-MB						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene	BB. 1,1,2,2-Tetrachloroethane	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane	CC. Toluene	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform	EE. Ethylbenzene	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. Iodomethane
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.1,1-Difluoroethane
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

LDC#: 39721I1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JN
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)
Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)
	1	~~TD9777-1~~ Om 1009	
H	2.5U	1.4	NC
AA	2.5U	1.4	NC
S	667	747	11

V:\Janny\FD calculations\39721I1.wpd

Q3SVM - DATA VALIDATION REVIEW REPORTS

SEPTEMBER - OCTOBER 2017 SOIL VAPOR MONITORING DATA

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Clear Creek Associates
6155 E. Indian School Road #200
Scottsdale, AZ 85251
ATTN: Mr. Todd Cruse

January 25, 2018

SUBJECT: 52nd Street Motorola Superfund Site, Data Validation

Dear Mr. Cruse,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on January 24, 2018. Attachment 1 is a summary of the samples that were reviewed for analysis.

LDC Project #40266:

SDG #	**Fraction**
JC52047, JC52048, JC52711	Volatiles

The data validation was performed under Level II guidelines. The analyses were validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona, March 2015
- USEPA, National Functional Guidelines for Organic Superfund Methods Data Review, January 2017

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Christina Rink
Project Manager/ Chemist

203 pages-EM

Attachment 1

Level II

LDC #40266 (Clear Creek-Tucson, AZ/ 52nd Street Motorola Superfund Site)

LDC	SDG#	DATE REC'D	(3) DATE DUE	Short VOA (TO-15)																																			
Matrix:	Air/Water/Soil			A	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JC52047	01/24/18	ASAP	4	0																																		
B	JC52048	01/24/18	ASAP	18	0																																		
C	JC52711	01/24/18	ASAP	14	0																																		
Total	J/CR			36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36

Shaded cells indicate Level IV validation (all other cells are Level II validation). These sample counts do not include MS/MSD, and DUPs

V:\LOGIN\ClearCreek\Motorola\Accutest\52nd Street\40266ST.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: January 25, 2018

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): JC52047

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
SVM-05-15.5	JC52047-1	Air	09/29/17
SVM-05-26.5	JC52047-2	Air	09/29/17
SVM-05-38.5	JC52047-3	Air	09/29/17
SVM-05-42.5	JC52047-4	Air	09/29/17
SVM-05-15.5DUP	JC52047-1DUP	Air	09/29/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method TO-15

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

The canisters were properly pressurized and handled.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 24 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

All canisters were cleaned as required by the method. The laboratory indicated that canister certification was performed by batch. No volatile contaminants were found in the representative canister blank.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG JC52047

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG JC52047

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG JC52047

No Sample Data Qualified in this SDG

LDC #: 40266A48 **VALIDATION COMPLETENESS WORKSHEET** Date: 01/24/18
SDG #: JC52047 Level II Page: 1 of 1
Laboratory: Accutest Laboratories Reviewer: OVC
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks /canister	A	(Batch cert.)
VI.	Field blanks	N	
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates /LD	N/A	
IX.	Laboratory control samples	A	LCS /D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 2	SVM-05-15.5	JC52047-1	Air	09/29/17
2 1	SVM-05-26.5	JC52047-2	Air	09/29/17
3 1	SVM-05-38.5	JC52047-3	Air	09/29/17
4 1	SVM-05-42.5	JC52047-4	Air	09/29/17
5 2	SVM-05-15.5DUP	JC52047-1DUP	Air	09/29/17
6				
7				
8				

Notes:

1	VSW2383-MB						
2	VSW1069-1						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: January 25, 2018

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): JC52048

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
SVM-01-15.5	JC52048-1	Air	09/25/17
SVM-01-29.5	JC52048-2	Air	09/25/17
SVM-01-39.5	JC52048-3	Air	09/25/17
SVM-01-58.7	JC52048-4	Air	09/25/17
SVM-02-15.5	JC52048-5	Air	09/25/17
SVM-02-29.5	JC52048-6	Air	09/25/17
SVM-02-39.5	JC52048-7	Air	09/25/17
SVM-02-59.5	JC52048-8	Air	09/25/17
SVM-03-15.5	JC52048-9	Air	09/26/17
SVM-03-23.5	JC52048-10	Air	09/26/17
SVM-03-31.5	JC52048-11	Air	09/26/17
SVM-03-39.5	JC52048-12	Air	09/26/17
SVM-00-1	JC52048-13	Air	09/26/17
SVM-04-15.5	JC52048-14	Air	09/26/17
SVM-04-26.5	JC52048-15	Air	09/26/17
SVM-04-38.5	JC52048-16	Air	09/26/17
SVM-04-42.5	JC52048-17	Air	09/26/17
SVM-00-2	JC52048-18	Air	09/26/17
SVM-01-29.5DUP	JC52048-2DUP	Air	09/25/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) Method TO-15

All sample results were subjected to Level II data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

The canisters were properly pressurized and handled.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 24 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

All canisters were cleaned as required by the method. The laboratory indicated that canister certification was performed by batch. No volatile contaminants were found in the representative canister blank.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG JC52048

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG JC52048

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG JC52048

No Sample Data Qualified in this SDG

LDC #: 40266B48 **VALIDATION COMPLETENESS WORKSHEET** Date: 01/24/18
SDG #: JC52048 Level II Page: 1 of 2
Laboratory: Accutest Laboratories Reviewer: JVG
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks / canister	A	(Batch cert.)
VI.	Field blanks	N	
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates / LD	N / A	
IX.	Laboratory control samples	A	LCS / D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	1/5 SVM-01-15.5	JC52048-1	Air	09/25/17
2	1/5 SVM-01-29.5	JC52048-2	Air	09/25/17
3	1/5 SVM-01-39.5	JC52048-3	Air	09/25/17
4	1/5 SVM-01-58.7	JC52048-4	Air	09/25/17
5	1/5 SVM-02-15.5	JC52048-5	Air	09/25/17
6	1/5 SVM-02-29.5	JC52048-6	Air	09/25/17
7	1/5 SVM-02-39.5	JC52048-7	Air	09/25/17
8	2/5 SVM-02-59.5	JC52048-8	Air	09/25/17
9	2/5 SVM-03-15.5	JC52048-9	Air	09/26/17
10	2/5 SVM-03-23.5	JC52048-10	Air	09/26/17
11	3/4 SVM-03-31.5	JC52048-11	Air	09/26/17
12	3/6 SVM-03-39.5	JC52048-12	Air	09/26/17
13	3/4 SVM-00-1	JC52048-13	Air	09/26/17

LDC #: 40266B48 **VALIDATION COMPLETENESS WORKSHEET** Date: 01/24/18
SDG #: JC52048 Level II Page: 2 of 2
Laboratory: Accutest Laboratories Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA Method TO-15)

	Client ID	Lab ID	Matrix	Date
14 3	SVM-04-15.5	JC52048-14	Air	09/26/17
15 3	SVM-04-26.5	JC52048-15	Air	09/26/17
16 3	SVM-04-38.5	JC52048-16	Air	09/26/17
17 3	SVM-04-42.5	JC52048-17	Air	09/26/17
18 3	SVM-00-2	JC52048-18	Air	09/26/17
19	SVM-01-29.5DUP	JC52048-2DUP	Air	09/25/17
20				
21				
22				

Notes:

-1	V3W2383-MB	-5	V3W2385-MB (S)				
-2	V5W1067-	-6	V3W1076- (S)				
-3	V5W1068-	-7	V3W2386- (H)				
-4	V5W1069- (S)						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 52nd Street Motorola Superfund Site

LDC Report Date: January 25, 2018

Parameters: Volatiles

Validation Level: Level II

Laboratory: Accutest Laboratories

Sample Delivery Group (SDG): JC52711

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
SVM-09-SHALLOW	JC52711-1	Air	10/05/17
SVM-09-DEEP	JC52711-2	Air	10/03/17
SVM-00-3	JC52711-3	Air	10/03/17
SVM-10-SHALLOW	JC52711-4	Air	09/27/17
SVM-10-DEEP	JC52711-5	Air	09/28/17
VP-11	JC52711-6	Air	09/27/17
VP-13	JC52711-7	Air	09/27/17
SVM-06-SHALLOW	JC52711-8	Air	10/05/17
SVM-06-DEEP	JC52711-9	Air	10/04/17
SVM-00-4	JC52711-10	Air	10/04/17
SVM-07-SHALLOW	JC52711-11	Air	09/29/17
SVM-07-DEEP	JC52711-12	Air	09/29/17
SVM-08-SHALLOW	JC52711-13	Air	10/05/17
SVM-08-DEEP	JC52711-14	Air	10/02/17
SVM-10-SHALLOWDUP	JC52711-4DUP	Air	09/27/17

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Quality Assurance Project Plan Sampling and Analysis Plan for Groundwater and Soil Vapor Monitoring for Motorola 52nd Street Superfund Site, Operable Unit No. 1, Phoenix, Arizona (March 2015) and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

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UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

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The canisters were properly pressurized and handled.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

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All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration data were not reviewed for Level II validation.

IV. Continuing Calibration

Continuing calibration data were not reviewed for Level II validation.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

All canisters were cleaned as required by the method. The laboratory indicated that canister certification was performed by batch. No volatile contaminants were found in the representative canister blank.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates/Duplicate Sample Analysis

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

Internal standards data were not reviewed for Level II validation.

XII. Compound Quantitation

Raw data were not reviewed for Level II validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level II validation.

XIV. System Performance

Raw data were not reviewed for Level II validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

52nd Street Motorola Superfund Site
Volatiles - Data Qualification Summary - SDG JC52711

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG JC52711

No Sample Data Qualified in this SDG

52nd Street Motorola Superfund Site
Volatiles - Field Blank Data Qualification Summary - SDG JC52711

No Sample Data Qualified in this SDG

LDC #: 40266C48 **VALIDATION COMPLETENESS WORKSHEET** Date: 01/25/18
SDG #: JC52711 Level II Page: 1 of 2
Laboratory: Accutest Laboratories Reviewer: SR
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA Method TO-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	N	
III.	Initial calibration/ICV	N/N	
IV.	Continuing calibration	N	
V.	Laboratory Blanks /canister	A	(Batch cert.)
VI.	Field blanks	N	
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates /LD	N/A	
IX.	Laboratory control samples	A	LCS /D
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1 2	SVM-09-SHALLOW	JC52711-1	Air	10/05/17
2 2	SVM-09-DEEP	JC52711-2	Air	10/03/17
3 1	SVM-00-3	JC52711-3	Air	10/03/17
4 2	SVM-10-SHALLOW	JC52711-4	Air	09/27/17
5 1	SVM-10-DEEP	JC52711-5	Air	09/28/17
6 2	VP-11	JC52711-6	Air	09/27/17
7 1	VP-13	JC52711-7	Air	09/27/17
8 1	SVM-06-SHALLOW	JC52711-8	Air	10/05/17
9 1	SVM-06-DEEP	JC52711-9	Air	10/04/17
10	SVM-00-4	JC52711-10	Air	10/04/17
11 1	SVM-07-SHALLOW	JC52711-11	Air	09/29/17
12 1	SVM-07-DEEP	JC52711-12	Air	09/29/17
13 1	SVM-08-SHALLOW	JC52711-13	Air	10/05/17

LDC #: 40266C48 **VALIDATION COMPLETENESS WORKSHEET** Date: 01/25/18
SDG #: JC52711 Level II Page: 2 of 2
Laboratory: Accutest Laboratories Reviewer: JVC
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA Method TO-15)

	Client ID	Lab ID	Matrix	Date
14	SVM-08-DEEP	JC52711-14	Air	10/02/17
15	SVM-10-SHALLOWDUP	JC52711-4DUP	Air	09/27/17
16				
17				
18				
19				
20				

Notes:

1	V3W2392-4B						
2	V3W 2396-						
3	~~V5W 1073~~ -						

(Short list)

APPENDIX F

FIELD FORMS

(PROVIDED ON CD VERSION OF REPORT)

2017Q1 Field Forms

Groundwater Monitoring

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM602
Project Name: Motorola 52nd St.	Date: 1/13/17
Project Number: 005121	Samplers: RG
Location:	Weather: Cloudy

INSTRUMENTATION	Instruments calibratated on:	Date: 1/11/17	Time: 0800
pH Meter: Hanna			
pH calibration readings at:	(4.0) 4.01	(7.0) 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 12.88	Reading:	

WELL INFORMATION	Depth to water (DTW): 72.72 feet bmp	Date: 1/13/17	Time: 0921
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: 117 feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD 120 - DTW 72.72) * well diameter 5.5 ^{2} * 0.0408 = 58 gal.	
Two well volumes= 116 gal.	
Three well volumes = 174 gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0935											
0939	4	7.7	37	77.37	7.16	2.41	76.2	Clear	Clear	None	
0944	9	7.8	73	77.73	7.14	2.44	77.0	Clear	Clear	None	
0948	13	7.9	105	77.76	7.17	2.47	76.9	Clear	Clear	None	
0953	18	8.0	141	77.89	7.13	2.47	77.4	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 1/13/17	Time: 0957	Volume Purged: 184 gal.
Requested Analysis: 8260	Collection Equipment:		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE:
Comments:			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 1/13/17		
Reviewed By: [signature]	Date: 1/13/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 62-0
Project Name: Motorola 52nd St	Date: 1/13/17
Project Number: 005121	Samplers: RG
Location:	Weather: Cloudy

INSTRUMENTATION	Instruments calibratated on:	Date: 1/11/17	Time: 0900
pH Meter: Hanna			
pH calibration readings at:	(4.0) 4.01	(7.0) 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 12.88	Reading:	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 92 - DTW 68.11) * well diameter 4 ^{2} * 0.0408 = 1.6 gal.			
Two well volumes= 3.2 gal.			
Three well volumes = 4.8 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (E)	COLOR	CLARITY	ODOR	
1038	3	3.6	10	70.86	7.09	2.56	76.4	Clear	Clear	None	
1042	4	3.6	23	71.22	7.08	2.60	76.0	Clear	Clear	None	
1045	7	3.6	36	71.31	7.08	2.60	76.4	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

1035

SAMPLE COLLECTION	Date: 1/13/17	Time: 1048	Volume Purged: 52 gal.
Requested Analysis: 8260		Collection Equipment:	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE:
Comments:			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 1/13/17	
Reviewed By: [signature]		Date: 1/13/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM620
Project Name: Motorola 52nd St.	Date: 02/07/17
Project Number: 005128	Samplers: TL, HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on: 02/07/17	Date: 02/07/17	Time: 0745
pH Meter: Hanna HI 98129			
pH calibration readings at:	~~4.0~~ 4.01	(7.0:) 7.01	10.0:
Conductivity Meter: 1413µs	Calibration solution used: 1413	Reading:	

WELL INFORMATION	Depth to water (DTW): 68.23 feet bmp	Date: 02/07/17	Time: 0930
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 92 - DTW 68.23) * well diameter 4	^{2} * 0.0408 = 15.52 gal.		
Two well volumes= 31.04 gal.			
Three well volumes = 46.55 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
~~[illegible]~~	~~3~~	~~3.5~~	~~11~~	~~[illegible]~~							
0933	3	3.5	11	70.83	6.25	2290	74.6	clear	clear	slight	
0936	6	3.5	20	71.21	6.66	2307	76.6	clear	clear	slight	
0939	9	3.5	30	71.29	6.71	2321	77.3	clear	clear	v. slight	
0942	12	3.6	41	71.36	6.76	2340	78.0	clear	clear	v. slight	
0945	15	3.5	51	71.35	6.77	2343	78.0	clear	clear	v. slight	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 02/07/17	Time: 0945	Volume Purged: 67 gal.
Requested Analysis: 8260		Collection Equipment:	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE:
Comments:			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 02/07/17	
Reviewed By: [signature]		Date: 2/7/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM602
Project Name: Motorola 52nd St.	Date: 02/07/17
Project Number: 005128	Samplers: TC, HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on: 02/07/17	Date: 02/07/17	Time: 0745
pH Meter: Hanna HI 98129			
pH calibration readings at:	~~4.01~~ 4.01	(7.0) 7.0	10.0:
Conductivity Meter: 1413 uS	Calibration solution used: 1413	Reading:	

WELL INFORMATION	Depth to water (DTW): 72.84 feet bmp	Date: 02/07/17	Time: 1028
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: 117 feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 120 - DTW 72.84) * well diameter 5.5 ^{2} * 0.0408 = 58.2 gal.

Two well volumes= 116.4 gal.

Three well volumes = 174.6 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

Start @ 1030

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1037	7	7	46	77.35	6.42	2116	76.6	clear	film	none	
1043	13	7.9	89	77.35	6.78	2212	77.7	clear	clear	none	
1048	18	7.8	124	77.36	6.86	2235	77.6	clear	clear	none	
1051	21	7.1	147	77.37	6.89	2237	77.6	clear	clear	none	
1055	25	7.6	175	77.40	6.89	2242	78.0	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 02/07/17	Time: 1100	Volume Purged: 198 gal.
Requested Analysis: 8260	Collection Equipment:		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE:
Comments:			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature:	Date:		
Reviewed By:	Date: 2/7/17		

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)		Comments
DM118		03/14/17	0818	North side top of 4" PVC casing	1177.23	62.61		
DM120		03/14/17	1236	North side top of 6" PVC casing	1161.83	76.61		
DM122-B		03/14/17	1221	North side top of 6" PVC casing	1144.87	77.23		
						Measured	Calcuted	
DM305		03/15/17	1212	Orange mark @ surface - subtract 5.75 feet from WL reading	1185.73	98.95	93.20	
DM306		03/15/17	1221	Orange mark @ surface - subtract 5.70 feet from WL reading	1181.04	74.30	68.60	
DM307		03/15/17	1234	Orange mark @ surface - subtract 5.66 feet from WL reading	1177.64	121.38	115.72	
DM308		03/15/17	1301	Orange mark @ surface- subtract 5.72 feet from WL reading	1177.63	130.72	125.00	
DM309		03/15/17	1312	Orange mark @ surface - subtract 5.76 feet from WL reading	1174.88	120.56	114.80	
DM310		03/15/17	1320	Orange mark @ surface - subtract 5.60 feet from WL reading	1175.17	112.91	107.31	unable to unlock
DM311		03/15/17	1419	Orange mark @ surface - subtract 5.73 feet from WL reading	1173.36	82.92	77.19	RG unlocked, OK
DM312		03/15/17	1330	Orange mark @ surface - subtract 5.75 feet from WL reading	1171.41	76.01	70.26	
DM313		03/15/17	1345	Orange mark @ surface - subtract 6.35 feet from WL reading	1169.71	69.91	63.56	
DM503		03/14/17	1212	North side top of 5.5" LCS casing	1162.31	71.23		
DM602		03/14/17	1005	North side top of 5" steel casing	1187.53	72.76		
DM604		03/14/17	0914	North side top of 5" steel casing	1178.35	81.31		
DM607 A		03/14/17	0940	fLUTE - Across Vault NO 1	1174.58	73.41		
DM607 B		03/14/17	0941	fLUTE - Across Vault NO.2	1174.58	71.64		
DM607 C		03/14/17	0942	fLUTE - Across Vault NO.3	1174.58	70.84		
DM607 D		03/14/17	0943	fLUTE - Across Vault NO.4	1174.58	71.10		
DM609		03/14/17	1137	Top of 5-in north side	1201.85	43.75		
DM611		03/14/17	1243	Canal Bank	1183.72	84.28		
DM612		03/14/17	1247	Canal Bank	1183.64	86.95		
DM613		03/14/17	1251	Canal Bank	1183.38	87.87		

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*

Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)	Comments
DM616		03/14/17	1128	On the north side of Hubbell St. just east of 46th Street.	1190.08	52.28	
DM617		03/14/17	0830	On the west side of 43rd Place South of McDowell Rd.	1170.86	70.98	⇒DM315; 71.80 DM617
DM618		03/14/17	0932	On Willetta East of DM607	1175.69	73.10	
DM619		03/14/17	0926	On Willetta East of DM316	1178.47	77.70	
DM620		03/14/17	1019	On Almeria Rd. North side street just off 1704 N. 46th Place.	1189.72	68.26	
DM621		03/14/17	1027	On 47th Street just outside of 1866 N. 47th St.	1195.83	49.14	
DM622		03/14/17	0800	West portion of parking lot of 7-11 on 48th and McDowell	1184.91	44.31	
DM623				On the west side of 43rd Place North of Belleview St.	1167.32		*Car parked over on 3/14 & 3/15
DM624A		03/14/17	1012	~~North~~ South side top of 2" casing	1189.85	69.51	
DM624B		03/14/17	1013	North side top of 2" casing	1189.85	72.51	
DM625		03/14/17	1255	North side top of 4" casing	1207.31	48.15	
DM626A		03/14/17	0750	North side top of 3" casing	1211.24	50.03	
DM626B		03/14/17	0750	North side top of 2" casing	1211.25	47.36	
DM627A		03/14/17	1120	North side top of 3" casing	1180.86	63.25	
DM627B		03/14/17	1121	North side top of 2" casing	1180.85	62.42	
DM628		03/14/17	1238	North side top of 4" casing	1161.12	77.25	Bailed 0.5 gallons @ surface
DM629A		03/14/17	0845	North side top of 3" casing	1168.53	73.07	
DM629B		03/14/17	0845	North side top of 2" casing	1168.53	71.27	
DM630A		03/14/17	1152	North side top of 3" casing	1162.12	79.31	
DM630B		03/14/17	1153	North side top of 2" casing	1162.12	78.47	
DM631A		03/14/17	0850	North side top of 3" casing	1160.72	75.31	
DM631B		03/14/17	0850	North side top of 2" casing	1160.72	74.85	
DM701		03/14/17	1307	Top of $4^1/_2$" dia galvanized well seal	1177.07	42.47	
EW18		03/14/17	1037	Sounding port top of well seal	1196.01	49.41	-Sounder wrapped around sample pertinced to unbolt cap

Reviewed By: [signature]

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*
Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 602
Project Name: Motorola 52nd St	Date: 3-15-17
Project Number: 005178	Samplers: KDT, HH
Location:	Weather: Clear, warm

INSTRUMENTATION	Instruments calibratated on: Wednesday Date: 03/15/17 Time: 0930
pH Meter: Hanna HI 98129	
pH calibration readings at:	4.0: 4.01 7.0: 7.0 10.0:
Conductivity Meter: 1413 µS	Calibration solution used: Reading:

WELL INFORMATION	Depth to water (DTW): 72.76 feet bmp	Date: 3-15-17 Time: 09:35
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5
Casing Type: PVC	Depth to Pump: 112 feet bmp	Drop Pipe Diameter: in.

One well volume = (TD 120 - DTW 72.76) * well diameter 5.5 ^{2} * 0.0408 =	58.3 gal.
Two well volumes= 116.6 gal.	
Three well volumes = 175 gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0942	Pump On			72.76							
0947	5	6.5	31	76.93	6.91	2135	78.3	clear	clear	none	
0952	10	6.5	64	76.98	7.14	2152	78.3	clear	clear	none	
0957	15	6.5	95	76.95	7.19	2168	78.4	clear	clear	none	
1002	20	6.4	129	76.95	7.27	2168	78.6	clear	clear	none	
1007	25	6.4	162	76.96	7.21	2175	78.7	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 03/15/17 Time: 1010 Volume Purged: 193 gal.
Requested Analysis: 8260C	Collection Equipment: Stub Up
Containers: VOAs	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment: —
Comments: Sample: "DM602"	SAMPLE TYPE: ☒ Primary ☐ Duplicate ☐ Equipment Blank ☐ Field Blank ☐ Split Sample ☐ MS/MSD
Sampler Signature:	Date: 3-15-17
Reviewed By:	Date: 3/16/17

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM620
Project Name: Mof 52nd St.	Date: 03/15/17
Project Number: 005128	Samplers: RDT, HK
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on: Wednesday Date: 03/15/17 Time: 0930
pH Meter: Hanna HI 98127	
pH calibration readings at:	~~4.0:~~ 4.01 7.0: 7.01 10.0:
Conductivity Meter: 1413 µS	Calibration solution used: Reading:

WELL INFORMATION	Depth to water (DTW): 68.26 feet bmp	Date: 03/15/17 Time: 1038
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter: in.

One well volume = (TD 92 - DTW 68.26) * well diameter 4 ^{2} * 0.0408 =	15.5 gal.
Two well volumes=	31 gal.
Three well volumes =	46.5 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1010	Pump start			68.26			79.3				
1045	5	3.4	17	71.31	6.27	2230	79.3	clear	clear	none	
1050	10	3.4	33	71.43	6.91	2237	79.7	clear	clear	none	
1055	15	3.1	54	71.50	7.09	2253	79.4	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 03/15/17 Time: 1057 Volume Purged: 62 gal.
Requested Analysis: 8260C	Collection Equipment: Stub Up
Containers: VOAs	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment: —
Comments: Sample: "DM620"	SAMPLE TYPE: ☒ Primary ☐ Duplicate ☐ Equipment Blank ☐ Field Blank ☐ Split Sample ☐ MS/MSD
Sampler Signature:	Date: 3-15-17
Reviewed By:	Date: 3/16/17

2017Q2 Field Forms

Groundwater Monitoring

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM602
Project Name: Motorola 52nd St	Date: 4/6/2017
Project Number: 005128	Samplers: TG, DP
Location:	Weather: Sunny 60-70°

INSTRUMENTATION	Instruments calibratated on:	Date: 4/3/2017	Time: 1200
pH Meter: Hanna			
pH calibration readings at:	4.01 ~~4.0~~	(7.0)	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): 72.96 feet bmp	Date: 4/6/2017	Time: 0900
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 60-120	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: 112 feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD 120 - DTW 73)* well diameter 5.5 ^{2} * 0.0408 = ~~10.54~~ 58 gal. ~~(11)~~	
Two well volumes= ~~22~~ 116 gal.	
Three well volumes = ~~33~~ 174 gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR
09:18	7	6.8	40	77.29	7.21	2235	78.2	clear	clear	none
09:23	5	6.9	80	77.32	7.18	2248	78.6	clear	clear	none
09:29	6	6.9	120	77.33	7.17	2263	78.4	clear	clear	none
09:35	6	6.9	160	77.34	7.13	2262	78.9	clear	clear	none
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%			

9VL

SAMPLE COLLECTION	Date: 4/6/2017	Time: 09:40	Volume Purged: 193 gal.
Requested Analysis: 8260C	Collection Equipment: Stub up		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

Sampler Signature: Troy Dossard Date: 4/6/2017

Reviewed By: [illegible] Date: 4/6/17

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM620
Project Name: Motorola 52nd St.	Date: 4/6/2017
Project Number: 005128	Samplers: TG, DP
Location:	Weather: Sunny 60-70°F

INSTRUMENTATION	Instruments calibratated on:	Date: 4/3/2017	Time: 1200
pH Meter: Hanna			
pH calibration readings at:	4.01 ~~7.0~~	6.0	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): 68.40 feet bmp	Date: 4/6/2017	Time: 0956
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD 92 - DTW 69) * well diameter 4	^{2} * 0.0408 =	15	gal.		
Two well volumes= 30	gal.				
Three well volumes = 45	gal.				

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

1005

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
10:08	3	3.6	10	70.62	7.21	2278	79.5	clear	clear	none	
10:11	3	3.6	20	72.09	7.20	2327	78.6	clear	clear	none	
10:14	3	3.6	30	72.20	7.20	2334	79.7	clear	clear	none	
10:16	2	3.7	40	72.28	7.17	2341	78.6	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 4/6/2017	Time: 10:20	Volume Purged: 58 gal.
Requested Analysis: 8260C	Collection Equipment: Stub up		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: Troy Gossard	Date: 4/6/2017		
Reviewed By: [illegible]	Date: 4/6/17		

SAMPLE TYPE:
- ☒ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 304
Project Name: Mot 52nd St.	Date: 5/17/17
Project Number: 005178	Samplers: TG, DP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date:	Time:
pH Meter:			
pH calibration readings at:	4.0:	7.0:	10.0:
Conductivity Meter:	Calibration solution used:		Reading:

WELL INFORMATION	Depth to water (DTW): 50.95 feet bmp	Date: 5/17/17	Time: 11:35
Total Depth of Well (TD): 102 feet bmp	Screened Interval: 37-92	Casing Diameter: 6.625	
Casing Type: LCS	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 102 - DTW 50.95) * well diameter 6.625² * 0.0408 =	91.43 gal.
Two well volumes= 182.86 gal.	
Three well volumes = 274.29 gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)² * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1147		1.8		53.70							
1149		1.8		55.50							
1151		1.7		57.80							
1153		1.7		59.61							
1156		1.7		60.72							
1157		1.7		62.12							
1159		1.7		63.08							
1201		1.7		64.22							
1203		1.7		65.31							
1205		1.7	37	66.47							
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 5/17/17	Time: 1206	Volume Purged: 40 gal.
Requested Analysis: ~~8260B~~	Collection Equipment:		
Containers: ~~VOA~~	Preservative: HCl		
Filtered?: Yes ☐ No ☐	Filter Equipment:		SAMPLE TYPE:
Comments: 1.8 gallons per ft.			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: David Pum	Date: 5/17/17		
Reviewed By:	Date:		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): OM620
Project Name: Motorola 52nd St	Date: 5/17/17
Project Number: 005128	Samplers: TG, DP
Location:	Weather: Sunny 80°F

INSTRUMENTATION	Instruments calibratated on:	Date: 5/16/17	Time: 1530
pH Meter: Hanna			
pH calibration readings at:	4.01	7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 12.88	Reading:	

WELL INFORMATION	Depth to water (DTW): 68.49 feet bmp	Date: 5/17/17	Time: 1011
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 92 - DTW 69) * well diameter 4 ^{2} * 0.0408 = 15 gal.			
Two well volumes= 30 gal.			
Three well volumes = 45 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:

1013

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. mS (~~uS~~/cm)	Temp C°	COLOR	CLARITY	ODOR	
1016	3	3.6	10	71.62	6.71	2.65	79.6	Clear	Clear	None	
1018	5	3.6	20	72.19	7.32	2.65	78.2	None	Clear	None	
1021	8	3.7	30	72.36	7.31	2.64	78.8	None	Clear	None	
1024	11	3.7	40	72.41	7.28	2.65	79.0				
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 5/17/17	Time: 10:26	Volume Purged: 53 gal.
Requested Analysis: 8260		Collection Equipment: Stub-up	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE:
Comments:			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: Trey Dossett	Date: 5/17/17		
Reviewed By: Robert [illegible]	Date: 5/17/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM602
Project Name: Motorola 52nd St	Date: 5/17/17
Project Number: 005128	Samplers: TG, DP
Location:	Weather: Sunny 75

INSTRUMENTATION	Instruments calibratated on: 5/16/17	Date:	Time: 1530
pH Meter: Hanna			
pH calibration readings at:	~~4.0~~ 4.01	~~7.0~~ 7.01	~~10.0~~:
Conductivity Meter: Hanna	Calibration solution used: 1288	Reading:	

WELL INFORMATION	Depth to water (DTW): 72.99 feet bmp	Date: 5/17/17	Time: 9:13
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: 112 feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 120 - DTW 73) * well diameter 5.5 ^{2} * 0.0408 = 58 gal.			
Two well volumes= 116 gal.			
Three well volumes = 174 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

0922

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. mS (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR
0928	6	7.8	40	77.78	6.94	2.52	77.4	None	Clear	None
0932	10	7.6	80	77.84	7.28	2.52	77.4	None	Clear	None
0938	16	7.5	120	77.89	7.29	2.52	77.8	None	Clear	None
0943	21	7.6	160	77.93	7.31	2.52	77.1	None	Clear	None
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%			

SAMPLE COLLECTION	Date: 5/17/17	Time: 0950	Volume Purged: 189 gal.
Requested Analysis: 8260		Collection Equipment: Stub up	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 5/17/17	
Reviewed By: [signature]		Date: 5/17/17	

PRESSURE PROFILE

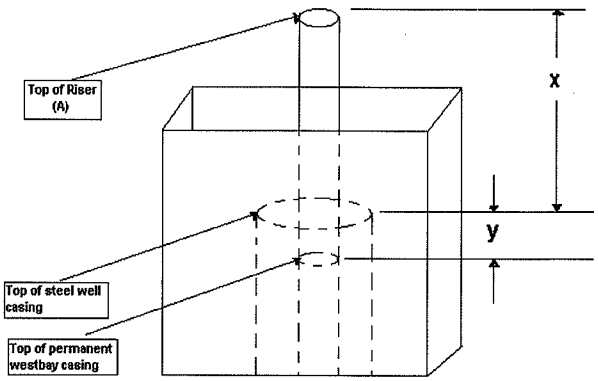
Motorola 52nd St. Facility – Quarterly Measurements 005129-011-1

Well ID: EW13 Date: 5-23-17 Job #: ~~005131-17-1~~

Pressure Probe Type: MOSDAX Ser #: 1050

Measuring Point Elevation: 1092.71

Technician(s): RDT, AP



Ambient Readings:

Pressure / Temp / DTW in MP casing (A) / Time

Initial: 14.08 / 28.54°C / 67.45 / 0858

Final: 14.14 / 25.71°C / 67.59 / 0946

x = 0.73 ft y = 0 ft

Well Location: 16th Street and Jefferson

			Fluid Pressure Readings					Depth to Water in MP casing (ft)			
			Arm out	Shoe out	Shoe in						
Zone No.	Cable Reading (ft)	Port Depth (ft)	Inside Casing P(i)	Outside Casing P(o)	Inside Casing P(i)	Temp (°C)	Time	DTW from Top of Riser (A)	DTW Corr. (A)-(x)	[P(o)-P(i)]/ 0.4335 (ft)	Piez Level outside Port DTW Corr' (ft)
Z1	301'8"	300	116.36	101.54	116.36	24.64	0912	65.30	64.57	-34.19	98.76
QA1	280'.0	278	~~106.77~~	92.54	106.80	24.22	0920	65.42	64.69	32.90	97.59
Z2	270' 3"	268	102.46	87.64	102.47	24.18	0922	65.46	64.73	34.21	98.94
QA2	240' 5"	238	89.44	74.80	89.44	24.19	0925	65.60	64.87	-33.77	98.64
Z3	230' 6"	228	85.08	69.99	85.10	24.20	0928	65.65	64.92	-34.86	99.78
QA3	180'.9"	178	63.38	47.72	63.38	24.40	0930	65.76	65.03	-36.12	101.15
Z4	170' 10"	168	59.03	43.02	59.03	24.71	0932	65.90	65.17	36.93	102.10
QA4	131' 1"	128	41.65	25.82	41.66	25.02	0935	66.10	65.37	36.54	101.91
Z5	121' 2"	118	37.31	21.43	37.31	25.29	0937	66.20	65.47	36.63	102.10
~~QA5~~	~~91' 5"~~	~~88~~	~~24.24~~	~~14.29~~	~~24.25~~	~~25.43~~	~~0939~~	~~66.25~~	~~65.52~~	~~22.98~~	~~88.50~~
Z6A	81' 6"	78	19.86	14.28	19.89	25.52	0941	66.30	65.57	12.94	78.51
Z6B	71' 7"	68	15.48	14.32	15.42	25.59	0943	66.35	65.62	2.54	68.16
QA6	Above the water table	58	—	—	—	—	—	—	-	—	—

Reviewed By: [signature] Date: 5/23/17

CLEAR CREEK ASSOCIATES

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WESTBAY FIELD DATA SHEET

Motorola 52nd Street Facility - Groundwater Sampling

Well ID: ***EW13*** Date: 5/23/17

Technician (s): ARP + RDT

Initial Depth to Water (DTW) in Multi-Port (MP) casing: 67.59

Final DTW in MP casing: 67.10

Sample Order	Zone no.	Surface Function Checks								Position Sampler		
		Arm Out	Shoe out	Vacuum Check	Open Valve	Evaacuate Chamber	Close Valve	Shoe In	Arm In	Port Depth (ft)	Arm Out	Cable Depth (ft)
	Z1	✓								268		
1	Z2	✓	✓	✓	✓	✓	✓	✓	✓	228	✓	228' 9"
	Z3									168		
2	Z4	✓	✓	✓	✓	✓	✓	✓	✓	118	✓	118' 9"

Sample Order	Zone no.	Port Depth (ft)	Sample Collection Checks									
			DTW in MP Casing (ft)	Pressure Inside Casing (psi)	Shoe out	Pressure Outside Casing (psi)	Valve Open Time (Sample Time)	Valve Closed Time	Pressure Outside Casing (psi)	Shoe In	DTW in MP casing {Remove Sounder} (ft)	Volume Retrieved (ml)
	Z1	268										
1	Z2	228	64.55	85.54	✓	69.98	1000	1005	69.97	✓	64.58	245
	Z3	168	65.10									
2	Z4	118	↓	37.71	✓	21.35	1030	1034	21.35	✓	65.1	200
											Total Volume Collected	

Sample Order	Zone no.	Port Depth (ft)	Field Parameters						
			Open Valve (Decon)	pH	Conductivity (mS/cm)	Temp. C° (F°)	Appearance		
							Color	Clarity	Odor
	Z1	268	✓	5.02	3.14	83.2	light orange	slightly cloudy	little
1	Z2	228	↓	↓	↓	↓	↓	↓	↓
	Z3	168							
2	Z4	118	✓	8.03	1.55	81.6	clear	clear	very slight

Comments:

Reviewed By: [signature] Date: 5/23/17

Equipment Rinsate Blank (BR1): N/A

Field Duplicate (D1): N/A

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)		Comments
DM118		06/01/17	0725	North side top of 4" PVC casing	1177.23	63.00		
DM120		06/01/17	1154	North side top of 6" PVC casing	1161.83	77.7		
DM122-B		06/01/17	1135	North side top of 6" PVC casing	1144.87	77.40		
						Measured	Calcuted	
DM305		06/02/17	0800	Orange mark @ surface - subtract 5.75 feet from WL reading	1185.73	101.75	96	
DM306		06/02/17	0815	Orange mark @ surface - subtract 5.70 feet from WL reading	1181.04	102.55	96.85	
DM307		06/02/17	0830	Orange mark @ surface - subtract 5.66 feet from WL reading	1177.64	106.2	100.54	
DM308		06/02/17	0853	Orange mark @ surface- subtract 5.72 feet from WL reading	1177.63	92.9	87.18	
DM309		06/02/17	0857	Orange mark @ surface - subtract 5.76 feet from WL reading	1174.88	116.55	110.79	
DM310		06/02/17	0905	Orange mark @ surface - subtract 5.60 feet from WL reading	1175.17	106.21	100.61	
DM311		06/02/17	0915	Orange mark @ surface - subtract 5.73 feet from WL reading	1173.36	84.40	78.67	
DM312		06/02/17	0918	Orange mark @ surface - subtract 5.75 feet from WL reading	1171.41	76.6	70.85	
DM313		06/02/17	0922	Orange mark @ surface - subtract 6.35 feet from WL reading	1169.71	70.21	63.86	
DM503		06/01/17	1030	North side top of 5.5" LCS casing	1162.31	72.6		
DM602		06/01/17	0845	North side top of 5" steel casing	1187.53	73.1		
DM604		06/01/17	0805	North side top of 5" steel casing	1178.35	82.35		
DM607 A		06/01/17	0830	fLUTE - Across Vault	1174.58	75.1		
DM607 B		06/01/17	0832	fLUTE - Across Vault	1174.58	72.81		
DM607 C		06/01/17	0834	fLUTE - Across Vault	1174.58	71.9		
DM607 D		06/01/17	0836	fLUTE - Across Vault	1174.58	72.53		
DM609		06/01/17	1007	Top of 5-in north side	1201.85	43.9		
DM611		06/02/17	0848	Canal Bank	1183.72	85.0		
DM612		06/02/17	0842	Canal Bank	1183.64	86.5		
DM613		06/02/17	0844	Canal Bank	1183.38	85.3		

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*

Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)	Comments
DM616		6/7/17 —	0944 —	On the north side of Hubbell St. just east of 46th Street.	1190.08	52.62 —	Parked car
DM617		06/01/17	0735	On the west side of 43rd Place South of McDowell Rd.	1170.86	72.11	
DM618		06/01/17	0745	On Willetta East of DM607.	1175.69	73.7	
DM619		06/01/17	0817	On Willetta East of DM316.	1178.47	78.35	
DM620		06/01/17	0853	On Almeria Rd. North side street just off 1704 N. 46th Place.	1189.72	68.57	
DM621		06/01/17	0853	On 47th Street just outside of 1866 N. 47th St.	1195.83	49.5	
DM622		06/01/17	0940	West portion of parking lot of 7-11 on 48th and McDowell	1184.91	49.72	
DM623		—	—	On the west side of 43rd Place North of Belleview St.	1167.32	—	Stripped screws
DM624A		06/02/17	1200	North side top of 2" casing	1189.85	69.6	Stripped screws
DM624B		06/02/17	1200	North side top of 2" casing	1189.85	72.8	can't access
DM625		06/01/17	1207	North side top of 4" casing	1207.31	98.2	
DM626A	0715 →	06/01/17 →		North side top of 3" casing	1211.24	50.48	
DM626B	0714 →	06/01/17 →		North side top of 2" casing	1211.25	48.00	
DM627A	~~109~~	06/01/17	1000	North side top of 3" casing	1180.86	63.58	
DM627B		06/01/17	1001	North side top of 2" casing	1180.85	62.63	
DM628		06/01/17	1147	North side top of 4" casing	1161.12	77.42	
DM629A		06/01/17	0737	North side top of 3" casing	1168.53	73.4	
DM629B		06/01/17	0739	North side top of 2" casing	1168.53	71.55	
DM630A		06/01/17	1025	North side top of 3" casing	1162.12	79.6	
DM630B		06/01/17	1026	North side top of 2" casing	1162.12	78.80	
DM631A		06/01/17	0748	North side top of 3" casing	1160.72	75.4	
DM631B		06/01/17	0750	North side top of 2" casing	1160.72	74.95	
DM701		06/01/17	1215	Top of $4^1/_2$" dia galvanized well seal	1177.07	49.1	
EW18		06/01/17	0900	Sounding port top of well seal	1196.01	49.8	

Reviewed By: [signature]

NOTES:

*Depth to water measured from **NORTH** side of inner casing.*
Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 602
Project Name: Motorola 52nd St.	Date: 06/02/17
Project Number: 005128	Samplers: HH, AR
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on: Friday	Date: 06/02/17	Time: 1105
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	7.0:	10.0:
Conductivity Meter: 1413 µS	Calibration solution used:	Reading:	

WELL INFORMATION	Depth to water (DTW): 73.02 feet bmp	Date: 06/02/17	Time: 1100
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: 117 feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD 120 - DTW 46.98) * well diameter 5.5 ^{2} * 0.0408 = 58.0 gal.			
Two well volumes= 116 gal.			
Three well volumes = 174 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR
1105	—	—	—	START						
1112	7	7.4	43	77.65	7.52	1970	79.2	None/ Clear	slt. specs	None
1117	12	7.4	84	77.67	7.50	1985	79.6	None	clear	none
1123	18	7.4	128	77.70	7.51	1984	79.8	None	clear	None
1129	24	7.4	171	77.70	7.50	1982	80.3	None	clear	None
1130	—	—	SAMPLE							
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%			

SAMPLE COLLECTION	Date: 06/02/17	Time: 1130	Volume Purged: 190 gal.
Requested Analysis: 8260		Collection Equipment:	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment: —	
Comments:			
Sampler Signature: [signature]		Date: 06/02/17	
Reviewed By: [signature]		Date: 6/2/17	

SAMPLE TYPE:
- ☒ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM670
Project Name: Motorola 52nd St.	Date: 06/02/17
Project Number: 005178	Samplers: HH, AP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on: friday	Date: 06/02/17	Time: 1105
pH Meter: Panna			
pH calibration readings at:	~~4.0:~~ 4.01	7.0:	10.0:
Conductivity Meter: 1413 mS	Calibration solution used:	Reading:	

WELL INFORMATION	Depth to water (DTW): 68.6 feet bmp	Date: 06/02/17	Time: 1205
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter: in.	

23.4

One well volume = (TD 92 - DTW) * well diameter 4 ^{2} * 0.0408 = 15.3 gal.	
Two well volumes= 30.55 gal.	
Three well volumes = 45.83 gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

1205 Start

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1210	5	3-4	12	71-88	7.92	2025	81.7	clear	clear	none	
1212	7	3.5	21	72.32	7.38	2060	80.8	clear	clear	none	
1215	9	3-6	30	72.5	7.39	2073	81.4	clear	clear	none	
1218	12	3-6	41	72.9	7.42	2080	83.0	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 06/02/17	Time: 1220	Volume Purged: 53 gal.
Requested Analysis: 8260	Collection Equipment:		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment: —		
Comments:			
Sampler Signature:	Date: 06/02/17		
Reviewed By:	Date: 6/2/17		

SAMPLE TYPE:
- ☒ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

2017Q3/Q4 Field Forms

Groundwater Monitoring

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM602
Project Name: Motorola 52nd St.	Date: 07/19/17
Project Number: 005128	Samplers: DP, HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on: 07/19/17	Date: 07/19/17	Time: 0920
pH Meter: Hanna			
pH calibration readings at:	(4.0) 4.01	(7.0) 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading:	

WELL INFORMATION	Depth to water (DTW): 73.08 feet bmp	Date: 07/19/17	Time: 0925
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: 112 feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 120 - DTW 73.08) * well diameter 5.5 ^{2} * 0.0408 = 58 gal.		
Two well volumes= 116 gal.		
Three well volumes = 174 gal.		

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0927											
0933	6	6.8	44	77.46	7.30	1490	79.8	slt. tan	slt. cloudy	None	
0939	12	7.0	89	77.49	7.32	1873	79.8	none	clear	None	
0945	18	6.6	132	77.57	7.29	2017	79.8	none	clear	None	
0950	23	6.7	171	77.60	7.32	2054	79.8	none	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 07/19/17	Time: 0950	Volume Purged: 192 gal.
Requested Analysis: 8260		Collection Equipment:	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE:
Comments:			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature:		Date: 07/19/17	
Reviewed By:		Date: 7/20/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM620
Project Name: Motorola 52nd St.	Date: 07/19/17
Project Number: 005178	Samplers: DP, HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on: 07/19/17	Date: 07/19/17	Time: 0920
pH Meter: Hanna			
pH calibration readings at:	(4.0) 4.01	(7.0) 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading:	

WELL INFORMATION	Depth to water (DTW): 68.65 feet bmp	Date: 07/19/17	Time: 1015
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 92 - DTW 68.65) * well diameter 4 ^{2} * 0.0408 = 15.2 gal.		
Two well volumes= 30.5 gal.		
Three well volumes = 95.7 gal.		

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F)	COLOR	CLARITY	ODOR	
1017											
1021	4	3.4	13	72.76	7.02	2195	80.9	None	Clear	None	
1023	6	3.7	22	73.12	7.00	2221	80.3	None	Clear	None	
1026	9	3.4	33	73.26	7.18	2228	81.0	None	Clear	None	
1029	12	3.8	44	73.43	7.20	2241	80.5	None	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 07/19/17	Time: 1030	Volume Purged: ~~45~~ 57 gal.
Requested Analysis: 8260		Collection Equipment:	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE:
Comments:			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 07/19/17	
Reviewed By: [signature]		Date: 7/20/17	

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)		Comments
DM705				Top of $^5/_8$" dia. Aluminum well seal	1193.80			
DM706				Top of $^5/_8$" dia. Aluminum well seal	1193.62			
DM707				Top of $^5/_8$" dia. Aluminum well seal	1195.58			
DM713				North side top of 4.5" well seal	1199.59			
DM714				North side top of 4.5" well seal	1202.76			
DM715				Sounding port top of 4" well seal	1202.41			
DM716				Sounding port top of 4" well seal	1204.74			
DM718				North side top of well seal	1203.29			
DM720				North side top of well seal				
DM723				Sounding port top of 4" well seal	1202.99			
DM724				North side top of 7" well seal, sounding tube	1197.21			
DM725				Sounding port top of 4" well seal	1195.62			
DM726				Sounding port top of 4" well seal	1198.62			
DM727				Sounding port top of 4" well seal	1200.26			
DM728				Sounding port top of 4" well seal	1202.13			
DM733				Sounding port top of 5" well seal	1186.93			
DM735				Sounding port top of 5" well seal	1191.77			
EW18				Sounding port top of well seal	1196.01			
WT-K				Northside top of PVC casing	1228.82			
MP03-B	AP	9/1/17	1030	Across Vault	1215.30	57.69		
MP03-C	AP	9/1/17	1030	Across Vault	1215.30	55.54		
MP03-D	AP	9/1/17	1030	Across Vault	1215.30	55.10		
MP09-B	AP	9/1/17	0945	Across Vault	1214.43	55.08		

NOTES:
Depth to water measured from ***NORTH*** *side of inner casing.*
Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)	Comments
MP09-C	AP	9/1/17	0945	Across Vault	1214.43	55.54	
MP09-D	AP	9/1/17	0945	Across Vault	1214.43	54.15	
MP11-B	AP	9/1/17	1200	Across Vault	1209.14	41.42	
MP11-D	AP	9/1/17	1200	Across Vault	1209.14	45.55	
MP13-B	AP	9/1/17	0915	Top of Concrete Vault	1205.13	37.20	
MP13-D	AP	9/1/17	0915	Top of Concrete Vault	1205.13	32.56	
MP16-A	AP	9/1/17	0816	Top of Concrete Vault	1193.03	34.77	
MP16-B	AP	9/1/17	0816	Top of Concrete Vault	1193.03	33.24	
MP16-C	AP	9/1/17	0816	Top of Concrete Vault	1193.03	37.68	
MP16-D	AP	9/1/17	0816	Top of Concrete Vault	1193.03	37.72	
MP20-A	AP	9/1/17	0745	Across Vault	1211.74	33.74	
MP20-B	AP	9/1/17	0745	Across Vault	1211.74	33.27	
MP25-B	AP	9/5/17	0905	Across Vault	1224.34	40.91	
MP25-C	AP	9/5/17	0905	Across Vault	1224.34	40.70	
MP25-D	AP	9/5/17	0905	Across Vault	1224.34	45.94	
MP28-B	AP	9/5/17	0950	Across Vault	1217.61	48.34	
MP30-A	AP	9/5/17	1050	Across Vault	1217.20	56.36	
MP30-B	AP	9/5/17	1050	Across Vault	1217.20	56.35	
MP30-C	AP	9/5/17	1050	Across Vault	1217.20	55.26	
MP30-D	AP	9/5/17	1050	Across Vault	1217.20	53.45	
MP36-A	AP	9/5/17	1010	Across Vault	1211.47	Dry	Went to 46', dirt on end
MP36-B	AP	9/5/17	1010	Across Vault	1211.47	56.35	
MP36-C	AP	9/5/17	1010	Across Vault	1211.47	54.95	
MP36-D	AP	9/5/17	1010	Across Vault	1211.47	56.10	

Reviewed By: [illegible]

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*
Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)	Comments
DM107	DP/HH	09/05/17	1337	Top of 4" dia. PVC casing, north side	1198.32	25.12	
DM111	KB/HH	09/01/17	1145	North side top of 4" PVC casing	1200.15	DRY	
DM112	KB/HH	09/01/17	1140	North side top of 4" PVC casing	1194.23	~~DRY~~	full of ANTS!
DM114	HH/DP	9/5/17	0842	North side top of 4" PVC casing	1216.07	56.39	
DM115	KB/HH	09/01/17	1200	North side top of 4" PVC casing	1188.46	DRY	
DM117	KB/HH	09/01/17	11:49	North side top of 4" PVC casing	1201.80	37.0	
DM118	HH	09/01/17	0626	North side top of 4" PVC casing	1177.23	62.60	
DM120	KB/HH	09/01/17	11:03	North side top of 6" PVC casing	1161.83	76.75	
DM122-A	KB/HH	09/01/17	09:45	North side top of 6" PVC casing	1143.84	DRY	
DM122-B	KB/HH	09/01/17	09:41	North side top of 6" PVC casing	1144.87	76.8	
DM124	DP/HH	09/05/17	0810	North side top of 8" LCS casing	1168.65	35.48	
DM201	DP/HH	09/05/17	1020	Top of 6 5/8" aluminum well seal	1194.61	94.31	
DM201-OB1	DP/HH	09/05/17	1026	Top of 2" dia. PVC well seal	1195.75	36.29	
DM201-OB2	DP/HH	09/05/17	1009	Sounding port top of 2" well seal	1194.79	40.25	Cap off / missing lock
DM301	DP/HH	09/05/17	1224	North side top of 7" well seal	1212.86	60.48	55-514169
DM302	DP/HH	9/5/17	1229	North side top of 7" well seal	1212.46	74.82	
DM303	DP/HH	9/5/17	0905	North side top of well seal	1209.43	66.30	- running
DM304	DP/HH	09/05/17	0909	North side top of well seal	1209.19	50.95	
						Measured	Calcuted
DM305	DP/HH	09/06/17	0745	Orange mark @ surface - subtract 5.75 feet from WL reading	1185.73	102.56	96.81
DM306	DP/HH	9/6/17	0751	Orange mark @ surface - subtract 5.70 feet from WL reading	1181.04	74.61	68.91
DM307	DP/HH	09/06/17	0757	Orange mark @ surface - subtract 5.66 feet from WL reading	1177.64	117.78	112.12

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*
Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft) Measured	Depth to Water from Measurement Point (ft) Calcuted	Comments
DM308	DP/HH	9/6/17	0820	Orange mark @ surface- subtract 5.72 feet from WL reading	1177.63	129.10	123.38	
DM309	DP/HH	09/06/17	0825	Orange mark @ surface - subtract 5.76 feet from WL reading	1174.88	118.36	112.6	
DM310	DP/HH	9/6/17	0831	Orange mark @ surface - subtract 5.60 feet from WL reading	1175.17	106.50	100.9	
DM311	DP/HH	9/6/17	0843	Orange mark @ surface - subtract 5.73 feet from WL reading	1173.36	84.86	79.13	
DM312	DP/HH	9/6/17	0837	Orange mark @ surface - subtract 5.75 feet from WL reading	1171.41	77.35	71.6	
DM313	DP/HH	09/06/17	0854	Orange mark @ surface - subtract 6.35 feet from WL reading	1169.71	70.96	64.61	
DM314	DP/HH	09/05/17	0913	Out side gate of 50th Street plant entrance.	1209.40	115.64		
DM503	~~KB/HH~~	09/01/17	0919	North side top of 5.5" LCS casing	1162.31	62.93		
DM602	~~KB/HH~~	09/01/17	0735	North side top of 5" steel casing	1187.53	72.99		
DM604	~~KB/HH~~	09/01/17	0705	North side top of 5" steel casing	1178.35	81.95		
DM607 A				fLUTE - Across Vault	1174.58			
DM607 B				fLUTE - Across Vault	1174.58			
DM607 C				fLUTE - Across Vault	1174.58			
DM607 D				fLUTE - Across Vault	1174.58			
DM609	~~HH/KB~~	09/01/17	0846	Top of 5-in north side	1201.85	43.70		
DM610	~~KB/HH~~	09/01/17	0843	Top of 5-in north side	1201.96	92.65		
DM611	DP/HH	9/6/17	0805	Canal Bank	1183.72	85.00		
DM612	DP/HH	9/6/17	0807	Canal Bank	1183.64	86.82		
DM613	DP/HH	9/6/17	0809	Canal Bank	1183.38	89.02		
DM614	DP/HH	09/05/17	0921	North side top of 6 5/8" casing	1209.92	52.63		
DM615	DP/HH	09/05/17	0918	North side top of 6 5/8" casing	1209.73	50.53		

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*

Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)	Comments
DM616	KB/HH	09/01/17	0827	North side top of 4" casing	1190.08	52.43	
DM617	KB/HH	09/01/17	0640	North side top of 4" casing	1170.86	71.72	
DM618	KB/HH	09/01/17	0728	North side top of 4" casing	1175.69	73.20	
DM619	KB/HH	09/01/17	0721	North side top of 4" casing	1178.47	78.0	
DM620	KB/HH	09/01/17	0742	North side top of 4" casing	1189.72	68.51	
DM621	KB/HH	09/01/17	0800	North side top of 4" casing	1195.83	71.40	
DM622	KB/HH	09/01/17	0600	North side top of 4" casing	1184.91	44.45	
DM623				North side top of 4" casing	1167.32		
DM624A	KB/HH	09/01/17	0752	North side top of 2" casing	1189.85	72.19	
DM624B	KB/HH	09/01/17	0750	North side top of 2" casing	1189.85	69.95	full of greasy rain water
DM625	KB/HH	09/01/17	1133	North side top of 4" casing	1207.31	49.10	
DM626A	KB/HH	09/01/17	0550	North side top of 3" casing	1211.24	50.64	
DM626B	KB/HH	09/01/17	0550	North side top of 2" casing	1211.25	48.03	
DM627A	KB/HH	09/01/17	0850	North side top of 3" casing	1180.86	63.35	
DM627B	KB/HH	09/01/17	0851	North side top of 2" casing	1180.85	62.70	
DM628	KB/HH	09/01/17	1058	North side top of 4" casing	1161.12	77.10	
DM629A	KB/HH	09/01/17	0649	North side top of 3" casing	1168.53	72.98	
DM629B	KB/HH	09/01/17	0649	North side top of 2" casing	1168.53	71.21	
DM630A	KB/HH	09/01/17	0903	North side top of 3" casing	1162.12	79.28	
DM630B	KB/HH	09/01/17	0906	North side top of 2" casing	1162.12	78.45	
DM631A	KB/HH	09/01/17	0655	North side top of 3" casing	1160.72	75.16	
DM631B	KB/HH	09/01/17	0655	North side top of 2" casing	1160.72	74.72	
DM701	DP/HH	09/05/17	0800	Top of $4^1/_2$" dia galvanized well seal	1177.07	42.61	
DM702	DP/HH	09/05/17	1015	Top of $^5/_8$" dia. Aluminum well seal	1195.38	58.81	
DM703	DP/HH	09/05/17	1012	Top of $^5/_8$" dia. Aluminum well seal	1194.72	63.02	
DM704	DP/HH	9/5/17	10:02	Top of $^5/_8$" dia. Aluminum well seal	1194.54	60.59	

NOTES:

*Depth to water measured from **NORTH** side of inner casing.*

Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)	Comments
DM705	HH/DP	9/5/17	0958	Top of 5/8" dia. Aluminum well seal	1193.80	64.31	
DM706	HH/DP	9/5/17	09:55	Top of 5/8" dia. Aluminum well seal	1193.62	60.58	
DM707	HH/DP	09/05/17	1017	Top of 5/8" dia. Aluminum well seal	1195.58	56.35	
DM713	HH/DP	09/05/17	1039	North side top of 4.5" well seal	1199.59	44.45	
DM714	HH/DP	9/5/17	13:12	North side top of 4.5" well seal	1202.76	40.64	
DM715	HH/DP	9/5/17	13:11	Sounding port top of 4" well seal	1202.41	38.58	
DM716	HH/DP	09/05/17	1322	Sounding port top of 4" well seal	1204.74	43.00	
DM718	HH/DP	09/05/17	1326	North side top of well seal	1203.29	44.17	
DM720	DP/HH	09/05/17	1245	North side top of well seal		28.57	
DM723	DP/HH	09/05/17	1119	Sounding port top of 4" well seal	1202.99	28.58	
DM724	DP/HH	09/05/17	1051	North side top of 7" well seal, sounding tube	1197.21	62.31	
DM725	DP/HH	09/05/17		Sounding port top of 4" well seal	1195.62	15.39	
DM726	DP/HH	9/5/17	10:42	Sounding port top of 4" well seal	1198.62	33.41	Top of casing
DM727	DP/HH	9/5/17	11:09	Sounding port top of 4" well seal	1200.26	32.37	
DM728	DP/HH	9/5/17	10:59	Sounding port top of 4" well seal	1202.13	36.14	Highest point on 4" (corroded)
DM733	DP/HH	9/5/17	13:58	Sounding port top of 5" well seal	1186.93	38.14	
DM735	DP/HH	9/5/17	13:49	Sounding port top of 5" well seal	1191.77	40.88	
EW18	~~68.15~~	~~09/05/17~~	0815	Sounding port top of well seal	1196.01	49.64	
WT-K	DP/HH	09/05/17	0938	Northside top of PVC casing	1228.82	31.73	
MP03-B				Across Vault	1215.30		
MP03-C				Across Vault	1215.30		
MP03-D				Across Vault	1215.30		
MP09-B				Across Vault	1214.43		

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*
Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 16-D
Project Name: Motorola 52nd St. 17Q3	Date: 9/6/17
Project Number: 005128	Samplers: AP + AC
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/1/17	Time: 0900
pH Meter: Hanna stick			
pH calibration readings at:	4.0: 4.01	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading:	

WELL INFORMATION	Depth to water (DTW): 37.72 feet bmp	Date: ~~9/6/17~~ 9/1/17	Time: 0816
Total Depth of Well (TD): 170 feet bmp	Screened Interval: 155-170	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 170 - DTW 37.72) * well diameter 2	^{2} * 0.0408 = 21.5	gal.	2.4 = screen vol.
Two well volumes= 24	gal.	(1 well volume + 1 screen)	
Three well volumes = 26.4	gal.	(1 well volume + 2 screen)	

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

Pumping at 1122 Tally - ~~LHT~~ 11

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1145	23	0.26	6	—	7.49	2032	86.5	clear	clear	none	
1218	56	0.25	14	—	7.48	2037	88.0	clear	clear	none	
1252	90	0.23	21	—	7.56	2048	91.6	clear	clear	none	
1327	125	0.22	27	—	7.61	2050	90.8	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/6/17	Time: 1330	Volume Purged: 27 gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3 100ml glass	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	
Comments:			
Sampler Signature: Alex Patton		Date: 9/6/17	
Reviewed By: [signature]		Date: 9/7/17	

SAMPLE TYPE:

☒ Primary ☐ Duplicate

☐ Equipment Blank ☐ Field Blank

☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 16 – B
Project Name: Motorola 52nd St. 17Q3	Date: 9/6/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/1/17	Time: 0900
pH Meter: Hanna stick			
pH calibration readings at:	4.0: 4.01	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading:	

WELL INFORMATION	Depth to water (DTW): 33.24 feet bmp	Date: 9/1/17	Time: 0816
Total Depth of Well (TD): 55 feet bmp	Screened Interval: 45-55	Casing Diameter: 2	
Casing Type:	Depth to Pump: 51 feet bmp	Drop Pipe Diameter:	in.

3.5 One well volume = (TD 55 - DTW 33.24) * well diameter 2 ^{2} * 0.0408 = 3.5 gal. screen = 1.5

5 Two well volumes= ~~7~~ 5.1 gal. (~~two well volumes~~) one well volume + 1 screen

6.75 Three well volumes = ~~10.5~~ ~~8.5~~ gal. (~~two~~ one well volumes + 2 screen volumes)

~~Pumping at 1342~~

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

Pumping at 1342

WELL EVACUATION	Purge Equipment:

	CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
RD a+6	1408	26	0.087	2.25	—	8.70	2200	92.0	clear	clear	none	
a+6	1440	~~32~~ 58	0.078	4.5	—	8.78	2102	91.6	clear	clear	none	
a+3	1515	93	0.073	6.75	—	8.67	2125	90.8	clear	clear	none	
Stabalization Criteria						+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/6/17	Time: 1515	Volume Purged: ~~10.5~~ 6.75 gal
Requested Analysis: 8260 Short List		Collection Equipment: 3 100 ml glass	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	
Comments:			
Sampler Signature: [signature]		Date: 9/6/17	
Reviewed By: [signature]		Date: 9/7/17	

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 36 - B
Project Name: Motorola 52nd St. 17Q3	Date: 9/7/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on: 9/7/17	Date:	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.03	7.0: 7.01	10.0: NA
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 56.35 feet bmp	Date: 9/5/17	Time: 1010
Total Depth of Well (TD): 80 feet bmp	Screened Interval: 60 - 80	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 80 - DTW 56.35) * well diameter 2 ^{2} * 0.0408 = 3.86 gal. Screen = 3.264			
Two well volumes= 7.7 gal.			
Three well volumes = 11.6 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

0957 - Pumping

WELL EVACUATION	Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1017	20	0.195	3.9	—	6.89	3790	82.5	clear	clear	none	
1041	44	0.177	7.8	—	6.94	3842	82.8	clear	clear	none	
1106	69	0.168	11.6	—	6.96	3859	84.3	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/7/17	Time: 1107	Volume Purged: ~~11.6~~ 12 gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100ml VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 9/7/17	
Reviewed By: [signature]		Date: 9/8/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 36-C
Project Name: Motorola 52nd St. 17Q3	Date: 9/7/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on: 9/7/17	Date:	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.03	7.0: 7.01	10.0: NA
Conductivity Meter: Hanna	Calibration solution used: 1413		Reading: 1415

WELL INFORMATION	Depth to water (DTW): 54.95 feet bmp	Date: 9/5/17	Time: 1010
Total Depth of Well (TD): 140 feet bmp	Screened Interval: 90-140	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 140 - DTW 54.95) * well diameter 2 ^{2} * 0.0408 = 13.9 gal. Screen = 8.16 gal.

Two well volumes= 22 gal. (One well volume, one well screen)

Three well volumes = 30 gal. (One well volume, two well screen)

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

1115 - Started pumping

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1215	60	0.125	7.5	—	7.67	1608	90.7	clear	clear	none	
1320	125	0.12	[illegible]	15	7.51	1498	91.4	clear	clear	none	
1430	195	0.11	22	—	7.61	1503	92.0	clear	clear	none	
1545	270	0.11	30	—	7.60	1499	91.0	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/7/17	Time: 1550	Volume Purged: 30 gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100 ml VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 9/7/17	
Reviewed By: [signature]		Date: 9/8/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 13-B
Project Name: Motorola 52nd St. 17Q3	Date: 9/8/17
Project Number: 005128	Samplers: Alex Potter
Location:	Weather: Cloudy

INSTRUMENTATION	Instruments calibratated on:	Date: 9/7/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.03	7.0: 7.01	10.0: NA
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date: 9/1/17	Time: 0915
Total Depth of Well (TD): 45 feet bmp	Screened Interval: 35-45	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 45 - DTW 37.20) * well diameter 2 ^{2} * 0.0408 = 1.27 gal.			
Two well volumes= 2.5 gal.			
Three well volumes = 3.8 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =	

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0935			1	—	6.90	2405	82.1	clear	clear	none	
0942			2	—	6.90	2413	84.1	murky	murky	none	
1013		Bail	3	—	6.98	2403	83.3	murky	murky	none	
1018			3.8	—	7.04	2467	81.7	murky	murky	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/8/17	Time: 1020	Volume Purged: 3.8 gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:	
Comments:		☒ Primary	☐ Duplicate
		☐ Equipment Blank	☐ Field Blank
		☐ Split Sample	☐ MS/MSD
Sampler Signature: Alex Potter	Date: 9/8/17		
Reviewed By: [signature]	Date: 9/8/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): Morgan Well
Project Name: Motorola 52nd St. 17Q3	Date: 9/8/17
Project Number: 005128	Samplers: RG
Location:	Weather: Cloudy

INSTRUMENTATION	Instruments calibratated on:	Date: 9/8/17	Time: 0800
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.01	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading:	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): feet bmp	Screened Interval:	Casing Diameter:	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0905					6.76	1815	80.0	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/8/17	Time: 0905	Volume Purged: gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:	
Comments:		☒ Primary	☐ Duplicate
		☐ Equipment Blank	☐ Field Blank
		☐ Split Sample	☐ MS/MSD
Sampler Signature: [signature]	Date: 9/8/17		
Reviewed By: [signature]	Date: 9/8/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): Morgan Well Tank
Project Name: Motorola 52nd St. 17Q3	Date: 9/8/17
Project Number: 005128	Samplers: RG
Location:	Weather: Cloudy

INSTRUMENTATION	Instruments calibratated on:	Date: 9/8/17	Time: 0800
pH Meter: Hanna			
pH calibration readings at:	(4.0) 4.01	(7.0) 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading:	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): feet bmp	Screened Interval:	Casing Diameter:	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD	- DTW	) * well diameter	^{2} * 0.0408 =	gal.
Two well volumes=	gal.			
Three well volumes =	gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0915					7.02	1782	82.3	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/8/17	Time: 0915	Volume Purged: gal.
Requested Analysis: 8260 Short List		Collection Equipment:	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE:
Comments:			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 9/8/17	
Reviewed By: [signature]		Date: 9/8/17	

602-478-2572
Gary

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 11-B
Project Name: Motorola 52nd St. 17Q3	Date: 9/11/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/12/17	Time: 1000
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.03	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 41.42 feet bmp	Date: 9/11/17	Time: 1200
Total Depth of Well (TD): 50 feet bmp	Screened Interval: 30 - 50	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 50 - DTW 41.42) * well diameter 2 ^{2} * 0.0408 = 1.4 gal.			
Two well volumes= 2.8 gal.			
Three well volumes = 4.2 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

	CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
9/11/17	1530	—	—	1	—	9.82	3377	87.0	murky	murky	none	
				~~2~~ 1.5	The well is dry.							
				~~3~~								
				~~4~~								
9/12/17	1035					10.97	5369	84.0	clear	clear	none	
Stabalization Criteria						+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/12/17	Time: 1040	Volume Purged: 2 gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: The well ran dry after purging 1.5 gallons on 9/11/17. Sampled on 9/12/17. One vial at 1040, the other at 1145 + 1245.			
Sampler Signature: [signature]	Date: 9/12/17		
Reviewed By: [signature]	Date: 9/12/17		

SAMPLE TYPE:
- ☒ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 11 - D
Project Name: Motorola 52nd St. 17Q3	Date: 9/12/17
Project Number: 005128	Samplers: [illegible]
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/7/17	Time: 1000
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.03	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 45.55 feet bmp	Date: 9/1/17	Time: 1200
Total Depth of Well (TD): 165 feet bmp	Screened Interval: 155-165	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 165 - DTW 45.55) * well diameter 2 ^{2} * 0.0408 = 19.5 gal. 1.6 = screen			
Two well volumes= 21 gal.			
Three well volumes = 22.7 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

Started pumping at 1200 on 9/12/17

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1230	30		5	—	8.58	419	93.0	clear	clear	None	
1237	Paused pumping to use restroom.										
1250	Pumping										
1430	Well went dry after ~7.5 gallons purged										
1215	Started Pumping										
1230	165	1.5	8		8.06	472	86.3	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/13/17	Time: 1230	Volume Purged: 8 gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: [illegible]	Date: 9/13/17		
Reviewed By: [illegible]	Date: 9/14/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 36-D
Project Name: Motorola 52nd St. 17Q3	Date: 9/11/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/7/17	Time: 1000
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.03	7.0: 7.01	10.0: NA
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 56.1 feet bmp	Date: 9/5/17	Time: 1010
Total Depth of Well (TD): 170 feet bmp	Screened Interval: 160-170	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 170 - DTW 56.1) * well diameter 2 ^{2} * 0.0408 = 18.6 gal.	1.6 = screen volume
Two well volumes= gal.	
Three well volumes = gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =	

Started pumping ~ 1040

WELL EVACUATION	Purge Equipment:

	CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
9/11/17	1300			3 - Technical Problems / Stopped Pumping								
9/13/17	1320											
	1350	5 gallons today & Total				7.53	1752	93.1	clear	clear	None	
	1400	No Water / leak in hose										
Started Pumping at 0915 → 9/14/17	0940	25	0.24	6	—	7.46	1759	82.7	clear	clear	None	
	1015	60	0.20	12	—	7.41	1695	83.4	clear	clear	None	
	1120	125	0.14	18	7.45	~~7.39~~	1454	87.2	clear	clear	None	
	1220	185	0.12	22	—	7.31	1498	102.7	clear	clear	None	
	Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/14/17	Time: 1220	Volume Purged: 22 gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: [signature]	Date: 9/14/17		
Reviewed By: [signature]	Date: 9/14/17		

SAMPLE TYPE: 1200 9/14/17
~~☒ Primary~~ 1250 9/14/17 ☒ Duplicate
MP36-D DUP 2000
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 13-D
Project Name: Motorola 52nd St. 17Q3	Date: ~~9/15/17~~ 9/15/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: ~~9/7/17~~ 9/15/17	Time: ~~1000~~ 0940
pH Meter: Hanna			
pH calibration readings at:	4.0: ~~4.05~~ 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 32.56 feet bmp	Date: 9/1/17	Time: 0915
Total Depth of Well (TD): 175 feet bmp	Screened Interval: 160-175	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 175 - DTW 32.56) * well diameter 2	^{2} * 0.0408 =	23.3	gal.	screen = 2.5
Two well volumes=	25.8 gal.			
Three well volumes =	28.3 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

Started Pumping at 0930

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1000	30	0.2	6	—	7.07	761	83.8	Murky	Murky	None	
1030	60	0.2	12	—	7.12	578	85.3	Clear	Clear	None	
1100	90	0.195	17.5	—	7.25	557	84.8	clear	clear	None	
1130	120	0.1875	22.5	—	7.18	548	85.8	Clear	clear	None	
1200	150	0.173	26.5	—	7.18	547	85.9	Clear	clear	None	
1220	170	0.168	28.5		7.21	547	86.4	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/15/17	Time: 1225	Volume Purged: 29 gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100 ml VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	
Comments:			
Sampler Signature: [signature]		Date: 9/15/17	
Reviewed By: [signature]		Date: 9/18/17	

SAMPLE TYPE:
- ☒ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM313
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AR, Leo
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 63.84 feet bmp	Date: 9/18/17	Time: 0717
Total Depth of Well (TD): 93 feet bmp	Screened Interval: 43-93	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

72.5 = 90% recovery from measuring point

One well volume = (TD 93 - DTW 63.84) * well diameter 6.625 ^{2} * 0.0408 = 52.2 gal.		
Two well volumes= 104.4 gal.		
Three well volumes = 156.6 gal.		

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

Pump on at 0725, Pump on at 1030, Pump on at 1252

WELL EVACUATION — Purge Equipment:

	CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR
Purged 46 gal Pump off	0727	2	6.4	18	72.65	9.39	2900	77.8	white	opaque	None
	0731	6	6.3	40	79.85	6.35	2852	76.8	clear	clear	None
					65.45 — Before pumping started						
Purged 40 gal.	1030	30 sec	8.1	5	~~74~~	~~8~~ 7.24	3298	82.8	clear	clear	None
	1035	5	7.4	36	—	too slow	—	—	—	—	—
	1036	6	off	40	—	—	—	—	—	—	—
	1253	1	8	8	—	7.18	3172	81.5	clear	clear	None
	1256	1	8	27	—	7.23	3188	83.7	clear	clear	None
	1252	Pump off		37							
	Stabalization Criteria			123 total		+/- 0.1	+/- 3%	+/- 10%			

SAMPLE COLLECTION	Date: 9/18/17	Time: 1257	Volume Purged: 123 gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE: ☑ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 9/18/17		
Reviewed By: [signature]	Date: 9/18/17		

Ran dry after 46 gallons
40 gallons
37
123

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): OM 312
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AP, LEO
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/18/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 70.81 feet bmp	Date: 9/18/17	Time: 0742
Total Depth of Well (TD): 103 feet bmp	Screened Interval: 53-103	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

79.2 = 90% recovery from measuring point.

One well volume = (TD 103 - DTW 70.81) * well diameter 6.625 ^{2} * 0.0408 =	57.6 gal.
Two well volumes=	115.2 gal.
Three well volumes =	172.8 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

0745 - Pump on 1045 - Pump on 1309 - Pump on

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR
0747	2	6.9	15	77.65	8.62	2294	77.4	clear	clear	None
0750	5	6.5	44	82.95	7.75	2367	79.5	orange	opaque	Slight
0754	9	6.3	64	93.00	7.59	2363	79.8	orange	~~opaque~~ foggy	Slight
0755	Pump off		80	-	-	-	—	—	—	—
1047	2	8.2	15	—	7.67	2449	85.5	orange	foggy	Slight
1050	5	7.9	37	-	7.64	2386	82.8	orange	foggy	Slight
1054	9	7.5	67	-	7.69	2395	83.0	clear	clear	Slight
1102	Pump off		85	-	-	-	—	—	—	—
1303	4	7.8	32	—	7.70	2389	83.3	clear	clear	Slight
1316	7	7.5	61	-	7.63	2369	83.0	clear	clear	slight
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%			

80 gal. purged

Pump off at ~~1055~~ 1102
~~76~~ gal. purged
85

Pump off at 1317
69 gallons purged

SAMPLE COLLECTION	Date: 9/18/17	Time: 1316	Volume Purged: 186 gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100 mL VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☑ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 9/18/17	
Reviewed By: [signature]		Date: 9/18/17	

Ran dry after 80 gallons.
55 gallons

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 311
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AP, LED
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 79.57 feet bmp	Date: 9/18/17	Time: 0805
Total Depth of Well (TD): 108 feet bmp	Screened Interval: 57-107	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

87.8 = 90% recovery from measuring point

One well volume = (TD 108 - DTW 79.57) * well diameter 6.625 ^{2} * 0.0408 = 50.9 gal.			
Two well volumes= 101.8 gal.			
Three well volumes = 152.7 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

0814-Pump on 1113-Pump on 1330-Pump on

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0815	1	10.4	10	—	8.71	1708	78.3	clear	clear	None	
0819	5	Pump	off	—	—	—	—	—	—	—	
1114	1	10.4	16	—	8.27	1483	83.1	clear	clear	None	
1116	3	10.2	32	—	8.05	1573	82.7	clear	clear	None	
1118	5	Pump off		—	—	—	—	—	—	—	
1333	3	10.4	23	—	7.96	1814	81.8	clear	clear	None	
1335		10	46	—	7.91	1963	81.5	clear	clear	None	
1336	Pump	off	49	—	—	—	—	—	—	—	
Stabalization Criteria			148		+/- 0.1	+/- 3%	+/- 10%				

50 gal purged

49 gal Purged

49 gal purged

SAMPLE COLLECTION	Date: 9/18/17	Time: 1335	Volume Purged: 148 gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100ml Vials	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	
Comments:			
Sampler Signature: [signature]		Date: 9/18/17	
Reviewed By: [signature]		Date: 9/18/17	

SAMPLE TYPE:
- ☑ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 310
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AP, Leo
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 140 feet bmp	Screened Interval: 69-139	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =	

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0935	—	—	—		7.48	2723	80.5	~~None~~	~~None~~	None	
								clear	clear		
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/18/17	Time: 0935	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE:
Comments: Extraction Well			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 9/18/17		
Reviewed By: [signature]	Date: 9/18/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 309
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AP, Lo
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1412	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 165 feet bmp	Screened Interval: 114-164	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.			
Two well volumes= gal.			
Three well volumes = gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0915	–	–	–		7.29	2444	91.6	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/18/17	Time: 0915	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 mL VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: Extraction Well			
Sampler Signature: [signature]	Date: 9/18/17		
Reviewed By: [signature]	Date: 9/18/17		

SAMPLE TYPE:
- ☑ Primary DM 309
- ☑ Duplicate DM 2001 — 9/18/17 1200
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM308
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AP, Leo
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 135 feet bmp	Screened Interval: 85-135	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.

Two well volumes= gal.

Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0910	–	–	–		7.25	2628	78.8	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/18/17	Time: 0910	Volume Purged: — gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100 ml VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	
Comments: Extraction Well			
Sampler Signature: [signature]		Date: 9/18/17	
Reviewed By: [signature]		Date: 9/18/17	

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 307
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AP, Leo
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 129 feet bmp	Screened Interval: 77-129	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0855	—	—	—		7.24	2437	76.0	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/18/17	Time: 0855	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE: ☑ Primary ☐ Duplicate
Comments: Extraction Well			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 9/18/17		
Reviewed By: [signature]	Date: 9/18/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): OM 306
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AP, Leo
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on: 9/15/17	Date:	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0: N/A
Conductivity Meter: Hanna	Calibration solution used: 1415	Reading: 1413	

WELL INFORMATION	Depth to water (DTW): - feet bmp	Date:	Time:
Total Depth of Well (TD): 107 feet bmp	Screened Interval: 57-107	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =	

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0843	5	—	—		7.21	2240	80.5	Clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/18/17	Time: 0845	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: Extraction well			
Sampler Signature: [signature]	Date: 9/18/17		
Reviewed By: [signature]	Date: 9/18/17		

SAMPLE TYPE:
- ☑ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 305
Project Name: Motorola 52nd St. 17Q3	Date: 9/18/17
Project Number: 005128	Samplers: AP, LED
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on: 9/15/17	Date:	Time: 1000
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413		Reading: 1415

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 107 feet bmp	Screened Interval: 57-107	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0835	—	—	—		7.25	2191	78.9	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/18/17	Time: 0835	Volume Purged: — gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100 ml VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☑ Primary ☐ Duplicate
Comments: Extraction Well			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 9/18/17	
Reviewed By: [signature]		Date: 9/18/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 314
Project Name: Motorola 52nd St. 17Q3	Date: 9/19/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0: N/A
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 240 feet bmp	Screened Interval: 139-240	Casing Diameter: 8	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.			
Two well volumes= gal.			
Three well volumes = gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1050	—	4.5	—	—	7.52	1643	90.6	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/19/17	Time: 1050	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 mL VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: Extraction Well			
Sampler Signature: [signature]	Date: 9/19/17		
Reviewed By: [signature]	Date: 9/20/17		

SAMPLE TYPE:
- ☑ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 611
Project Name: Motorola 52nd St. 17Q3	Date: 9/19/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0: NA
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 83.9 feet bmp	Date: 9/19/17	Time: 1150
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 80-92	Casing Diameter: 4	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 92 - DTW 83.9) * well diameter 4 ^{2} * 0.0408 = 5.3 gal.			
Two well volumes= 10.6 gal.			
Three well volumes = 15.9 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

1156 - Pumping - 110 psi, 5.8 R and 4.2 D

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1202	6	[redacted]	0.5	—	7.06	2722	86.3	Clear	Clear	None	0.083 gpm
1232	36	0.097	3.5	—	6.99	2746	87.4	clear	clear	None	
1302	66	0.098	6.5	83.95	6.85	2757	88.6	clear	clear	None	
1332	96	0.099	9.5	—	6.87	2755	88.1	clear	clear	None	
1402	126	0.099	12.5	—	6.83	2742	88.5	clear	clear	None	
1432	156	0.099	15.5	—	6.85	2756	86.9	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/19/17	Time: 1440	Volume Purged: 16 gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100 mL VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☑ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 9/19/17	
Reviewed By: [signature]		Date: 9/20/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): OM 301
Project Name: Motorola 52nd St. 17Q3	Date: ~~9/18/17~~ 9/19/17
Project Number: 005128	Samplers: AP, Leo
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 118 feet bmp	Screened Interval: 37-98	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.			
Two well volumes= gal.			
Three well volumes = gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1510	–	3.8	–	–	7.31	3560	86.0	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/19/17	Time: 1510	Volume Purged: – gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3,100 ml VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☑ Primary ☐ Duplicate
Comments: Extraction Well			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 9/19/17	
Reviewed By: [signature]		Date: 9/20/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): OM 302
Project Name: Motorola 52nd St. 17Q3	Date: 9/19/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hzenna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 117 feet bmp	Screened Interval: 42-96	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.

Two well volumes= gal.

Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1520	–	3.8	–	–	7.05	3607	86.3	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/19/17	Time: 1520	Volume Purged: – gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE:
Comments: Extraction Well			☑ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 9/19/17		
Reviewed By: [signature]	Date: 9/20/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 303
Project Name: Motorola 52nd St. 17Q3	Date: 9/19/17
Project Number: 005128	Samplers: AP
Location: Hanna RG	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stock			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 102 feet bmp	Screened Interval: 37-92	Casing Diameter: 6.675	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 =	gal.
Two well volumes=	gal.
Three well volumes =	gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =	

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1025	–	–	–	–	6.94	3218	84.4	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/19/17	Time: 1025	Volume Purged: – gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3,100 mL VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☑ Primary ☐ Duplicate
Comments: Extraction Well			☐ Equipment Blank ☐ Field Blank ☐ Split Sample ☐ MS/MSD
Sampler Signature: Alex Patterson		Date: 9/19/17	
Reviewed By: [signature]		Date: 9/20/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 304
Project Name: Motorola 52nd St. 17Q3	Date: 9/19/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0: N/A
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 102 feet bmp	Screened Interval: 37-92	Casing Diameter: 6.675	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.

Two well volumes= gal.

Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1015	—	—	—	—	7.15	3733	86.1	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/19/17	Time: 1015	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: Extraction Well			
Sampler Signature: [signature]	Date: 9/19/17		
Reviewed By: [signature]	Date: 9/20/17		

SAMPLE TYPE:
- ☑ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM504
Project Name: Motorola 52nd St. 17Q3	Date: 9/20/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick		7.01	
pH calibration readings at:	4.0: 4.02	7.0: ~~7.02~~	10.0: N/A
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 77.28 feet bmp	Date: 9/20/17	Time: 1000
Total Depth of Well (TD): 233 feet bmp	Screened Interval: 184-233	Casing Diameter: 5.5	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 233 - DTW 77.28) * well diameter 5.5 ^{2} * 0.0408 = 192 gal. 60 = screen

Two well volumes= 384 gal.

Three well volumes = ~~576~~ 444 gal. Two well volumes, one screen volume.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

0902 - Pump on

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR
0907	5	9.2	41	–	7.52	2312	77.8	clear	clear	None
0919	17	9.3	153	–	7.56	2368	79.8	clear	clear	None
0935	33	9.3	301	–	7.42	2371	80.4	clear	clear	None
0955	53	off	482	–	7.50	2360	82.2	clear	clear	None
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%			

SAMPLE COLLECTION	Date: 9/20/17	Time: 0950	Volume Purged: 482 gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 mL VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: Alex Peters	Date: 9/20/17		
Reviewed By: [signature]	Date: 9/20/17		

SAMPLE TYPE:
☑ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): EW02
Project Name: Motorola 52nd St. 17Q3	Date: 9/20/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0: N/A
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

wrong form — [redacted]

WELL INFORMATION	Depth to water (DTW): [redacted] feet bmp [redacted].2	Date: 9/20/17	Time: [redacted]
Total Depth of Well (TD): 100 feet bmp	Screened Interval: 50-100	Casing Diameter: 4"	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 100 - DTW [redacted] 76.2 * well diameter 4 ² * 0.0408 = [redacted] gal. 15.5	
Two well volumes= [redacted] 31 gal.	
Three well volumes = [redacted] 46.5 gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)² * 0.0408 =	

1031 - Pump on.

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1037	—	—	—	—	7.68	2181	84.3	murky	murky	None	
1037	—	6.5	29	78.2	7.73	2192	81.8	murky	murky	None	
1043	Pump off		58	—	—	—	—	—	—	—	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/20/17	Time: 1040	Volume Purged: 58 gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 ml VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: [signature]	Date: 9/20/17		
Reviewed By: [signature]	Date: 9/20/17		

SAMPLE TYPE:
- ☒ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP30-D
Project Name: Motorola 52nd St. 17Q3	Date: 9/21/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/15/17	Time: 1000
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0: N/A
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1415	

WELL INFORMATION	Depth to water (DTW): 53.45 feet bmp	Date: 9/5/17	Time: 1050
Total Depth of Well (TD): 175 feet bmp	Screened Interval: 160-175	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 175 - DTW) * well diameter 2 ^{2} * 0.0408 = 19.8 gal. Screen = 2.5 gallons				
Two well volumes= 22.3 gal.				
Three well volumes = 24.8 gal.				

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

0930 - Started pumping.

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0945	15	0.03	0.5	—	8.02	1412	78.9	clear	clear	None	
1020	50	0.06	3	—	7.98	1481	79.2	clear	clear	None	
1055	85	0.15	13+	—	8.11	1400	79.9	clear	clear	None	
1101	91	0.19	18	—	—	—	—	—	—	—	
1110	100	0.24	24	—	—	—	—	—	—	—	
1115	105	0.27	28	—	8.08	1431	78.5	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

100 psi, R=7 → D=3

100 psi, R=12.5 → D=8.5

SAMPLE COLLECTION	Date: 9/21/17	Time: 1115	Volume Purged: 30+ gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 mL VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: Bladder likely broken.			
Sampler Signature: [signature]	Date: 9/21/17		
Reviewed By: [signature]	Date: 9/21/17		

SAMPLE TYPE:
☑ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM 607 A

Total Depth of Well: 146 Feet bmp

Casing Diameter: 1 Inches

Screen Interval: 126-146 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 48" Diameter(in.): 0.75"

Depth of PDB (bmp): 1st PDB: 135 middle 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 11:05

DTW: Feet bmp

Retrieval: Date: 9/21/17 Time: 0755

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

* add 1 weight next time

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
1-A	5.83	428	76.8	None	Clear	None	Hole in top of bag tied off w/ knot

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/21/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St, 17Q3

Project Number: 005128

Well ID/Sample ID: DM607B

Total Depth of Well: 210 Feet bmp

Casing Diameter: 1 Inches

Screen Interval: 190-210 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 48 Diameter(in.): 0.75

Depth of PDB (bmp): 1st PDB: 200 middle 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 DP Time: 10:25

DTW: Feet bmp

Retrieval: Date: 9/21/17 Time: 0805

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
2-B	6.05	282	76.2	None	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/21/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM 607 C

Total Depth of Well: 310 Feet bmp

Casing Diameter: 1 Inches

Screen Interval: 290-310 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 48 Diameter(in.): 0.75

Depth of PDB (bmp): 1st PDB: 300 middle 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 10:40

DTW: Feet bmp

Retrieval: Date: 9/21/17 Time: 0815

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
3-C	4.84	14	78.0	None	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM607D

Total Depth of Well: 400 Feet bmp

Casing Diameter: 1 Inches

Screen Interval: 380-400 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 48 Diameter(in.): 0.75

Depth of PDB (bmp): 1st PDB: 385 middle 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 1055

DTW: Feet bmp

Retrieval: Date: 9/21/17 Time: 0828

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
4-D	4.16	5	78.1	None	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM 624 A

Total Depth of Well: 160 Feet bmp

Casing Diameter: 2 Inches

Screen Interval: 140-160 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 142 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 09/06/17 Time: 1136

DTW: 69.61 Feet bmp

Retrieval: Date: 9/21/17 Time: 0855

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
A	4.92	4	78.7	None	Clear	None	effervesces
		4					effervesces

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

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* Very strong effervecente reaction. Sample VOAs contain bubble smaller than a pea.

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17 Q3

Project Number: 005128

Well ID/Sample ID: DM 624 B

Total Depth of Well: 300 Feet bmp

Casing Diameter: 2 Inches

Screen Interval: 280 - 300 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 290 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 09/06/17 Time: 11:50

DTW: 72.78 Feet bmp

Retrieval: Date: 9/21/17 Time: 09:10

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
B	4.99	5	83.0	None	Clear	None	effervesces

Sampler Signature: David Pen Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM625

Total Depth of Well: 55 Feet bmp

Casing Diameter: 4 Inches

Screen Interval: 35-55 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 52 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 12:43

DTW: 48.07 Feet bmp

Retrieval: Date: 9/21/17 Time:

Requested Analysis: 8260

Type and Number of Sample Containers: 3 - VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.25	8	81.7	None	Clear	None	DM1004
							Duplicate.

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17 Q3

Project Number: 005128

Well ID/Sample ID: OM 626 A

Total Depth of Well: 80 Feet bmp

Casing Diameter: 3 Inches

Screen Interval: 60-80 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 70 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 12:56

DTW: 50.65 Feet bmp

Retrieval: Date: 9/21/17 Time: 1012

Requested Analysis: 8260

Type and Number of Sample Containers: 3-VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.64	5	81.0	None	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM 626 B

Total Depth of Well: 150 Feet bmp

Casing Diameter: 2 Inches

Screen Interval: 130-150 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 140 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 13:00

DTW: 48.01 Feet bmp

Retrieval: Date: 9/21/17 Time: 1025

Requested Analysis: 8260

Type and Number of Sample Containers: 3-VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.09	4	80.3	None	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St 17Q3

Project Number: 005128

Well ID/Sample ID: OM627A

Total Depth of Well: 120 Feet bmp

Casing Diameter: 3 Inches

Screen Interval: 100 – 120 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 110 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 13:19

DTW: 63.29 Feet bmp

Retrieval: Date: 9/21/17 Time: 1045

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.05	7	77.1	None	clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM627B

Total Depth of Well: 195 Feet bmp

Casing Diameter: 2 Inches

Screen Interval: 175-195 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 185 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 13:28

DTW: 62.68 Feet bmp

Retrieval: Date: 9/21/17 Time: 1056

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.18	4	78.7	None	Clear	None	effervesces

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM628

Total Depth of Well: 210 Feet bmp

Casing Diameter: 4 Inches

Screen Interval: 190 – 210 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 197 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 13:45

DTW: 76.91 Feet bmp

Retrieval: Date: 9/21/17 Time: 1205

Requested Analysis: 8260

Type and Number of Sample Containers: 3-VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.60	3	79.1	None	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM631A

Total Depth of Well: 169 Feet bmp

Casing Diameter: 3 Inches

Screen Interval: 149-169 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 159 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 09/07/17 Time: 0808

DTW: 74.98 Feet bmp

Retrieval: Date: 9/21/17 Time: 1222

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration R.
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	r	Notes
	4.74	8	82.2	None	clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM 631 B

Total Depth of Well: 239 Feet bmp

Casing Diameter: 2 Inches

Screen Interval: 219 - 239 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 229 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/7/17 Time: 0818

DTW: 74.52 Feet bmp

Retrieval: Date: 9/21/17 Time: 1235

Requested Analysis: 8260

Type and Number of Sample Containers: 3-VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	3.99	4	80.0	None	Clear	None	effervescence

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM629 A

Total Depth of Well: 137 Feet bmp

Casing Diameter: 3 Inches

Screen Interval: 117-137 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 127 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 13:59

DTW: 72.83 Feet bmp

Retrieval: Date: 9/21/17 Time: 1300

Requested Analysis: 8260

Type and Number of Sample Containers: 3-VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.28	6	79.9	None	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM629 B

Total Depth of Well: 207 Feet bmp

Casing Diameter: 2 Inches

Screen Interval: 187 - 207 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 197 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 14:07

DTW: 71.10 Feet bmp

Retrieval: Date: 9/21/17 Time: 1310

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.10	4	80.4	None	clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM 630 A

Total Depth of Well: 109 Feet bmp

Casing Diameter: 3 Inches

Screen Interval: 89-109 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 99 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 14:19

DTW: 79.08 Feet bmp

Retrieval: Date: 9/21/17 Time: 1330

Requested Analysis: 8260

Type and Number of Sample Containers: 3-VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
DM630A	4.49	5	82.6	Clear	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

Passive Diffusion Bag Sampling Form

Project Name: Motorola 52nd St. 17Q3

Project Number: 005128

Well ID/Sample ID: DM630 B

Total Depth of Well: 184 Feet bmp

Casing Diameter: 2 Inches

Screen Interval: 164-184 Feet bmp

Casing Type: PVC [X] LCS [ ] SS [ ]

Type of PDB Used: Lab Filled: [X] Field Filled: [ ]

Dimension of PDB: Length (in.): 18 Diameter(in.): 1.75

Depth of PDB (bmp): 1st PDB: 166 2nd PDB:

3rd PDB: 4th PDB:

5th PDB: 6th PDB:

Deployment: Date: 9/6/17 Time: 14:29

DTW: 78.25 Feet bmp

Retrieval: Date: 9/21/17 Time: 1345

Requested Analysis: 8260

Type and Number of Sample Containers: 3- VOAs

Field meter	Calibration Date	Calibration Readings
Hanna	9/15/17	4.01, 7.01, 1413

PDB #	pH	Cond	Temp	Color	Clarity	Odor	Notes
	4.20	4	80.9	None	Clear	None	

Sampler Signature: [signature] Date: 9/21/17

Reviewed By: [signature] Date: 9/22/17

CLEAR CREEK ASSOCIATES

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): MP 30-B
Project Name: Motorola 52nd St. 17Q3	Date: 9/22/17
Project Number: 005128	Samplers: AP
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 9/22/17	Time: 1015
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.02	7.0: 7.01	10.0: N/A
Conductivity Meter: Hanna	Calibration solution used: 1413	Reading: 1413	

WELL INFORMATION	Depth to water (DTW): 56.35 feet bmp	Date: 9/5/17	Time: 1050
Total Depth of Well (TD): 75 feet bmp	Screened Interval: 70-75	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 75 - DTW 56.35) * well diameter 2 ^{2} * 0.0408 = 3 gal.			0.8 = screen
Two well volumes= 6 / 3.8 gal.			
Three well volumes = 9 / 4.6 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

~~Pump on at 1130~~ Pump on at 1015

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1026	11		2.5	—	7.84	3182	78.3	Brown	Murky	None	
1045	30		4.5	—	8.64	3112	78.0	Rust	Murky	None	
1115	45		5.5	—	8.70	3175	79.8	Rust	Murky	None	
1120	50	Low	~5.7	—	—	—	—	—	—	—	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/21/17	Time: 1130	Volume Purged: 5.7 gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 mL VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: Took Duplicate DW 2003 at 1200 Only two VOAs, not three.			
Sampler Signature: [signature]	Date: 9/22/17		
Reviewed By: [signature]	Date: 9/22/17		

SAMPLE TYPE:
- ☑ Primary
- ☑ Duplicate 1200
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM702
Project Name: Motorola 52nd St. 17Q3	Date: 09/22/17
Project Number: 005128	Samplers: KB, DP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 09/22/17 Time: 0735
pH Meter: Hanna		
pH calibration readings at:	4.0: 4.01 7.0: 7.01 10.0:	
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0748	—	—	—	—	6.75	2437	84.1	Clear	Clear	None	Sampled
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 09/22/17 Time: 07:48 Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:
Containers: VOAs	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments: Extraction Well	
Duplicate DM1005, 09/22/17, 08:00	
Sampler Signature: [signature]	Date: 09/22/17
Reviewed By: [signature]	Date: 9/22/17

SAMPLE TYPE:
- ☒ Primary
- ☒ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 703
Project Name: Motorola 52nd St. 17Q3	Date: 09/22/17
Project Number: 005128	Samplers: KB, DP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/22/17	Time: 0735
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.01	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.			
Two well volumes= gal.			
Three well volumes = gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
07:58	—	—	—	—	8.07	2090	84.5	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 09/22/17	Time: 07:58	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE:
Comments: Extraction Well			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature:	Date: 09/22/17		
Reviewed By: Russell	Date: 9/22/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM704
Project Name: Motorola 52nd St. 17Q3	Date: 09/22/17
Project Number: 005128	Samplers: KB, DP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 09/22/17 Time: 0735
pH Meter: Hanna		
pH calibration readings at:	4.0: 4.01 7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD	- DTW	) * well diameter	^{2} * 0.0408 =	gal.
Two well volumes=	gal.			
Three well volumes =	gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
08:10	—	—	—	—	8.55	2056	85.7	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 09/22/17 Time: 08:10	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:	
Containers: VOAs	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:
Comments: Extraction Well		☒ Primary ☒ Duplicate
Duplicate DM1006, 09/22/17, 08:01		☐ Equipment Blank ☐ Field Blank
		☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 09/22/17	
Reviewed By: [signature]	Date: 9/22/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 705
Project Name: Motorola 52nd St. 17Q3	Date: 09/22/17
Project Number: 005128	Samplers: KB; DP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 09/22/17 Time: 0735
pH Meter: Hanna		
pH calibration readings at:	4.0: 4.01 7.0: 7.01 10.0:	
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
08:21	—	—	—	—	8.11	2367	85.9	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 09/22/17 Time: 08:21 Volume Purged: — gal.	
Requested Analysis: 8260 Short List	Collection Equipment:	
Containers: VOAs	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:
Comments: Extraction Well		☒ Primary ☐ Duplicate
		☐ Equipment Blank ☐ Field Blank
		☐ Split Sample ☐ MS/MSD
Sampler Signature:	Date: 09/22/17	
Reviewed By:	Date: 9/22/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 706
Project Name: Motorola 52nd St. 17Q3	Date: 09/22/17
Project Number: 005128	Samplers: KB, DP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 09/22/17	Time: 0735
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.01	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): – feet bmp	Date:	Time:
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 =			gal.
Two well volumes= gal.			
Three well volumes = gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
08:31	—	—	—	—	8.15	1790	85.8	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 09/22/17 Time: 08:31	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:	
Containers: VOAs	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE: ☒ Primary ☒ Duplicate
Comments: Extraction Well Duplicate DM1007, 08:02		☐ Equipment Blank ☐ Field Blank ☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 09/22/17	
Reviewed By: Russell [signature]	Date: 9/22/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM707
Project Name: Motorola 52nd St. 17Q3	Date: 09/22/17
Project Number: 005128	Samplers: KB, DP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 09/22/17	Time: 0735
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.01	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = gal.
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
08:36	—	—	—	—	8.00	2476	85.8	Clear	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 09/22/17	Time: 08:36	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE:
Comments: Extraction Well			☒ Primary ☐ Duplicate
			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature:	Date: 09/22/17		
Reviewed By:	Date: 9/22/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 713
Project Name: Motorola 52nd St. 17Q3	Date: 09/22/2017
Project Number: 005128	Samplers: KB, DP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/22/17 Time: 0735
pH Meter: Hanna		
pH calibration readings at:	~~4.0~~: 4.01	(7.0) ~~10.0~~:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 49 feet bmp	Screened Interval: 24-49	Casing Diameter: 4	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * ~~well diameter~~ ^{2} * 0.0408 = gal.
Two well volumes= gal.
~~Three well~~ volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =	

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0950	—	—	—	—	8.24	1728		clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 09/22/2017 Time: 0950 Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:
Containers: VOAs 3	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments: Extraction Well	
Sampler Signature: [signature]	Date: 09/22/17
Reviewed By: [signature]	Date: 9/22/17

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 714
Project Name: Motorola 52nd St. 17Q3	Date: 9/22/17
Project Number: 005128	Samplers: DP/KB
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/22/17	Time: 0735
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01	~~10.0:~~
Conductivity Meter:	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 48 feet bmp	Screened Interval: 23-48	Casing Diameter: 4	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter	~~^{2} * 0.0408 =~~	~~gal.~~	
Two well volumes=	gal.		
~~Three well volumes =~~	gal.		

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1000	—	—	—	—	7.68	2733	86.4	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/22/17 Time: 10:00	Volume Purged: gal.
Requested Analysis: 8260 Short List	Collection Equipment:	
Containers: VOAs	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:
Comments: Extraction Well		☒ Primary ☐ Duplicate
		☐ Equipment Blank ☐ Field Blank
		☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 09/22/17	
Reviewed By: [signature]	Date: 9/22/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM718
Project Name: Motorola 52nd St. 17Q3	Date: 9/22/17
Project Number: 005128	Samplers: DP/KB
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/22/17 Time: 0735
pH Meter: Hanna		
pH calibration readings at:	~~4.0~~ 4.01	(7.0) 7.01 ~~10.0~~
Conductivity Meter:	Calibration solution used: 1413 µS	Reading:

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 49 feet bmp	Screened Interval: 24-49	Casing Diameter: 4.5	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ~~^{2} * 0.0408~~ = gal.	
Two well volumes= gal.	
~~Three well volumes~~ = gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1010	—	—	—	—	7.67	3802	98.2	clear	clear	none	*
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/22/17 Time: 10:10	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:	
Containers: VOAs 3	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments: Extraction well DM718 "went dry" before parameter sample taken. Also each VOA has small bubble because DM718 went dry.		☐ Equipment Blank ☐ Field Blank ☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 09/22/17	
Reviewed By: [signature]	Date: 9/22/17	

* parameter sample collected at 10:50 after well recharge.

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 724
Project Name: Motorola 52nd St. 17Q3	Date: 9/22/17
Project Number: 005128	Samplers: DP/KB
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/22/17	Time: 0735
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01	~~10.0:~~
Conductivity Meter:	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 6.625	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 = ~~gal.~~
Two well volumes= gal.
Three well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
10:43	—	—	—	—	8.23	2275	87.5	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/22/17 Time: 10:43 Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:
Containers: VOAs 3	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments: Extraction Well	
Sampler Signature:	Date: 09/22/17
Reviewed By:	Date: 9/22/17

SAMPLE TYPE:
- ☒ Primary
- ☐ Duplicate
- ☐ Equipment Blank
- ☐ Field Blank
- ☐ Split Sample
- ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 726
Project Name: Motorola 52nd St. 17Q3	Date: 9/25/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17 Time: 0840
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01 (7.0:) 7.01 ~~10.0:~~	
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

70
-34
36

WELL INFORMATION	Depth to water (DTW): 33.45 feet bmp	Date: 9/25/17 Time: ~~0735~~ DP 0835
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 4.5
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.

~30

One well volume = (TD 70 - DTW) * well diameter 4.5 ² * 0.0408 = 30 gal.
Two well volumes= 60 gal.
Three well volumes = 90 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)² * 0.0408 =	

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	*
Start 09:00											
0923	23	1.1	25	43.03	8.76	1365	86.3	slt yellow	clear	none	
0948	48	1.0	50	51.04	8.71	1380	87.8	slt yellow	clear	none	
1013	73	1.0	75	56.24	8.76	1400	88.0	clear	clear	none	
1028	88	1.0	90	57.98	8.69	1438	90.2	clear	clear	none	
Sample 1030	—	—	—	—	8.73	1443	86.6	clear	clear	none	* bailer
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/25/17 Time: 10:30 Volume Purged: 90 gal.
Requested Analysis: 8260 Short List	Collection Equipment: bailer
Containers: VOAs 3	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments: Equipment Blank DM726-BR1 (08:50) Flow meter not working. Use bucket to calculate flow. Pump @ ~65' bls	SAMPLE TYPE: ☒ Primary ☐ Duplicate ☒ Equipment Blank ☒ ~~Field Blank~~ RO ☐ Split Sample ☐ MS/MSD
Sampler Signature: David Pum	Date: 9/25/17
Reviewed By: [signature]	Date: 9/25/17

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 122-B
Project Name: Motorola 52nd St. 17Q3	Date: 9/25/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17 Time: 0840
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01 (7.0:) 7.01 ~~10.0:~~	
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

WELL INFORMATION	Depth to water (DTW): 76.74 feet bmp	Date: 9/25/17 Time: 1213
Total Depth of Well (TD): 96 feet bmp	Screened Interval: 86-96	Casing Diameter: 6
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.

96
-77
19
~30

One well volume = (TD 96 - DTW) * well diameter 6 ^{2} * 0.0408 = ~~50.3~~ 28.3 gal.
Two well volumes= ~~100.6~~ 56.6 gal.
Three well volumes = ~~150.9~~ gal. 84.9

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

1217 ON

WELL EVACUATION	Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1220	3	6.6	24	78.77	7.18	2370	80.8	sl. yellow	clear	none	
1223	6	6.4	42	78.88	7.27	2367	80.7	vs lt. yellow	clear	none	
1226	9	6.5	63	78.91	7.17	2356	81.6	vs lt. yellow	clear	none	
1230	12	6.0	84	78.91	7.17	2376	82.9	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/25/17 Time: 12:35 Volume Purged: 105 gal.
Requested Analysis: 8260 Short List	Collection Equipment: Stub-up
Containers: VOAs 3	Preservative: (HCL)
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments:	
Sampler Signature: [signature]	Date: 9/25/17
Reviewed By: [signature]	Date: 9/25/17

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM120
Project Name: Motorola 52nd St. 17Q3	Date: 9/25/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17	Time: 08:40
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

140
- 76
64

WELL INFORMATION	Depth to water (DTW): 76.36 feet bmp	Date: 9/25/17	Time: 13:01
Total Depth of Well (TD): 140 feet bmp	Screened Interval: 120-140	Casing Diameter: 6	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

~94

One well volume = (TD 140 - DTW) * well diameter 6 ^{2} * 0.0408 = 94 gal.			
Two well volumes= 188 gal.			
Three well volumes = 282 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

Start 13:07

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1319	12	6.6	73	80.89	7.72	2340	80.8	None	Clear	None	
1329	22	6.2	137	80.90	7.69	2360	79.7	None	Clear	None	
1342	35	6.5	222	80.92	7.58	~~2362~~	80.5	None	Clear	None	
1349	42	6.5	275	8.93	7.59	2352	80.3	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/25/17	Time: 13:50	Volume Purged: 288 gal.
Requested Analysis: 8260 Short List	Collection Equipment: Stick-up		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: [signature]	Date: 9/25/17		
Reviewed By: [signature]	Date: 9/25/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 201
Project Name: Motorola 52nd St. 17Q3	Date: 9/26/17
Project Number: 005128	Samplers: DP / HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17	Time: 0840
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	7.0: 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): feet bmp	Date:	Time:
Total Depth of Well (TD): feet bmp	Screened Interval:	Casing Diameter:	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD - DTW) * well diameter	^{2} * 0.0408 =	gal.	
Two well volumes=	gal.		
Three well volumes =	gal.		

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0835	—	—	—	—	7.09	1759	82.2	Clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/26/17	Time: 0835	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: Extraction well			
Sampler Signature: [signature]	Date: 9/26/17		
Reviewed By: [signature]	Date: 9/27/17		

SAMPLE TYPE:

☒ Primary ☐ Duplicate

☐ Equipment Blank ☐ Field Blank

☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 610
Project Name: Motorola 52nd St. 17Q3	Date: 9/26/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17 Time: 08:40
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01 (7.0) 7.01 ~~10.0:~~	
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

195
- 41
154

WELL INFORMATION	Depth to water (DTW): 42.70 feet bmp	Date: 9/26/17 Time: 12:52
Total Depth of Well (TD): 195 feet bmp	Screened Interval: 145-195	Casing Diameter: 4
Casing Type: PVC	Depth to Pump: 190 feet bmp	Drop Pipe Diameter: in.

100
x 3
300

One well volume = (TD 195 - DTW = 152.3) * well diameter 4 ^{2} * 0.0408 = 100 gal.
Two well volumes= 200 gal.
Three well volumes = 300 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

Start 1302

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
13:22	20	3.0	75	144.70	7.47	757	79.9	clear	clear	none	
13:47	45	2.5	146	161.41	7.54	758	82.1	clear	clear	none	
14:20	78	1.9	226	168.85	7.54	756	82.1	clear	clear	none	
14:48	106	2.1	290	168.98	~~742~~ 7.56	742	81.9	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/26/17 Time: 14:55 Volume Purged: 305 gal.	
Requested Analysis: 8260 Short List	Collection Equipment: stub-up	
Containers: VOAs 3	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:
Comments: DM1008 (12:00)		☒ Primary ☒ Duplicate
		☐ Equipment Blank ☐ Field Blank
		☐ Split Sample ☐ MS/MSD
Sampler Signature: David Pen	Date: 9/26/17	
Reviewed By: Terrell [illegible]	Date: 9/27/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 723
Project Name: Motorola 52nd St. 17Q3	Date: 9/26/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17	Time: 0840
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): 28.99 feet bmp	~~Date: 9/25~~ 9/26/15	Time: 0915
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 20-70	Casing Diameter: 4.5	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

70
-28
42

One well volume = (TD 70 - DTW 28.99) * well diameter 4.5 ² * 0.0408 = 34 gal.
Two well volumes= 68 gal.
Three well volumes = 102 gal.

35
x 3
150

Low Yield Wells	DTW after recovery = 29.62	Percent Recovery: 98% water column now / initial water column x 100
Has 1 well volume been removed (yes) no	Drop Pipe Volume = pump depth * (pipe dia)² * 0.0408 = N/A	

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
Start 09:34 9/26/17											
0954	20	1.1	19	39.66	7.43	452	82.2	clear	clear	none	
1011	37	1.1	39	50.38	7.50						
1030	56	1.0	60	58.21	~~7.82~~	4.82	89.1	clear	clear	none	
1054	80	.8	79	63.55	7.76	5.07	83.2	clear	clear	none	
		well went dry									
9/27/17 0830	—	—	—	29.62	7.55	481	82.8	clear	clear	none	— from sample bailer
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

9/27/17 08:30

SAMPLE COLLECTION	~~Date: 9/26/17~~ Time: ~~14:55~~ DP	Volume Purged: 87 gal. then dry
Requested Analysis: 8260 Short List	Collection Equipment: bailer	
Containers: VOAs 3	Preservative (HCL)	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments: DM723-BR1 (09:10) Portable pump and controller stopped every 1 to 2 min.		☐ Equipment Blank ☐ Field Blank ☐ Split Sample ☐ MS/MSD
Sampler Signature: David Pum	Date: 9/27/17	
Reviewed By: [illegible]	Date: 9/27/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 602
Project Name: Motorola 52nd St. 17Q3	Date: 9/27/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17	Time: 0840
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

120
-72
60

WELL INFORMATION	Depth to water (DTW): 73.01 feet bmp	Date: 9/27/17	Time: 0920
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: 112 feet bmp	Drop Pipe Diameter:	in.

60
x3
180

One well volume = (TD 120 - DTW) * well diameter 5.5 ^{2} * 0.0408 = 50 gal.
Two well volumes= 112 gal.
Three well volumes = 168 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

Start 0923

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0930	7	7.1	49	77.58	7.24	2250	78.3	None	clear	None	
0936	13	7.1	87	77.68	7.34	2263	78.2	None	clear	None	
0942	19	6.9	132	77.71	7.35	2281	77.0	None	Clear	None	
0946	23	7.2	162	77.78	7.33	2284	78.3	none	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/27/17 Time: 0950	Volume Purged: 185 gal.
Requested Analysis: 8260 Short List	Collection Equipment: Stab-up	
Containers: VOAs 3	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE: ☒ Primary ☒ Duplicate
Comments: DM 1009 (08:00)		☐ Equipment Blank ☐ Field Blank ☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 9/27/17	
Reviewed By: [signature]	Date: 9/27/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 620
Project Name: Motorola 52nd St. 17Q3	Date: 9/27/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17 Time: 0840
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01 (7.0:) 7.01 ~~10.0:~~	
Conductivity Meter: Hanna	Calibration solution used: 1413µS	Reading:

92
-68
24

WELL INFORMATION	Depth to water (DTW): 68.52 feet bmp	Date: 9/27/17 Time: 10:10
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter: in.

16
x 3
48

One well volume = (TD 92 - DTW) * well diameter 4 ^{2} * 0.0408 = 15.33 gal.
Two well volumes= 30.666 gal.
Three well volumes = 46 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

Start 1025 9/27/17

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR
1040	15	1.0	12	69.30	7.26	2760	82.4	None	clear	None
1050	25	1.0	24	69.32	7.93	2882	80.3	None	clear	None
1102	37	.9	35	69.32	7.26	7920	80.3	None	clear	None
1113	46	1.0	46	69.34	7.04	2900	80.9	none	clear	none
1115	—	—	—	—	7.27	2638	80.0	none	clear	none
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%			

→ from bailer

SAMPLE COLLECTION	Date: 9/27/17 Time: 11:15	Volume Purged: 49 gal.
Requested Analysis: 8260 Short List	Collection Equipment: bailer	
Containers: VOAs 3	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:
Comments: DM620-BR1 (10:15)		☒ Primary ☐ Duplicate
		☒ Equipment Blank ☐ Field Blank
		☐ Split Sample ☐ MS/MSD
Sampler Signature: David [signature]	Date: 9/27/17	
Reviewed By: [signature]	Date: 9/27/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM609
Project Name: Motorola 52nd St. 17Q3	Date: 9/27/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17 Time: 0840
pH Meter: Hanna		
pH calibration readings at:	~~4.0~~ 4.01 (7.0) 7.01 ~~10.0~~	
Conductivity Meter: Hanna	Calibration solution used: 14134S	Reading:

95
-43
52

WELL INFORMATION	Depth to water (DTW): 43.58 feet bmp	Date:	Time:
Total Depth of Well (TD): 95 feet bmp	Screened Interval: 75-95	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 93 feet bmp	Drop Pipe Diameter:	in.

34
x3
102

One well volume = (TD 95 - DTW = 51.42 * well diameter 4 ² * 0.0408 = 34 gal.
Two well volumes= ~~34~~ 68 gal.
Three well volumes = 102 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)² * 0.0408 =

Start
12:40

WELL EVACUATION	Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1245	5	5.8	29	45.22	7.51	2195	81.8	None	clear	None	
1250	10	5.8	51	45.25	7.50	2196	78.3	None	clear	None	
1254	14	5.9	75	45.28	7.38	2187	78.9	None	clear	None	
1258	18	5.9	100	45.28	7.23	2178	78.9	none	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/27/17 Time: 13:00 Volume Purged: 120 gal.
Requested Analysis: 8260 Short List	Collection Equipment: Stub-up
Containers: VOAs 3	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments: DM1010 (08:08)	
Sampler Signature: [signature]	Date: 9/27/17
Reviewed By: [signature]	Date: 9/27/17

SAMPLE TYPE:
☒ Primary ☒ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 621
Project Name: Motorola 52nd St. 17Q3	Date: 9/28/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/28/17	Time: 0915
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

84
-49
35

WELL INFORMATION	Depth to water (DTW): 49.32 feet bmp	Date:	Time:
Total Depth of Well (TD): 84 feet bmp	Screened Interval: 54-84	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 75 feet bmp	Drop Pipe Diameter:	in.

23
x 3
69

One well volume = (TD 84 - DTW = 35) * well diameter 4 ^{2} * 0.0408 = 23 gal.
Two well volumes= 46 gal.
Three well volumes = 69 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

Start 10:25

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1028	3	4.4	15	51.0	6.96	2324	78.7	Slt yellow	Clear	None	
1031	6	4.7	31	51.03	7.15	2220	78.6	None	Clear	None	
1034	9	4.7	44	51.06	7.26	2217	79.0	None	Clear	None	
1038	13	4.5	69	51.09	7.33	2223	79.1	None	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/28/17 Time: 10:38 Volume Purged: 77 gal.
Requested Analysis: 8260 Short List	Collection Equipment:
Containers: VOAs 3	Preservative: HCl
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments:	
Sampler Signature: [signature]	Date: 9/28/17
Reviewed By: [signature]	Date: 9/28/17

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): WT-K
Project Name: Motorola 52nd St. 17Q3	Date: 9/28/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 8/25/17	Time: 0840
pH Meter: Hanna HI98129 and Hanna HI 991301			
pH calibration readings at:	~~4.0:~~ 4.01	7.0: 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413µS 12.88mS	Reading:	

60
-31
29

WELL INFORMATION	Depth to water (DTW): 31.98 feet bmp	Date: 9/28/17	Time: 0835
Total Depth of Well (TD): 60 feet bmp	Screened Interval: 30-60	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

19
x3
57

One well volume = (TD 60 - DTW 28.02) * well diameter 4 ² * 0.0408 = 19 gal.	
Two well volumes= 38 gal.	
Three well volumes = 57 gal.	

Low Yield Wells	DTW after recovery = 33.08	Percent Recovery: 96% water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)² * 0.0408 = N/A	

$\frac{26.92}{28.02} = 96\%$

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0901	9	1.4	12	44.55	6.64	3610	84.9	slt. yellow	clear	sulfur	
0915	14	1.0	20	56.07	7.14	447	85.0	slight yell	<1% sand	sulfur	
					6.85	3498	81.9	None	clear	None	
0820	—	—	—	—	↓	↓	↓	↓	↓	↓	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

Start 0852 (9/28/17)

Sample (9/29/17)

bailer

SAMPLE COLLECTION	Date: 9/29/17	Time: 0820	Volume Purged: 24 gal gal.
Requested Analysis: 8260 Short List	Collection Equipment: bailer		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		

Comments:
WT-K-BR1 (0830)
* Portable pump not able to pump.
Pumped "dry". DTW 56.04 bmp at 09:28

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☒ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

Sampler Signature: [signature] Date: 9/29/17
Reviewed By: [signature] Date: 9/29/17

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 616
Project Name: Motorola 52nd St. 17Q3	Date: 9/29/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17 Time: 0840
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01 7.0: 7.01 ~~10.0:~~	
Conductivity Meter: Hanna	Calibration solution used: 1413µS	Reading:

94
-51
43

WELL INFORMATION	Depth to water (DTW): ~~44.44~~ 52.34 feet bmp	Date: 9/29/17 Time: 09:14
Total Depth of Well (TD): 94 feet bmp	Screened Interval: 64-94	Casing Diameter: 4
Casing Type: PVC	Depth to Pump: 85 feet bmp	Drop Pipe Diameter: in.

28
x 3
84

One well volume = (TD 94 - DTW) * well diameter 4 ^{2} * 0.0408 = 28 gal.
Two well volumes= 56 gal.
Three well volumes = 84 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:

Start 0917

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0922	5	4.6	21	55.98	6.38	2140	78.9	None	Clear	None	
0926	9	4.2	40	56.03	7.08	2123	77.9	None	Clear	None	
0931	14	4.4	62	56.08	7.20	2104	78.5	None	Clear	None	
0936	19	4.5	81	56.10	7.15	2109	78.3	None	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 9/29/17	Time: 0940	Volume Purged: 44 gal.
Requested Analysis: 8260 Short List		Collection Equipment: Stub-up	
Containers: VOAs 3		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	
Comments:			
Sampler Signature:		Date: 9/29/17	
Reviewed By:		Date: 9/29/17	

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): EW 18
Project Name: Motorola 52nd St. 17Q3	Date: 9/28/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/28/17 Time: 0840
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01 (7.0:) 7.01 ~~10.0:~~	
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

93
-49
29
x 3
87

WELL INFORMATION	Depth to water (DTW): 49.67 feet bmp	Date: 9/28/17 Time: 11:05
Total Depth of Well (TD): 93 feet bmp	Screened Interval: 63-93	Casing Diameter: 4
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.

One well volume = (TD 93 - DTW) * well diameter 4 ^{2} * 0.0408 = 29 gal.
Two well volumes= 58 gal.
Three well volumes = 87 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:

Start 11:13

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C°	COLOR	CLARITY	ODOR
1116	3	6.8	22	49.85	7.92	1992	77.9	None	clear	None
1119	6	7.0	43	49.87	7.37	1976	78.7	None	clear	None
1122	9	6.7	60	49.86	7.46	1988	77.8	None	clear	None
1125	12	6.8	80	49.87	7.33	1975	78.5	None	clear	None
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%			

SAMPLE COLLECTION	Date: 9/28/17 Time: 11:25 Volume Purged: 95 gal.
Requested Analysis: 8260 Short List	Collection Equipment: Stub-up
Containers: VOAs 3	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments:	

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

Sampler Signature: [signature] Date: 9/28/17
Reviewed By: [signature] Date: 9/28/17

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 622
Project Name: Motorola 52nd St. 17Q3	Date: 9/28/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 9/25/17 Time: 0840
pH Meter: Hanna		
pH calibration readings at:	~~4.0~~ 4.01 (7.0) 7.01 ~~10.0~~	
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

57
-44
13

WELL INFORMATION	Depth to water (DTW): 44.43 feet bmp	Date: 9/28/17 Time: 12:45
Total Depth of Well (TD): 57 feet bmp	Screened Interval: 42-57	Casing Diameter: 4
Casing Type: PVC	Depth to Pump: 55 feet bmp	Drop Pipe Diameter: in.

9
x 3
27

One well volume = (TD 57 - DTW) * well diameter 4 ^{2} * 0.0408 = 9 gal.			
Two well volumes= 18 gal.			
Three well volumes = 27 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:

Start 12:49

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR
1251	2	4.6	5	46.38	7.26	1986	88.5	None	clear	none
1252	3	4.5	13	46.76	7.48	2002	86.0	None	clear	none
1254	5	4.5	28	46.93	7.39	2011	84.3	None	clear	none
1255	6	4.5	26	46.96	7.38	2013	84.2	None	clear	none
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%			

SAMPLE COLLECTION	Date: 9/28/17 Time: 12:57	Volume Purged: 34 gal.
Requested Analysis: 8260 Short List	Collection Equipment:	
Containers: VOAs 3	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:
Comments:		☒ Primary ☐ Duplicate
		☐ Equipment Blank ☐ Field Blank
		☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 9/28/17	
Reviewed By: [signature]	Date: 9/28/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM604
Project Name: Motorola 52nd St. 17Q3	Date: 10/2/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	~~4.0~~: 4.01	(7.0:) 7.01	~~10.0~~:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

130
- 82
48

WELL INFORMATION	Depth to water (DTW): 81.90 feet bmp	Date: 10/2/17	Time: 1148
Total Depth of Well (TD): 130 feet bmp	Screened Interval: 80-130	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

60
x 3
180

One well volume = (TD 130 - DTW) * well diameter 5.5 ^{2} * 0.0408 = 60 gal.		
Two well volumes= 120 gal.		
Three well volumes = 180 gal.		

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)^2 * 0.0408 =	

Start 11:53

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
12:02	10	6.6	40	83.21	7.23	2316	80.9	clear	clear	none	
1210	18	7.2	91	83.28	7.23	2357	80.4	clear	clear	none	
1214	22	6.9	124	83.30	7.33	2339	80.5	clear	clear	none	
1221	27	7.2	173	83.34	7.33	2348	80.3	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/2/17	Time: 1225	Volume Purged: 194 gal.
Requested Analysis: 8260 Short List		Collection Equipment: Stub-up	
Containers: VOAs 3		Preservative: (HCL)	
Filtered?: Yes ☐ No ☒		Filter Equipment:	
Comments:			
Sampler Signature: David Pu		Date: 10/2/17	
Reviewed By: [signature]		Date: 10/2/17	

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 619
Project Name: Motorola 52nd St. 17Q3	Date: 10/2/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17 Time: 0825
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01 ~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

WELL INFORMATION	Depth to water (DTW): 77.90 feet bmp	Date: 10/2/17 Time: 0930
Total Depth of Well (TD): 144 feet bmp	Screened Interval: 94-144	Casing Diameter: 4
Casing Type: PVC	Depth to Pump: 135 feet bmp	Drop Pipe Diameter: in.

144
- 78
66

One well volume = (TD 144 - DTW 61.1) * well diameter 4 ^{2} * 0.0408 = 43 gal.
Two well volumes= 86 gal.
Three well volumes = 129 gal.

43
x 3
129

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

Start 0933

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0941	8	5.1	00	78.58	7.14	2448	80.5	None	Slight	None	
0949	16	5.1	83	78.60	7.22	2442	79.8	None	Clear	None	
0956	23	5.1	120	78.62	7.25	2437	80.0	None	Clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/2/17 Time: 10:00 Volume Purged: 140 gal.
Requested Analysis: 8260 Short List	Collection Equipment:
Containers: VOAs 3	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments:	
Sampler Signature: [signature]	Date: 10/2/17
Reviewed By: [signature]	Date: 10/2/17

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 618
Project Name: Motorola 52nd St. 17Q3	Date: 10/2/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413uS	Reading:	

245
− 73
172

WELL INFORMATION	Depth to water (DTW): 73.23 feet bmp	Date: 10/2/17	Time: 0830
Total Depth of Well (TD): 245 feet bmp	Screened Interval: 195-245	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 235 feet bmp	Drop Pipe Diameter:	in.

113
x 3
339

One well volume = (TD 245 - DTW	) * well diameter 4	^{2} * 0.0408 = 113	gal.
Two well volumes= 226	gal.		
Three well volumes = 339	gal.		

Low Yield Wells	DTW after recovery = 73.28	Percent Recovery: 99.9% water column now / initial water column x 100
Has 1 well volume been removed (yes) no	Drop Pipe Volume = pump depth 235 * (pipe dia 1)^2 * 0.0408 = 10	

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
Start 0833											
0841	8	3.90	30	173.10	7.47	2343	81.1	None	foggy	None	
0848	15	3.70	60	173.70	7.75	2371	80.6	None	slt. foggy	None	
0856	23	3.70	90	*200+	7.66	1667	80.3	None	clear	None	
0905	32	3.4	120	*200+	7.68	2205	81.1	none	clear	none	
0909	36	<1.0	132	well is "dry"							
10/2/17											
Start 0841											
0844	3	~~105.3~~	10	94.70	7.73	2673	78.6	none	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/3/17	Time: 0845	Volume Purged: 132+24 gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: *Sounder maximum depth is 200'. 10/3/17 Purge 10 gallons (drop pipe) then sampled			
Sampler Signature: [signature]	Date: 10/3/17		
Reviewed By: [signature]	Date: 10/4/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM623
Project Name: Motorola 52nd St. 17Q3	Date: 10/3/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	7.0: 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413µS	Reading:	

103
- 74
29

WELL INFORMATION	Depth to water (DTW): 74.42 feet bmp	Date:	Time:
Total Depth of Well (TD): 103 feet bmp	Screened Interval: 73-103	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

19
x 3
57

One well volume = (TD 103 - DTW) * well diameter 4 ² * 0.0408 = 19 gal.			
Two well volumes= 38 gal.			
Three well volumes = 57 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)² * 0.0408 =

Start 0916

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0919	3	4.8	5	76.16	7.51	2290	79.5	None	clear	None	
0922	6	4.8	28	76.18	7.61	2315	79.3	None	clear	None	
0925	9	4.8	41	76.22	7.57	2303	79.3	None	clear	None	
0927	11	4.8	53	76.22	7.60	2307	79.8	None	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/3/17	Time: 0930	Volume Purged: 67 gal.
Requested Analysis: 8260 Short List		Collection Equipment:	
Containers: VOAs 3		Preservative HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	
Comments:			
Sampler Signature: David [signature]		Date: 10/3/17	
Reviewed By: Russell [signature]		Date: 10/4/17	

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 617
Project Name: Motorola 52nd St. 17Q3	Date: 10/4/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	4.0: 4.01	7.0: 7.01	10.0:
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

143
- 71
72

WELL INFORMATION	Depth to water (DTW): 71.68 feet bmp	Date:	Time:
Total Depth of Well (TD): 143 feet bmp	Screened Interval: 93-143	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: 135 feet bmp	Drop Pipe Diameter:	in.

47
x 3
141

One well volume = (TD 143 - DTW) * well diameter 4 ² * 0.0408 = 47 gal.
Two well volumes= 94 gal.
Three well volumes = 141 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth * (pipe dia)² * 0.0408 =	

Start
1117

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1125	8	5.5	35	73.22	7.28	2176	79.6	None	clear	None	
1131	14	5.5	70	73.25	7.30	2179	79.8	None	clear	None	
1137	20	5.6	105	73.26	7.33	2190	79.0	None	clear	None	
1143	26	5.6	140	73.27	7.40	2195	79.4	None	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/4/17	Time: 11:50	Volume Purged: 150 gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature:	Date: 10/4/17		
Reviewed By:	Date: 10/5/17		

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 118
Project Name: Motorola 52nd St. 17Q3	Date: 10/4/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	7.0: 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

118
- 62
56

WELL INFORMATION	Depth to water (DTW): 62.48 feet bmp	Date: 10/4/17	Time: 09:52
Total Depth of Well (TD): 118 feet bmp	Screened Interval: 98-118	Casing Diameter: 6	
Casing Type: PVC	Depth to Pump: 110 feet bmp	Drop Pipe Diameter:	in.

83
x 3
249

One well volume = (TD 118 - DTW 55.52) * well diameter 6 ^{2} * 0.0408 = 82 gal.
Two well volumes= 164 gal.
Three well volumes = 246 gal.

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1002	8	8.5	64	64.45	7.43	234	77.6	None	clear	None	
1010	15	8.6	120	64.45	7.30	2345	78.2	none	clear	none	
1017	22	8.6	186	64.47	7.42	2346	78.1	none	clear	none	
1023	28	8.6	240	64.47	7.33	2345	78.2	none	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

Start
0955

SAMPLE COLLECTION	Date: 10/4/17	Time: 10:25	Volume Purged: 264 gal.
Requested Analysis: 8260 Short List	Collection Equipment: stick-up		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: [signature]	Date: 10/4/17		
Reviewed By: [signature]	Date: 10/5/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM201-OB1
Project Name: Motorola 52nd St. 17Q3	Date: 10/4/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17 Time: 0825
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01 7.0: 7.01 ~~10.0:~~	
Conductivity Meter: Hanna	Calibration solution used: 1413µS	Reading:

118
-36

13
x 3

39

WELL INFORMATION	Depth to water (DTW): — feet bmp	Date: ~~10/2/17~~	Time: —
Total Depth of Well (TD): 118 feet bmp	Screened Interval: 18-118	Casing Diameter: 2	
Casing Type:	Depth to Pump: feet bmp	Drop Pipe Diameter:	in.

One well volume = (TD - DTW) * well diameter ^{2} * 0.0408 =			gal.
Two well volumes=	gal.		
~~Three well volumes =~~	gal.		

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F)	COLOR	CLARITY	ODOR	
0825	—	—	—	—	6.96	2570	84.8	None	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/4/17 Time: 0825	Volume Purged: — gal.
Requested Analysis: 8260 Short List	Collection Equipment:	
Containers: VOAs 3	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment:	SAMPLE TYPE:
Comments: Extraction Well		☒ Primary ☐ Duplicate
		☐ Equipment Blank ☐ Field Blank
		☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 10/4/17	
Reviewed By: [signature]	Date: 10/5/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 733
Project Name: Motorola 52nd St. 17Q3	Date: 10/3/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna HI 98129 and Hanna HI 991301 (calibrated 9/28/17)			
pH calibration readings at:	~~4.0:~~ 4.01	7.0: 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

70
-39
31

WELL INFORMATION	Depth to water (DTW): 38.91 feet bmp	Date:	Time:
Total Depth of Well (TD): 70 feet bmp	Screened Interval: 25-70	Casing Diameter: 5	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

32
x3
96

One well volume = (TD 70 - DTW) * well diameter 5	^{2} * 0.0408 = 32	gal.
Two well volumes= 64	gal.	
Three well volumes = 96	gal.	

Low Yield Wells	DTW after recovery = 40.40	Percent Recovery: 95% water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. ~~(uS/cm)~~ mS	Temp C° F°	COLOR	CLARITY	ODOR	
12:50	13	1.4	21	46.41	7.52	4.6	83.0	None	clear	None	
13:05	28	1.3	42	54.65	7.41	4.43	82.7	None	clear	None	
13:23	46	1.1	63	62.47	7.40	4.41	83.6	none	clear	none	
13:44	67	1.0	74	dry	–	–	–	–	–	–	
						µS					
0910	–	–	–	40.40	7.03	3899	82.3	none	organics	none	from bailer
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

Start 12:37 10/3/17

10/4/17

SAMPLE COLLECTION	Date: 10/4/17	Time: 09:10	Volume Purged: 74 gal.
Requested Analysis: 8260 Short List	Collection Equipment: bailer		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: DM733-BR1 (12:30)			
13:44 DM733 went dry at 74 gallons purged			
Sampler Signature: [signature]	Date: 10/4/17		
Reviewed By: [signature]	Date: 10/5/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☒ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM735
Project Name: Motorola 52nd St. 17Q3	Date: 10/3/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17 Time: 0825
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01 (7.0:)	~~10.0:~~
Conductivity Meter:	Calibration solution used: 1413µS	Reading:

80
-40
40

WELL INFORMATION	Depth to water (DTW): 40.31 feet bmp	Date:	Time:
Total Depth of Well (TD): 80 feet bmp	Screened Interval: 30-80	Casing Diameter: 5	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

41
x 3
123

One well volume = (TD 80 - DTW) * well diameter 5 ² * 0.0408 = 40.5 gal.
Two well volumes= 81 gal.
Three well volumes = 121.5 gal.

Low Yield Wells	DTW after recovery = ~~74.10~~ 67.41	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed (yes) no	Drop Pipe Volume = pump depth * (pipe dia)² * 0.0408 =	

WELL EVACUATION	Purge Equipment:

	CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
Start 1000 10/3/17	1018	18	13	1.9	47.52	7.46	2807	85.3	None	clear	None	
	1033	33	1.1	31	57.95	7.63	1304	83.1	None	clear	None	
	1047	47	1.0	46	67.47	7.24	1312	83.2	none	clear	none	
	1100	60	6.0	56	77.1	7.31	1264	88.5	none	odd	None	
10/4/17	0845	—	—	—	67.41	7.47	1270	80.1	None	21 organics	None	from bailer
Stabalization Criteria						+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: ~~10/3~~ 10/4/17	Time: ~~1105~~ ~~0845~~ 15:10	Volume Purged: 57 gal.
Requested Analysis: 8260 Short List		Collection Equipment: bailer	
Containers: VOAs 3		Preservative: (HCL)	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments: DM735-BR1 (0955) 11:02 well is dry at 57 gallons purged			☒ Equipment Blank ☐ Field Blank ☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 10/4/17	
Reviewed By: [signature]		Date: 10/5/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): OM 114
Project Name: Motorola 52nd St. 17Q3	Date: 10/4/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	~~4.0~~ 4.01	(7.0) 7.01	~~10.0~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

61
-34
27

WELL INFORMATION	Depth to water (DTW): 56.47 feet bmp	Date:	Time:
Total Depth of Well (TD): 61 feet bmp	Screened Interval: 21-61	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

18
x 3
54
Bail

One well volume = (TD 61 - DTW) * well diameter 4 ² 0.0408 = gal.
Two well volumes= gal.
~~Three~~ well volumes = gal.

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)² * 0.0408 =

WELL EVACUATION — Purge Equipment:

	CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
10/4/17	13:28	—	—	1	~57	7.27	1985	80.1	Gray	Very Cloudy	organic	
10/5/17	10:45	—	—	—	56.48	7.04	2214	85.5	Gray	Cloudy		
Stabalization Criteria						+/- 0.1	+/- 3%	+/- 10%				

-from sample bailer

SAMPLE COLLECTION	Date: 10/5/17	Time: 10:45	Volume Purged: 1 gal.
Requested Analysis: 8260 Short List	Collection Equipment: bailer		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments: 10/4/17 at 13:00, TD 58' bmp DTW 56.47 bmp. 13:30 bailed dry after ~ 1 gallon			
Sampler Signature: David Pum	Date: 10/5/17		
Reviewed By: [illegible]	Date: 10/6/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM614
Project Name: Motorola 52nd St. 17Q3	Date: 10/5/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.01	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413µS	Reading:	

275
− 52

WELL INFORMATION	Depth to water (DTW): 53.42 feet bmp	Date: 10/5/17	Time: 11:48
Total Depth of Well (TD): 275 feet bmp	Screened Interval: 225-275	Casing Diameter: 6.625	
Casing Type: open hole	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

400
x 3

One well volume = (TD 275 - DTW 221.58) * well diameter 6.625^2 * 0.0408 = 397 gal.	2 screen volume
Two well volumes= gal. / 1 well volume + 2 screen volumes =	= 2(50x6.625²x0.0408)
Three well volumes = gal. DP ~~377~~ 397 gallons + 179 gall. = ~~556~~ 576 gallons	= 179 gallons

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no	Drop Pipe Volume = pump depth	* (pipe dia)² * 0.0408 =

WELL EVACUATION	Purge Equipment:										
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
Start 11:50											
12:22	32	2.5	100	111.73	7.64	1366	82.9	clear	clear	slight	
13:00	70	2.0	188	140.96	7.55	1377	84.5	clear	clear	none	
14:00	130	1.0	290	7.57	↔ 151.69	1379	86.0	clear	clear	none	
stop											
start 14:40			325								
14:50	140	2.5	~~355~~	133.76	7.48	1372	84.5	clear	clear	none	
15:00	150	2.0	~~405~~	139.72	7.48	1361	84.1	clear	clear	none	
15:10	160	1.9	~~475~~	144.12	7.52	1345	84.5	clear	clear	none	
15:20	170	1.5	~~476~~	146.93	7.47	1356	83.6	clear	clear	none	
15:30	180	1.4	426	147.96	7.50	1347	83.5	clear	clear	None	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/5/17	Time: 15:35	Volume Purged: 426 gal.
Requested Analysis: 8260 Short List	Collection Equipment: Stub-up		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: [signature]	Date: 10/5/17		
Reviewed By: [signature]	Date: 10/6/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 613
Project Name: Motorola 52nd St. 17Q3	Date: 10/6/17
Project Number: 005128	Samplers: DP / AP
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	~~4.0~~ 4.01	7.0 7.01	~~10.0~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

400
− 84
316

566
× 3

WELL INFORMATION	Depth to water (DTW): 84.45 feet bmp	Date:	Time:
Total Depth of Well (TD): 400 feet bmp	Screened Interval: 351-400	Casing Diameter: 6.625	
Casing Type: open hole	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 400 - DTW 315.55) * well diameter 6.625 ² * 0.0408 = 566 gal.

Two well volumes= gal.

Three well volumes = gal. 1 well volume + 2 screen volumes = 732 gall.

2 = screen volumes = (2 x 49 x 6.625² x 0.0408) = 176 gallons

Low Yield Wells	DTW after recovery =	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth * (pipe dia)² * 0.0408 =

Start 11:16

Stop

Start 1310

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
1134	18	6	100	173.6	7.97	625	83.0	None	~~None~~ Clear	None	
1153	36	4.4	200	>200	8.10	640	82.5	None	Clear	None	
1214	58	3.8	400	>200	8.04	644	83.5	none	clear	none	
Empty purge water trailer											
		~6.9									
1330	78	~~4.8~~	500	—	7.76	681	85.6	None	clear	None	
1346	94	~6.9	600	—	7.74	651	83.8	none	clear	none	
1404	112	~6.1	700	—	7.78	632	83.1	none	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/6/17	Time: 14:20	Volume Purged: ~750 gal*
Requested Analysis: 8260 Short List		Collection Equipment: stub-up	
Containers: VOAs ~3		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	

Comments: * Estimated from bucket test and amount in graduated tank of purge water trailer.

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

Sampler Signature: [signature] Date: 10/6/17

Reviewed By: [signature] Date: 10/9/17

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 615
Project Name: Motorola 52nd St. 17Q3	Date: 10/5/17
Project Number: 005128	Samplers: DP/HH
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17 Time: 0825
pH Meter: Hanna		
pH calibration readings at:	~~4.0:~~ 4.01	(7.0:) 7.07 ~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:

400
−50
350

WELL INFORMATION	Depth to water (DTW): 50.55 feet bmp	Date: 10/5/17 Time: 0854
Total Depth of Well (TD): 400 feet bmp	Screened Interval: 350-400	Casing Diameter: 6.625
Casing Type: open hole	Depth to Pump: feet bmp	Drop Pipe Diameter: in.

626
X 3

One well volume = (TD 400 - DTW 350) * well diameter ^{2} * 0.0408 = 626 gal.
Two well volumes= 1,252 gal.
Three well volumes = 1,878 gal.

Low Yield Wells	DTW after recovery = >200'	Percent Recovery: water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth 400 * (pipe dia 1)^2 * 0.0408 = 17

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
0914	14	6.8	105	125.45	8.40	1216	81.9	clear	clear	none	
0930	30	5.8	204	190.2	8.62	1221	81.7	clear	clear	none	
0948	48	4.6	305	>200	8.78	1235	83.6	clear	clear	none	
1015	75	3.0	400	>200	8.73	1168	83.9	clear	clear	none	
1028	dry	0.0	432	>200	—	—	—	—	—	—	
0850	5	3.2	17	>200	6.88	1332	80.3	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

Start 0900.
10/5/17
10/6/17

SAMPLE COLLECTION	Date: 10/6/17 Time: 08:50 Volume Purged: 432+17 gal.
Requested Analysis: 8260 Short List	Collection Equipment:
Containers: VOAs 3	Preservative: HCL
Filtered?: Yes ☐ No ☒	Filter Equipment:
Comments:	
Sampler Signature: [signature]	Date: 10/6/17
Reviewed By: [signature]	Date: 10/9/17

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM 612
Project Name: Motorola 52nd St. 17Q3	Date: 10/6/17
Project Number: 005128	Samplers: DP/AP
Location:	Weather: Sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/2/17	Time: 0825
pH Meter: Hanna			
pH calibration readings at:	~~4.0~~ 4.01	7.0: 7.01	~~10.0~~
Conductivity Meter: Hanna	Calibration solution used: 1413µS	Reading:	

WELL INFORMATION	Depth to water (DTW): 82.98 feet bmp	Date: 10/6/17	Time: 0920
Total Depth of Well (TD): 220 feet bmp	Screened Interval: 171-220	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

220
− 83
137

One well volume = (TD 220 - DTW) * well diameter 4	² * 0.0408 = 89 gal.		
Two well volumes= 178 gal.			
Three well volumes = 267 gal.			

89
x 3
267

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)² * 0.0408 =

Start
0925

WELL EVACUATION			Purge Equipment:								
CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° F°	COLOR	CLARITY	ODOR	
0938	13	4.1	57	132.05	7.63	891	81.8	clear	clear	none	
0953	28	3.9	120	147.95	7.69	914	81.4	clear	clear	none	
1008	44	3.9	180	153.10	7.66	930	81.8	clear	clear	none	
1023	59	3.9	240	154.80	7.67	928	81.5	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/6/17	Time: 10:45	Volume Purged: 269 gal.
Requested Analysis: 8260 Short List	Collection Equipment:		
Containers: VOAs 3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		
Comments:			
Sampler Signature: [signature]	Date: 10/6/17		
Reviewed By: [signature]	Date: 10/9/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☐ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM602
Project Name: Motorola 52nd St.	Date: 10/24/17
Project Number: 005128	Samplers: DP/AP
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/23/17 Time: 0850
pH Meter: Hanna stick		
pH calibration readings at:	~~4.0:~~ 4.01 7.0:	~~10.0:~~
Conductivity Meter: Hanna	Calibration solution used: 1413µS	Reading:

WELL INFORMATION	Depth to water (DTW): 72.81 feet bmp	Date: 10/24/17 Time: 0924
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5
Casing Type: PVC	Depth to Pump: 112 feet bmp	Drop Pipe Diameter: in.

One well volume = (TD 120 - DTW 47.19) * well diameter 5.5 ² * 0.0408 =	59	gal.	
Two well volumes=	118	gal.	
Three well volumes =	177	gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)² * 0.0408 =

WELL EVACUATION — Purge Equipment:

Start 0925

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	°Temp C° (F°)	COLOR	CLARITY	ODOR	
0932	7	6.0	40	77.11	6.91	2270	79.2	clear	clear	none	
0938	13	6.1	80	77.19	7.17	2293	79.1	clear	clear	none	
0944	19	6.3	120	77.22	7.19	2293	79.1	clear	clear	none	
0951	27	6.2	161	77.26	7.18	2297	79.2	clear	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/24/17 Time: 0955	Volume Purged: 190 gal.
Requested Analysis: 8260 Short List	Collection Equipment: stub-up	
Containers: VOAs x3	Preservative: HCL	
Filtered?: Yes ☐ No ☒	Filter Equipment: —	SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments:		☐ Equipment Blank ☐ Field Blank
		☐ Split Sample ☐ MS/MSD
Sampler Signature: David [illegible]	Date: 10/24/17	
Reviewed By: [illegible]	Date: 10/24/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM620
Project Name: Motorola 52nd St.	Date: 10/24/17
Project Number: 005128	Samplers: DP/AP
Location:	Weather: sunny

INSTRUMENTATION	Instruments calibratated on:	Date: 10/23/17	Time: 0850
pH Meter: Hanna stick			
pH calibration readings at:	~~4.0~~ 4.01	7.0:	~~10.0~~
Conductivity Meter: Hanna	Calibration solution used: 1413 µS	Reading:	

WELL INFORMATION	Depth to water (DTW): 68.32 feet bmp	Date: 10/24/17	Time: 10:05
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: — feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 92 - DTW 23.68) * well diameter 4 ^{2} * 0.0408 =	16	gal.	
Two well volumes= 32	gal.		
Three well volumes = 48	gal.		

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

Start 10:25

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
10:34	9	1.4	12	69.35	6.81	3126	83.4	clear	clear	none	
10:40	15	1.5	24	69.37	6.95	3139	84.8	clear	clear	none	
1050	25	1.5	36	69.05	7.10	3118	82.7	clear	clear	none	*
1058	33	1.5	46	69.41	6.96	3151	83.3	clear	clear	none	
1105	—	—	48	—	6.95	3179	81.6	Clear	clear	none	→ from bailer
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 10/24/17	Time: 1105	Volume Purged: 48 gal.
Requested Analysis: 8260 Short List	Collection Equipment: bailer		
Containers: VOAs x3	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment: —		
Comments: DM620-BR1 (10:10)			
*Pump-controller temporarily stopped.			
Sampler Signature: [signature]	Date: 10/24/17		
Reviewed By: [signature]	Date: 10/24/17		

SAMPLE TYPE:
☒ Primary ☐ Duplicate
☒ Equipment Blank ☐ Field Blank
☐ Split Sample ☐ MS/MSD

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM620
Project Name: Motorola 52nd St.	Date: 11/8/17
Project Number: 005128	Samplers: AP + HH
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 11/8/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.00	7.0: 7.01	10.0: —
Conductivity Meter: Hanna	Calibration solution used: —	Reading: —	

WELL INFORMATION	Depth to water (DTW): 68.3 feet bmp	Date: 11/8/17	Time: 1009
Total Depth of Well (TD): 92 feet bmp	Screened Interval: 72-92	Casing Diameter: 4	
Casing Type: PVC	Depth to Pump: feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 92 - DTW) * well diameter 4 ^{2} * 0.0408 = 15.5 gal.			
Two well volumes= 31 gal.			
Three well volumes = 46.5 gal.			

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

1015 - started pumping

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1031	16	1.1	10	69.14	6.75	2596	82.6	None	clear	None	
1039	24	1.3	23	69.18	6.91	2740	82.2	None	Clear	none	
1045	30	1.5	30	69.21	6.91	2847	82.8	none	Clear	none	
1051	36	1.5	40	69.28	6.89	2858	82.8	none	Clear	none	
1056	—	—	—	—	7.03	2870	80.6	none	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

SAMPLE COLLECTION	Date: 11/8/17	Time: 1055	Volume Purged: 47 gal.
Requested Analysis: 8260 Short List		Collection Equipment: 3, 100 mL VOAs	
Containers: VOAs		Preservative: HCL	
Filtered?: Yes ☐ No ☒		Filter Equipment:	SAMPLE TYPE: ☑ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]		Date: 11/8/17	
Reviewed By: [signature]		Date: 11/8/17	

GROUNDWATER SAMPLING FORM

LOCATION	Well Number (Site ID): DM602
Project Name: Motorola 52nd St.	Date: 11/8/17
Project Number: 005128	Samplers: AP + CH
Location:	Weather: Clear

INSTRUMENTATION	Instruments calibratated on:	Date: 11/8/17	Time: 1000
pH Meter: Hanna Stick			
pH calibration readings at:	4.0: 4.00	7.0: 7.01	10.0: —
Conductivity Meter: Hanna	Calibration solution used: —	Reading: —	

WELL INFORMATION	Depth to water (DTW): 72.75 feet bmp	Date: 11/8/17	Time: 1157
Total Depth of Well (TD): 120 feet bmp	Screened Interval: 40-120	Casing Diameter: 5.5	
Casing Type: PVC	Depth to Pump: 112 feet bmp	Drop Pipe Diameter: in.	

One well volume = (TD 120 - DTW 72.75) * well diameter 5.5 ^{2} * 0.0408 = 58.3 gal.	
Two well volumes= 116.6 gal.	
Three well volumes = 175 gal.	

Low Yield Wells	DTW after recovery =	Percent Recovery:	water column now / initial water column x 100
Has 1 well volume been removed yes no		Drop Pipe Volume = pump depth	* (pipe dia)^2 * 0.0408 =

WELL EVACUATION — Purge Equipment:

CLOCK TIME	ELAPSED TIME (min)	PUMPING RATE (gpm)	PURGE VOLUME (gal)	DTW (feet)	pH	Specific Cond. (uS/cm)	Temp C° (F°)	COLOR	CLARITY	ODOR	
1200	6	6.3	23	76.92	7.29	2332	79.1	none	clear	none	
1204	10	6.2	44	76.98	7.29	2340	78.8	none	clear	none	
1211	17	6.2	86	77.03	7.24	2352	79.5	none	clear	none	
1216	22	6.4	125	77.1	7.30	2356	79.3	none	clear	none	
Stabalization Criteria					+/- 0.1	+/- 3%	+/- 10%				

start 11:54

SAMPLE COLLECTION	Date: 11/8/17	Time: 1230	Volume Purged: 188 gal.
Requested Analysis: 8260 Short List	Collection Equipment: 3, 100 mL VOAs		
Containers: VOAs	Preservative: HCL		
Filtered?: Yes ☐ No ☒	Filter Equipment:		SAMPLE TYPE: ☒ Primary ☐ Duplicate
Comments:			☐ Equipment Blank ☐ Field Blank
			☐ Split Sample ☐ MS/MSD
Sampler Signature: [signature]	Date: 11/8/17		
Reviewed By: [signature]	Date: 11/9/17		

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft) Measured	Calcuted	Comments
DM118	AP	12/1/17	0850	North side top of 4" PVC casing 1" sounding tube	1177.23	62.30		
DM120	AP	12/1/17	1144	North side top of 6" PVC casing	1161.83	76.68		
~~DM-628~~ DM-628	AP	12/1/17	1130	North side top of ~~6"~~ 4" PVC casing 1161.82 →	[redacted]	76.95		DM-628
DM305	↑	↑	1325	Orange mark @ surface - subtract 5.75 feet from WL reading	1185.73	101.70	95.95	
DM306			1313	Orange mark @ surface - subtract 5.70 feet from WL reading	1181.04	>101.0		Sounder could not pass 101.0'.
DM307			1311	Orange mark @ surface - subtract 5.66 feet from WL reading	1177.64	106.50	108.84	
DM308			~~1315~~ 1255	Orange mark @ surface- subtract 5.72 feet from WL reading	1177.63	92.05	86.33	pump not on — 122.05 GPI 11/30
DM309			1249	Orange mark @ surface - subtract 5.76 feet from WL reading	1174.88	116.60	110.84	
DM310			1242	Orange mark @ surface - subtract 5.60 feet from WL reading	1175.17	105.98	100.38	
DM311			1233	Orange mark @ surface - subtract 5.73 feet from WL reading	1173.36	83.45	77.72	
DM312	AP	12/1/17	1230	Orange mark @ surface - subtract 5.75 feet from WL reading	1171.41	76.45	70.70	
DM313	AP	12/1/17	1220	Orange mark @ surface - subtract 6.35 feet from WL reading	1169.71	70.40	64.05	
DM503	AP	12/1/17	1049	North side top of 5.5" LCS casing	1162.31	72.55		~~69.75~~
DM602	AP	12/1/17	0952	North side top of 5" steel casing	1187.53	72.80		
DM604	AP	12/1/17	0944	North side top of 5" steel casing	1178.35	81.40		
DM607 A 1	AP	12/1/17	0926	fLUTE - Across Vault	1174.58	74.30		
DM607 B 2	AP	12/1/17	0927	fLUTE - Across Vault	1174.58	71.10		
DM607 C 3	AP	12/1/17	0928	fLUTE - Across Vault	1174.58	71.15		
DM607 D 4	AP	12/1/17	0929	fLUTE - Across Vault	1174.58	71.64		
DM609	AP	12/1/17	1028	Top of 5-in north side	1201.85	44.06		
DM611	↓	↓	1305	Canal Bank	1183.72	83.77		
DM612			1303	Canal Bank	1183.64	82.58		
DM613			1259	Canal Bank	1183.38	83.58		

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*

Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

WATER LEVEL RECORD

Motorola 52nd Street Study Area - Quarterly Measurements

Well	Measured By (initials)	Date	Time	Description of Measurement Point	Elevation of Measurement Point (ft)	Depth to Water from Measurement Point (ft)	Comments
DM616	AP	12/1/17	1022	On the north side of Hubbell St. just east of 46th Street.	1190.08	52.50	
DM617	AP	12/1/17	0900	On the west side of 43rd Place South of McDowell Rd.	1170.86	71.42	
DM618	AP	12/1/17	0933	On Willetta East of DM607	1175.69	72.90	
DM619	AP	12/1/17	0936	On Willetta East of DM316	1178.47	77.65	
DM620	AP	12/1/17	0958	On Almeria Rd. North side street just off 1704 N. 46th Place.	1189.72	68.18	
DM621	AP	12/1/17	1003	On 47th Street just outside of 1866 N. 47th St.	1195.83	49.40	
DM622	AP	12/1/17	0838	West portion of parking lot of 7-11 on 48th and McDowell	1184.91	44.33	
DM623	AP	12/1/17	0910	On the west side of 43rd Place North of Belleview St.	1167.32	74.17	
DM624A	AP	12/1/17	0955	North side top of 2" casing	1189.85	69.44	
DM624B	AP	12/1/17	0956	North side top of 2" casing	1189.85	72.53	
DM625	AP	12/1/17	1208	North side top of 4" casing	1207.31	48.54	
DM626A	AP	12/1/17	0828	North side top of 3" casing	1211.24	50.54	
DM626B	AP	12/1/17	0829	North side top of 2" casing	1211.25	47.89	
DM627A	AP	12/1/17	1014	North side top of 3" casing	1180.86	63.10	
DM627B	AP	12/1/17	1015	North side top of 2" casing	1180.85	62.54	
~~DM122-B~~	AP	12/1/17	1155	North side top of 4" casing	1144.87	77.05	DM 122-B
DM629A	AP	12/1/17	0905	North side top of 3" casing	1168.53	72.73	
DM629B	AP	12/1/17	0906	North side top of 2" casing	1168.53	70.96	
DM630A	AP	12/1/17	1040	North side top of 3" casing	1162.12	79.10	
DM630B	AP	12/1/17	1042	North side top of 2" casing	1162.12	78.26	
DM631A	AP	12/1/17	0915	North side top of 3" casing	1160.72	75.04	
DM631B	AP	12/1/17	0916	North side top of 2" casing	1160.72	74.61	
DM701	AP	12/1/17	1205	Top of $4^1/_2$" dia galvanized well seal	1177.07	43.05	
EW18	AP	12/1/17	1007	Sounding port top of well seal	1196.01	49.60	

Reviewed By: [signature]

NOTES:

Depth to water measured from ***NORTH*** *side of inner casing.*
Attach pressure profiles for Westbay wells.
Include initials and date measurement collected at Westbay wells.

CLEAR CREEK ASSOCIATES

2017Q3/Q4 SVM Field Forms

Soil Vapor Monitoring

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorola 52nd Street	Soil Vapor Well #: SVM-01
Project Number: 005128	Samplers: AP
Date: 9/25/17	Weather: Clear

Leak Check Compound:

SVM-01-15.5	Vacuum Check	✓	
Suma Canister # A535	Flow Controller # FC354		
Start Time 1421	Pressure -29		
End Time 1428	Pressure -1		

Accidentally kicked "purge" valve open. Re-did below

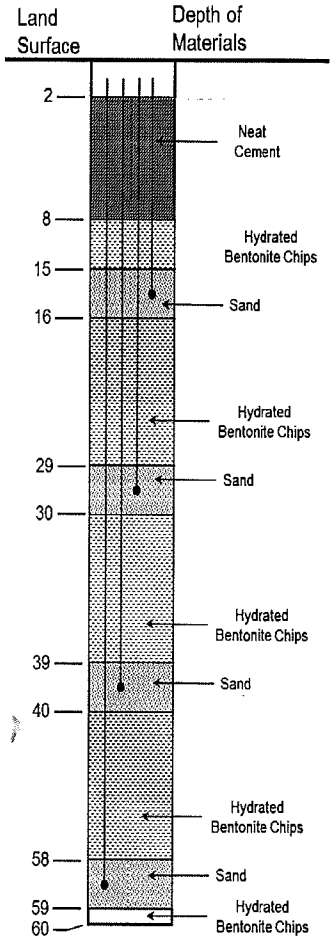
~~SVM-01-29.5~~	~~Vacuum Check~~	~~✓~~	
~~Suma Canister # M419~~	~~Flow Controller # FC550~~		
~~Start Time 1435~~	~~Pressure -29~~		
~~End Time~~	~~Pressure~~		

SVM-01-39.5	Vacuum Check	✓	
Suma Canister # ~~FC370~~ M177	Flow Controller # FC370		
Start Time 1454	Pressure -28		
End Time 1501	Pressure -3		

SVM-01-58.7	Vacuum Check	✓	
Suma Canister # A538	Flow Controller # FC717		
Start Time 1526	Pressure -28		
End Time 1534	Pressure -5		

~~SVM-00-~~ SVM-01-29.5	~~Duplicate of~~ Vacuum Check	✓	
Suma Canister # A696	Flow Controller # MC008		
Start Time 1506	Pressure -30		
End Time 1528	Pressure -6		

As-built Diagram



Purge Volume Calculation

Tubing Volume (ml) = $((D_{tube}/2)^2 * 3.14) * (L_{tube} \cdot 12) * 16.387$

TV ml = $((0.25/2)^2 * 3.14) * (1*12) * 16.387$

TV ml = $(0.125^2) * 3.14 * 12 * 16.387$

TV ml = $9.65 * L_{tube\ ft} * 3$ tube volumes

Purge Volumes

Probe Depth 15.5-ft **(Black)**

449 ml (149.6 ml = 1 TV)

Probe Depth 29.5-ft (White)

854 ml (284.7 ml = 1TV)

Probe Depth 39.5-ft (Green)

1144 ml (381.2 ml = 1 TV)

Probe Depth 58.7-ft **(Red)**

1700 ml (566.5 ml = 1TV)

CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 9/26/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorolla 52nd Street	Soil Vapor Well #: SVM-02
Project Number: 005128	Samplers: AP + RG
Date: 9/25/17	Weather: Clear

Leak Check Compound:

SVM-02-15.5	Vacuum Check	✓
Suma Canister # A565	Flow Controller # FC 553	
Start Time ~~1155~~ 1157	Pressure -30	
End Time ~~1157~~ 1211	Pressure ~~-30~~ -6	

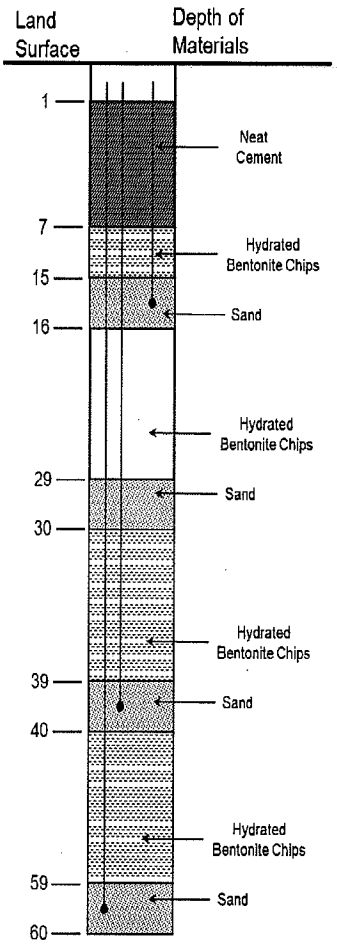
SVM-02-29.5	Vacuum Check	✓
Suma Canister # A794	Flow Controller # FC 406	
Start Time 1220	Pressure -30	
End Time 1228	Pressure -6	

SVM-02-39.5	Vacuum Check	✓
Suma Canister # A626	Flow Controller # FC 725	
Start Time 1247	Pressure -30	
End Time 1249	Pressure -3	

SVM-02-59.5	Vacuum Check	✓
Suma Canister # A546	Flow Controller # FC 223	
Start Time 1317	Pressure -30	
End Time 1324	Pressure -3	

SVM-00-	Duplicate of
Suma Canister #	Flow Controller #
Start Time	Pressure
End Time	Pressure

As-built Diagram



Purge Volume Calculation

Tubing Volume (ml) = $((D_{tube}/2)^2 * 3.14) * (L_{tube} * 12) * 16.387$

TV ml = $((0.25/2)^2 * 3.14) * (1*12) * 16.387$

TV ml = $(0.125^2) * 3.14 * 12 * 16.387$

TV ml = $9.65 * L_{tube\ ft} * 3$ tube volumes

Purge Volumes

Probe Depth 15.5-ft **(Black)**

449 ml (149.6 ml = 1TV)

Probe Depth 29.5-ft (White)

854 ml (284.7 ml = 1TV)

Probe Depth 39.5-ft (Green)

1144 ml (381.2 ml = 1TV)

Probe Depth 59.5-ft **(Red)**

5:45 mins 8:40

1723 ml (574.2 ml = 1 TV)

CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 9/26/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorola 52nd Street	Soil Vapor Well #: SVM-03
Project Number: 005128	Samplers: AP
Date: 9/26/17	Weather: Cloudy

Leak Check Compound: Isopropyl Alcohol

SVM-03-15.5		Vacuum Check	✓
Suma Canister #	A713	Flow Controller #	FC244
Start Time	1107	Pressure	-29
End Time	1138	Pressure	-7

SVM-03-23.5		Vacuum Check	✓
Suma Canister #	A436	Flow Controller #	FC418
Start Time	1143	Pressure	-29
End Time	1230	Pressure	-9

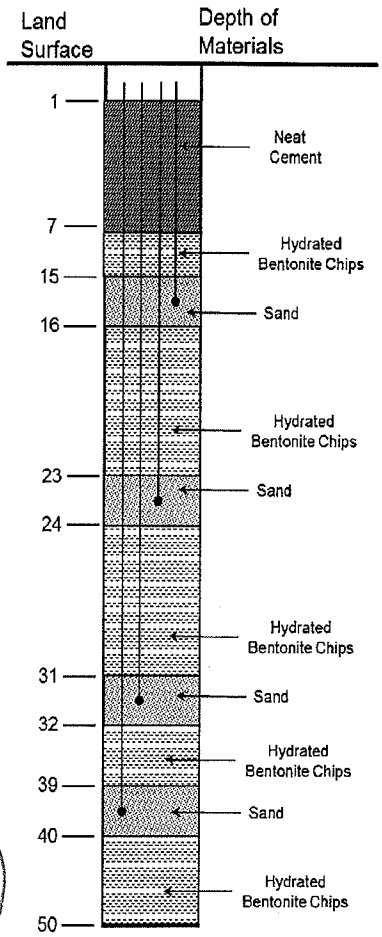
SVM-03-31.5		Vacuum Check	✓
Suma Canister #	A522	Flow Controller #	FC366
Start Time	1210	Pressure	-27
End Time	1221	Pressure	-1

SVM-03-39.5		Vacuum Check	✓
Suma Canister #	A1135	Flow Controller #	MC241
Start Time	1220	Pressure	-27
End Time	1226	Pressure	-1

SVM-00-1		Duplicate of	SVM-03-31.5
Suma Canister #	A1128	Flow Controller #	FC361
Start Time	1242	Pressure	-27.5
End Time	1250	Pressure	-1

There is no glass on the controller.

As-built Diagram



Purge Volume Calculation

Tubing Volume (ml) = $((D_{tube}/2)^2 * 3.14) * (L_{tube} * 12) * 16.387$

TV ml = $((0.25/2)^2 * 3.14) * (1*12) * 16.387$

TV ml = $(0.125^2) * 3.14 * 12 * 16.387$

TV ml = $9.65 * L_{tube\ ft} * 3_{\ tube\ volumes}$

Purge Volumes

Probe Depth 15.5-ft **(Black)** 2min 15sec
449 ml (149.6 ml = 1TV)

Probe Depth 23.5-ft **(White)** 3min 30sec
680 ml (226.8 ml = 1TV)

Probe Depth 31.5-ft (Green) 4min 30sec
912 ml (304 ml = 1TV)

Probe Depth 39.5-ft **(Red)** 5min 45sec
1144 ml (381.2 ml = 1TV)

CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 9/27/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motordle 52nd Street	Soil Vapor Well #: SVM-04
Project Number: 005128	Samplers: AP
Date: 9/26/17	Weather: cloudy

Leak Check Compound: Isopropyl Alcohol

SVM-04-15.5	Vacuum Check	✓
Suma Canister # A578	Flow Controller # FC512	
Start Time 1339	Pressure -27.5	
End Time 1344	Pressure -6	

SVM-04-26.5	Vacuum Check	✓
Suma Canister # A529	Flow Controller # FC191	
Start Time 1348	Pressure -27	
End Time 1352	Pressure ~5.5	

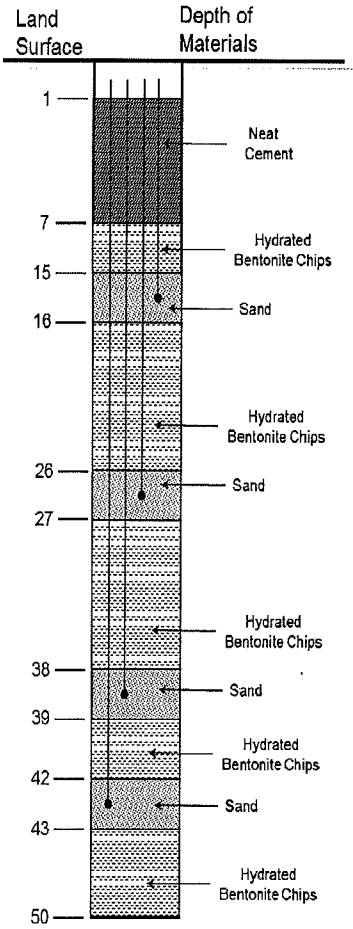
SVM-04-38.5	Vacuum Check	✓
Suma Canister # M444	Flow Controller # FC 340	
Start Time 1400	Pressure -29.5	
End Time 1406	Pressure ~4	

SVM-04-42.5	Vacuum Check	✓
Suma Canister # M425	Flow Controller # MC267	
Start Time 1417	Pressure -29.5	
End Time 1425	Pressure -4	

SVM-00- 2	Duplicate of SVM-04-15.5	
Suma Canister # A610	Flow Controller # ~~MC044~~ MC153	
Start Time 1501	Pressure -27.5	
End Time 1505	Pressure -8	

Could not get MC044 needle to move.

As-built Diagram



Purge Volume Calculation

Tubing Volume (ml) = $((D_{tube}/2)^2 * 3.14) * (L_{tube} * 12) * 16.387$

TV ml = $((0.25/2)^2 * 3.14) * (1*12) * 16.387$

TV ml = $(0.125^2) * 3.14 * 12 * 16.387$

TV ml = $9.65 * L_{tube\ ft} * 3$ tube volumes

Purge Volumes

Probe Depth 15.5-ft **(Black)** 2 min 15 sec
449 ml (149.6 ml = 1 TV)

Probe Depth 26.5-ft **(White)** 5 min 55 sec
767 ml (255.7 ml = 1TV)

Probe Depth 38.5-ft (Green) 5 min 35 sec
1115 ml (371.5 ml = 1TV)

Probe Depth 42.5-ft **(Red)** 6 min 9 sec
1230 ml (410.1 ml = 1TV)

CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 9/27/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name:	Motorola 52nd Street	Soil Vapor Well #:	SVM-05
Project Number:	005128	Samplers:	AP
Date:	9/26/17	Weather:	Cloudy

Leak Check Compound: Isopropyl Alcohol

SVM-05-15.5	Vacuum Check	✓	
Suma Canister # A1154	Flow Controller # FC 399		
Start Time 1602	Pressure -28		
End Time 1613	Pressure -7		

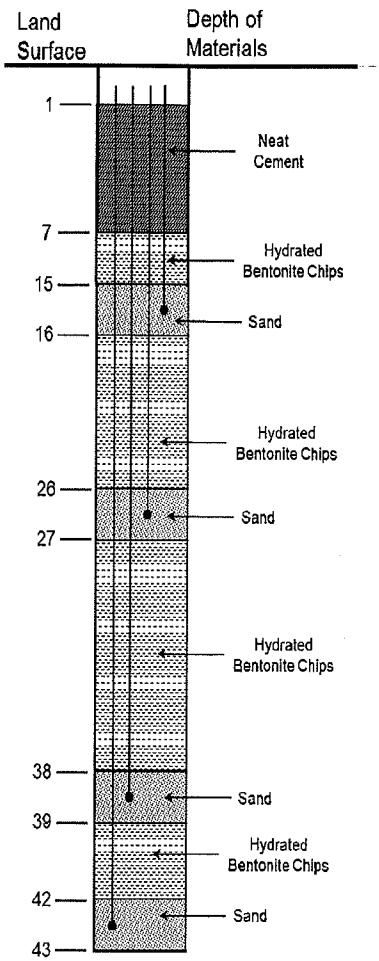
SVM-05-26.5	Vacuum Check	✓	
Suma Canister # A691	Flow Controller # FC260Z		
Start Time 1621	Pressure -29		
End Time 1626	Pressure -6		

SVM-05-38.5	Vacuum Check	✓	
Suma Canister # A507	Flow Controller # FC181		
Start Time 1634	Pressure -26		
End Time 1640	Pressure -2		

SVM-05-42.5	Vacuum Check	✓	
Suma Canister # A1122	Flow Controller # FC440		
Start Time 1648	Pressure -26		
End Time 1654	Pressure -3		

SVM-00-	Duplicate of
Suma Canister #	Flow Controller #
Start Time	Pressure
End Time	Pressure

As-built Diagram



Purge Volume Calculation

Tubing Volume (ml) = $((D_{tube}/2)^2 * 3.14) * (L_{tube} * 12) * 16.387$

TV ml = $((0.25/2)^2 * 3.14) * (1*12) * 16.387$

TV ml = $(0.125^2) * 3.14 * 12 * 16.387$

TV ml = $9.65 * L_{tube\ ft} * 3_{\ tube\ volumes}$

Purge Volumes

Probe Depth 15.5-ft **(Black)**

449 ml (149.6 ml = 1TV)

Probe Depth 26.5-ft **(White)**

767 ml (255.7 ml = 1TV)

Probe Depth 38.5-ft (Green)

1115 ml (371.5 ml = 1TV)

Probe Depth 42.5-ft **(Red)**

1230 ml (410.1 ml = 1TV)

CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 9/27/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorola 52nd Street	Soil Vapor Well #: SVM-10
Project Number: ~~005032~~ 005128	Samplers: AP
Date: 9/27/17 and 9/28/17	Weather: Clear

Leak Check Compound:

1330 - Start of purge

SVM-10 Shallow	Vacuum Check		
Suma Canister # A416	Flow Controller # ~~[illegible]~~ FC452		
Start Time 1551	Pressure -27.5		9/27/17
End Time 1559	Pressure -1		

SVM-10 Deep	Vacuum Check		
Suma Canister # A420	Flow Controller # FC578		
Start Time 1531	Pressure -26		
End Time 1535	Pressure -3		9/28/17

SVM-00-	Duplicate of
Suma Canister #	Flow Controller #
Start Time	Pressure
End Time	Pressure

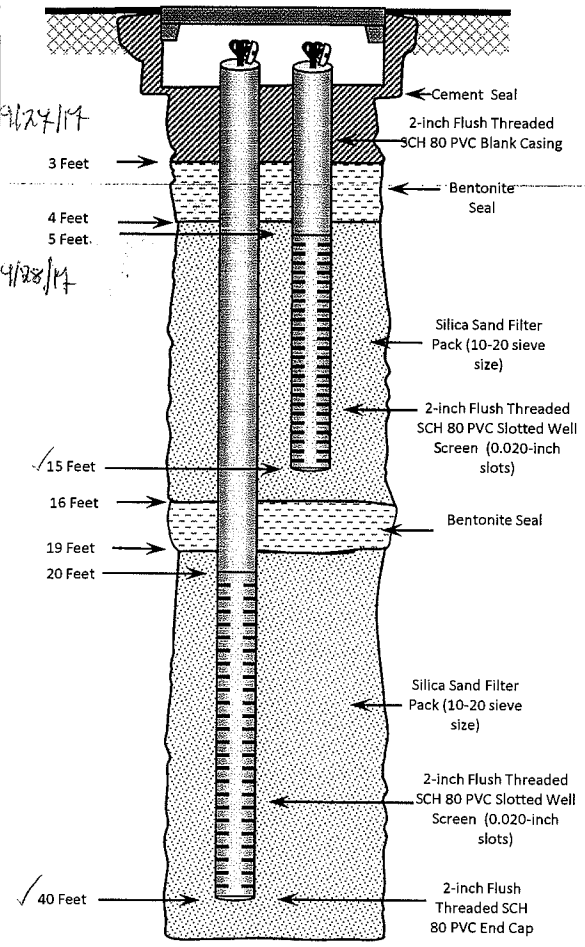
Purge Volume Calculation

Casing Volume (ml) = $((D_{casing}/2)^2*3.14)*(L_{casing}*12)*16.387$

Purge Volumes

SVM-10 Shallow Start 1330
1TV = 9,262 ml
3TV = 27,786 ml 2 hrs, 20 min
End at 1550 9/27/17

SVM-10 Deep
1TV = 24,698 ml Start at 0920
3TV = 74,094 ml 2 hrs, 11 mins, End at 1531 9/28/17



CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 9/29/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorola Sand Street	Soil Vapor Well #: SVM-07
Project Number: 005128	Samplers: AP
Date: 9/29/17	Weather: Clear

Leak Check Compound:

SVM-07 Shallow	Vacuum Check		
Suma Canister # A1129	Flow Controller # FC585		
Start Time 1825	Pressure -27		
End Time 1829	Pressure -5		

SVM-07 Deep	Vacuum Check		
Suma Canister # A1103	Flow Controller # FC569		
Start Time 1556	Pressure -26		
End Time 1601	Pressure -7		

SVM-00-	Duplicate of
Suma Canister #	Flow Controller #
Start Time	Pressure
End Time	Pressure

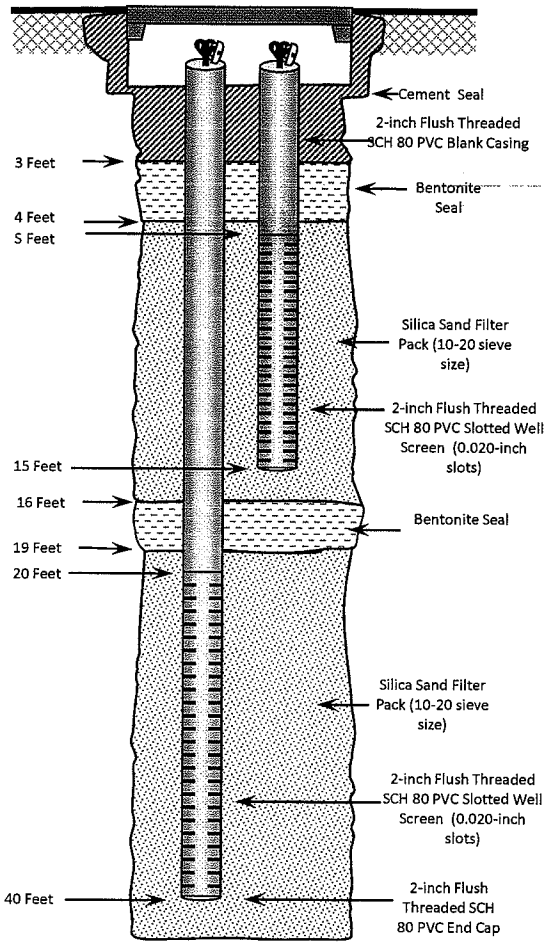
Purge Volume Calculation

Casing Volume (ml) = $((D_{casing}/2)^2*3.14)*(L_{casing}*12)*16.387$

Purge Volumes

SVM-07 Shallow Start at 1605
1TV = 9,262 ml
3TV = 27,786 ml 2 hrs, 19 mins
End at 1825

SVM-07 Deep Start 0945
1TV = 24,698 ml
3TV = 74,094 ml 2 hrs, 11 min
1556



CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 10/3/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorola 5 and Street	Soil Vapor Well #: SVM-06
Project Number: 005128	Samplers: AP
Date: 10/4/17	Weather: Clear

Leak Check Compound:

SVM-06 Shallow	Vacuum Check		
Suma Canister # A6025	Flow Controller # FC 6032		10/5/17
Start Time 1715	Pressure -28		
End Time 1725	Pressure -9		

SVM-06 Deep	Vacuum Check		
Suma Canister # A1248	Flow Controller # FC281		10/4/17
Start Time 1556	Pressure -27.5		
End Time 1602	Pressure -4		

SVM-00-4	Duplicate of SVM-06-Deep		
Suma Canister # A1207	Flow Controller # FC406		10/4/17
Start Time 1606	Pressure -28		
End Time 1612	Pressure -6		

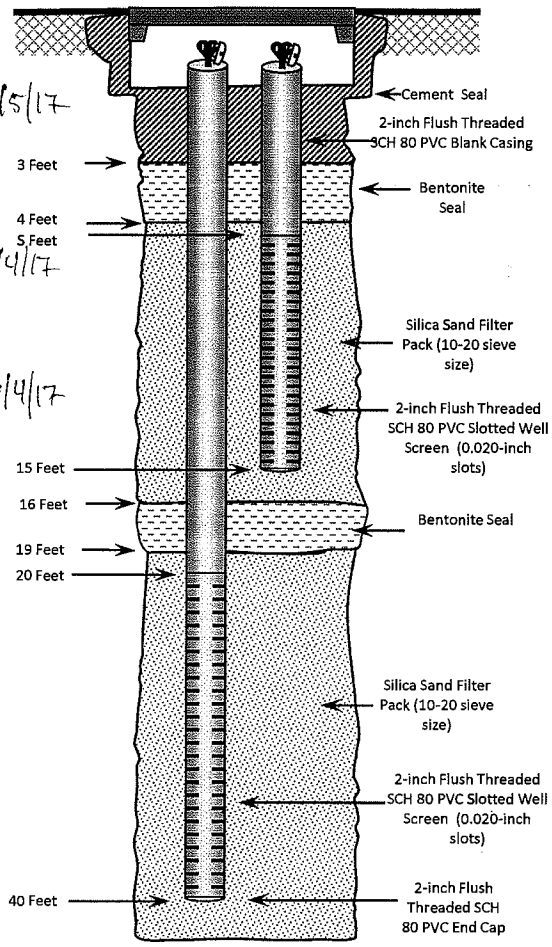
Purge Volume Calculation

Casing Volume (ml) = $((D_{casing}/2)^2*3.14)*(L_{casing}*12)*16.387$

Purge Volumes

SVM-06 Shallow
1TV = 9,262 ml 1455
3TV = 27,786 ml

SVM-06 Deep 0945 start
1TV = 24,698 ml
3TV = 74,094 ml end
1356



CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 10/9/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorola 52nd Street	Soil Vapor Well #: SVM-07
Project Number: 005128	Samplers: AP
Date: 9/29/17	Weather: Clear

Leak Check Compound:

SVM-07 Shallow	Vacuum Check		
Suma Canister # A1129	Flow Controller # FC585		
Start Time 1825	Pressure -27		
End Time 1829	Pressure -2		

SVM-07 Deep	Vacuum Check		
Suma Canister # A1103	Flow Controller # FC569		
Start Time 1556	Pressure -26		
End Time 1601	Pressure -7		

SVM-00-	Duplicate of
Suma Canister #	Flow Controller #
Start Time	Pressure
End Time	Pressure

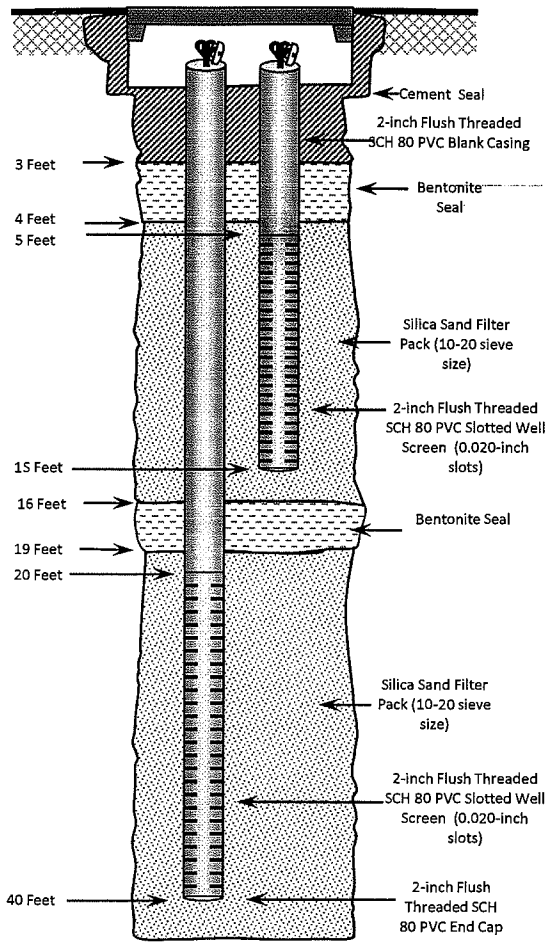
Purge Volume Calculation

Casing Volume (ml) = $((D_{casing}/2)^2*3.14)*(L_{casing}*12)*16.387$

Purge Volumes

SVM-07 Shallow Start at 1605
1TV = 9,262 ml
3TV = 27,786 ml 2 hrs, 19 mins
End at 1825

SVM-07 Deep Start 0945
1TV = 24,698 ml
3TV = 74,094 ml 6 hrs, 11 min
1556



CLEAR CREEK ASSOCIATES

Reviewed By: [signature] Date: 10/3/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorola 52nd Street	Soil Vapor Well #: SVM-08
Project Number: 005128	Samplers: AP
Date: 10/2/17	Weather: Clear

Leak Check Compound:

SVM-08 Shallow	Vacuum Check		
Suma Canister # A1245	Flow Controller # FC 350		
Start Time 1210	Pressure -27		
End Time 1217	Pressure -4		

10/5/17

SVM-08 Deep	Vacuum Check		
Suma Canister # A1249	Flow Controller # FC-305		
Start Time 1612	Pressure -27		
End Time 1618	Pressure -6		

10/2/17

SVM-00-	Duplicate of
Suma Canister #	Flow Controller #
Start Time	Pressure
End Time	Pressure

Purge Volume Calculation

Casing Volume (ml) = $((D_{casing}/2)^2*3.14)*(L_{casing}*12)*16.387$

Purge Volumes

SVM-08 Shallow 0950 → 1210

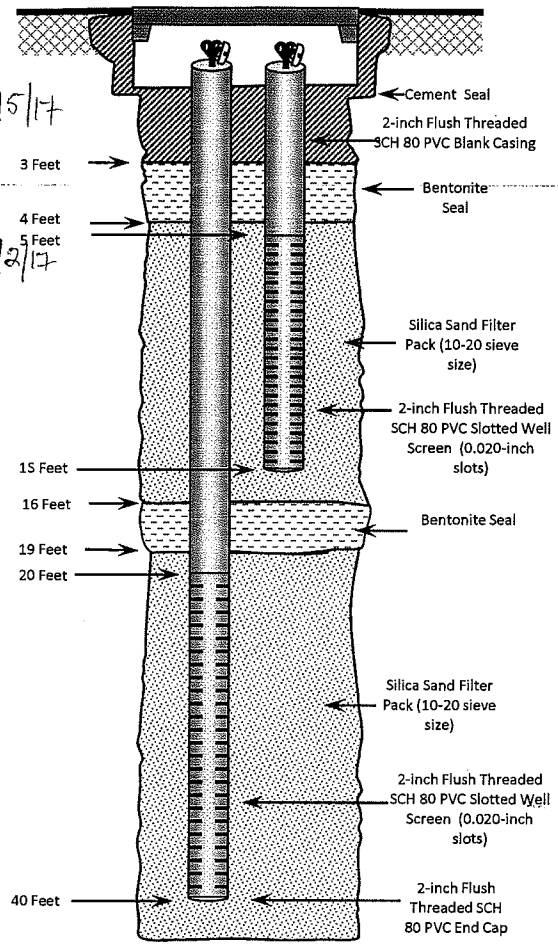
1TV = 9,262 ml

3TV = 27,786 ml 2hrs, 19mins

SVM-08 Deep

1TV = 24,698 ml

3TV = 74,094 ml



CLEAR CREEK ASSOCIATES

Reviewed By: Russell [illegible] Date: 10/9/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorolla 52nd Street	Soil Vapor Well #: SVM-09
Project Number: 005128	Samplers: AP
Date: 10/3/17	Weather: Clear

Leak Check Compound:

SVM-09 Shallow	Vacuum Check		
Suma Canister # A1230	Flow Controller # FC225		
Start Time 1440	Pressure -29		10/5/17
End Time 1446	Pressure -3		

SVM-09 Deep	Vacuum Check	
Suma Canister # A1215	Flow Controller # FC449	
Start Time 1556	Pressure -27	10/3/17
End Time 1601	Pressure -7	

SVM-00-3	Duplicate of SVM-09-Deep	
Suma Canister # 1329	Flow Controller # FC182	
Start Time 1603	Pressure -27	10/3/17
End Time 1608	Pressure -1	

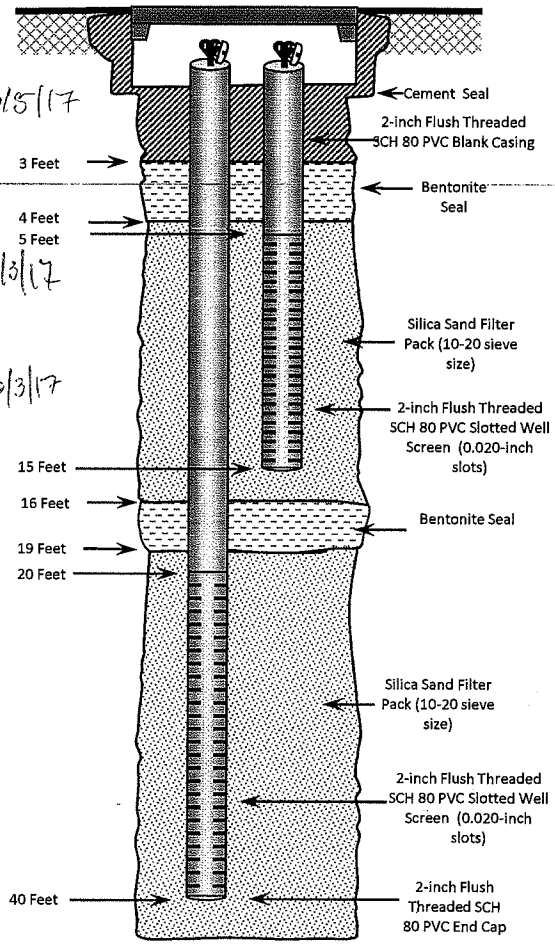
Purge Volume Calculation

Casing Volume (ml) = $((D_{casing}/2)^2*3.14)*(L_{casing}*12)*16.387$

Purge Volumes

SVM-09 Shallow
1TV = 9,262 ml
3TV = 27,786 ml

SVM-09 Deep
1TV = 24,698 ml
3TV = 74,094 ml



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Reviewed By: [signature] Date: 10/9/17

SOIL VAPOR MONITORING WELL SAMPLING FORM

Project Name: Motorola 52nd Street	Soil Vapor Well #: SVM-10
Project Number: ~~[illegible]~~ 0051 28	Samplers: AP
Date: 9/27/17 and 9/28/17	Weather: Clear

Leak Check Compound:

1330 - Start of purge

SVM-10 Shallow	Vacuum Check		
Suma Canister # A416	Flow Controller # ~~[illegible]~~ FC452		
Start Time 1551	Pressure -27.5		9/27/17
End Time 1559	Pressure -1		

SVM-10 Deep	Vacuum Check		
Suma Canister # A420	Flow Controller # FC578		
Start Time 1531	Pressure -26		
End Time 1535	Pressure -3		9/28/17

SVM-00-	Duplicate of
Suma Canister #	Flow Controller #
Start Time	Pressure
End Time	Pressure

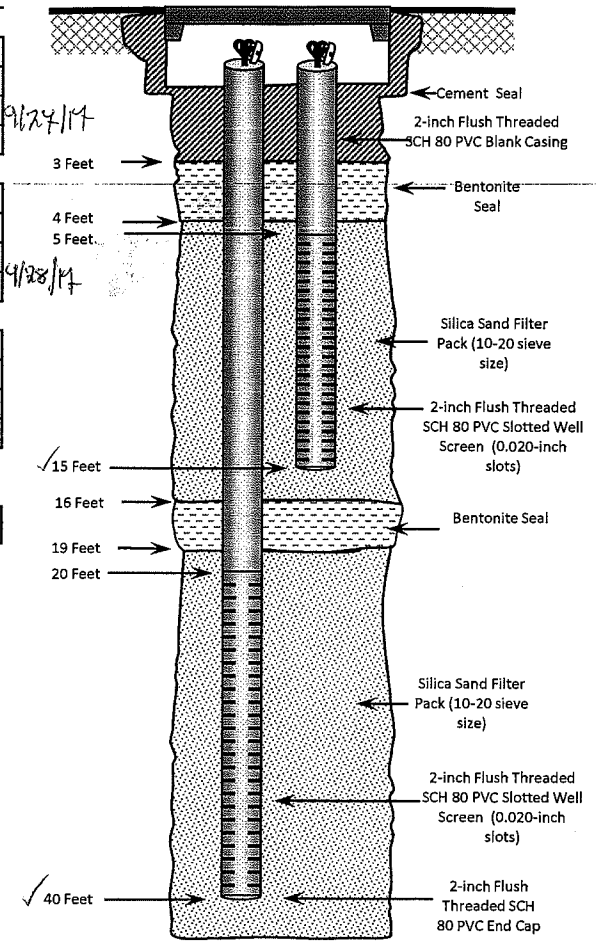
Purge Volume Calculation

Casing Volume (ml) = $((D_{casing}/2)^2*3.14)*(L_{casing}*12)*16.387$

Purge Volumes

SVM-10 Shallow start 1330
1TV = 9,262 ml
3TV = 27,786 ml 2 hrs, 20 min 9/27/17
End at 1550

SVM-10 Deep start at 0930
1TV = 24,698 ml 6 hrs, 11 mins 9/28/17
3TV = 74,094 ml End at 1531



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Reviewed By: [signature] Date: 9/29/17

Soil Gas Sample Log

Sample ID	Depth Sampled	Purge Volume	# of Purge Volumes	Date	Time	Leak Check Compound	Sampler	Time Delivered to the Lab	Site Conditions/Notes
SVM-01	15.5	149.6 ~~449~~ L	449	9/25/17	1400		AP		
SVM-01	29.5	284.7	854	9/25/17	1500		AP		
SVM-01	39.5	381.2	1144	9/25/17	1450		AP		
SVM-01	58.7	566	1700	9/25/17	1520		AP		
SVM-02	15.5	149.6	449	9/25/17	1150		AP		
SVM-02	29.5	284.7	854	9/25/17	1210		AP		
SVM-02	39.5	381.2	1144	9/25/17	1230		AP		
SVM-02	59.5	574.2	1723	9/25/17	1310		AP		
SVM-03	15.5	149.6	449	9/26/17	1100		AP		Lots of leaks
SVM-03	23.5	226.8	680	9/26/17	1140		AP		
SVM-03	31.5	304	912	9/26/17	1200		AP		
SVM-03	39.5	381	1144	9/26/17	1240		AP		
SVM-00-1	31.5	304	912	9/26/17	1240		AP		There is no glass on the controller but it appears to be working. Duplicate of SVM-03 -31.5.
SVM-04	15.5	149.6	449	9/26/17	1330		AP		
SVM-04	26.5	255.7	767	9/26/17	1340		AP		
SVM-04	38.5	371.5	1115	9/26/17	1350		AP		
SVM-04	42.5	410.1	1230	9/26/17	1410		AP		
SVM-002	15.5	149.6	449	9/26/17	1450		AP		Duplicate of SVM-04 -15.5
SVM-05	15.5	149.6	449	9/26/17	1600		AP		
SVM-05	26.5	255.7	767	9/26/17	1615		AP		
SVM-05	38.5	371.5	1115	9/26/17	1630		AP		
SVM-05	42.5	410.1	1230	9/26/17	1645		AP		

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Soil Gas Sample Log

Sample ID	Depth Sampled	Purge Volume	# of Purge Volumes	Date	Time	Leak Check Compound	Sampler	Time Delivered to the Lab	Site Conditions/Notes
VP-11	7'	606	3	9/27/17	1141		AP		
VP-13	9'	779	3	9/27/17	1206		AP		
SVM-06-S	15	9262	3	10/5/17	1710		AP		
SVM-07-S				9/29/17	1825		AP		
SVM-08-S				10/5/17	1210		AP		
SVM-09-S				10/5/17	1440		AP		
SVM-10-S				9/27/17	1551		AP		
SVM-06-D	40	24,698	3	10/4/17	1606		AP		
SVM-07-D				9/29/17	1556		AP		
SVM-08-D				10/2/17	1210		AP		
SVM-09-D				10/3/17	1556		AP		
SVM-10-D				9/28/17	1531		AP		
SVM-00-3				10/3/17	1603		AP		SVM-09-Deep duplicate
SVM-00-4				10/4/17	1606		AP		SVM-06-Deep duplicate

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Reviewed By:_____

LABORATORY REPORTS

(INCLUDED WITH CD OF REPORT)