



DEPARTMENT OF THE NAVY

COMMANDER
NAVY REGION HAWAII
850 TICONDEROGA ST STE 110
JBPHH, HAWAII 96860-5101

5000-45A
N45
June 15, 2021

CERTIFIED NO: 9489 0090 0027 6232 2134 67

Mr. Richard Takaba
Hawaii State Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
Underground Storage Tank Section
2827 Waimano Home Road #100
Pearl City, HI 96782

Dear Mr. Takaba:

**SUBJECT: RED HILL TANK COMPLEX
SOIL VAPOR SAMPLING RESULTS FOR MAY 2021
DOH FACILITY ID NO. 9-102271
DOH RELEASE ID NO. 990051, 010011, 020028, AND 140010**

Monthly soil vapor samples were collected from beneath all active and accessible Red Hill tanks on May 20, 2021. Tanks 1 and 19 are inactive and not included in the sampling network.

Soil vapor VOC concentrations were measured in the field using a photo-ionization detector. The soil vapor sampling results are presented graphically in an enclosure.

A conservative approach to assess the integrity of the associated tank system is to establish action thresholds for VOC concentrations in soil vapor monitoring points (SVMPs) beneath tanks as 50 percent of the calculated vapor concentration from fuel-saturated water. These action thresholds for SVMPs beneath tanks containing F-24 or JP-5 is 280,000 ppbv and 14,000 ppbv in SVMPs beneath tanks containing marine diesel fuel.

At Tank 5, the concentrations of VOCs detected in the front, middle and outer edge soil vapor monitoring probes were 339, 1103, and 1002 ppbv, respectively. VOC concentrations measured in all down-gradient tank soil vapor monitoring probes were 77 to 252 ppbv.

Additional supplemental monitoring is ongoing in response to the May 6, 2021 pipeline breach that occurred in the tunnel. SVMPs at Tanks 17 through 20 are believed to have been impacted by clean-up activities, resulting in increases in soil vapor VOC concentrations observed during the monthly monitoring event. Soil vapor VOC concentrations at Tanks 17 through 20 were below the action levels and will continue to be monitored through supplemental monitoring.

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All VOC concentrations measured in May were below the action levels, with no consistent trends observed over time.

Regular monthly soil vapor VOC concentrations will continue to be reported in accordance with the Groundwater Protection Plan. The next monthly soil vapor sampling event is scheduled for the week of June 14, 2021, and will include collecting samples from soil vapor monitoring probes beneath all active and accessible tanks.

If there are any questions regarding this matter, or if more information is needed, please contact Ms. Susan Lohr at (808) 471-4619 or Ms. Dayna Fujimoto at (808) 471-4805.

Sincerely,

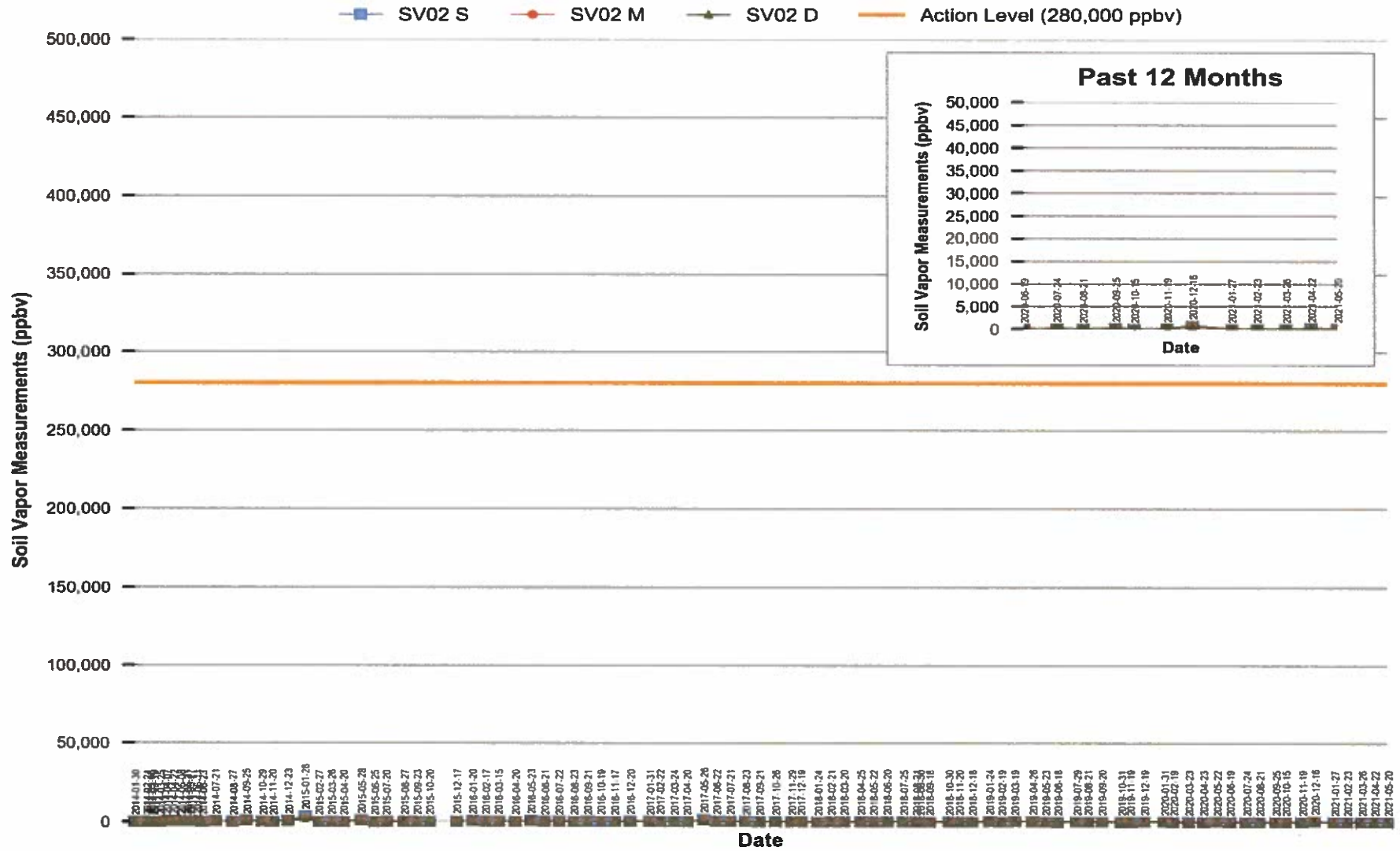


SHERRI R. ENG
Director
Regional Environmental Department
By direction of the
Commander

Enclosure: Graphical Summary of Soil Vapor Sampling Results for Tanks 2 - 18 and 20
Data represented through May 2021 (18 pages)

Copies to: Mr. Steve Linder, U.S. EPA Region 9, Underground Storage Tank Program Office
Mr. John Floyd, NAVSUP FLC Pearl Harbor
Mr. Ralph Wells, DLA Energy Pacific

Figure 1
Red Hill - Tank 02 (F-24)
Soil Vapor Measurements (Jan 2014 Through May 2021)



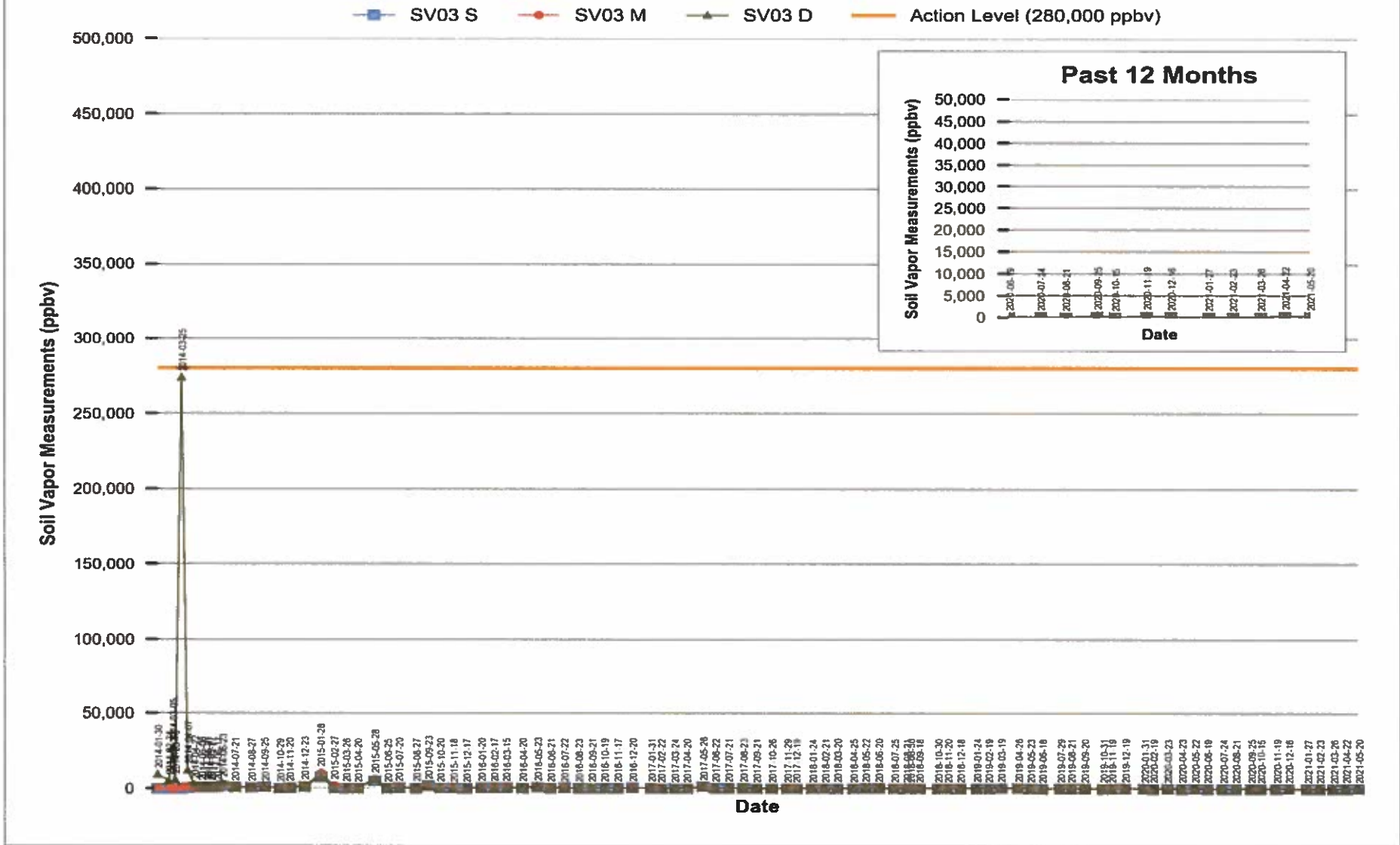
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 2
Red Hill - Tank 03 (F-24)
Soil Vapor Measurements (Jan 2014 Through May 2021)



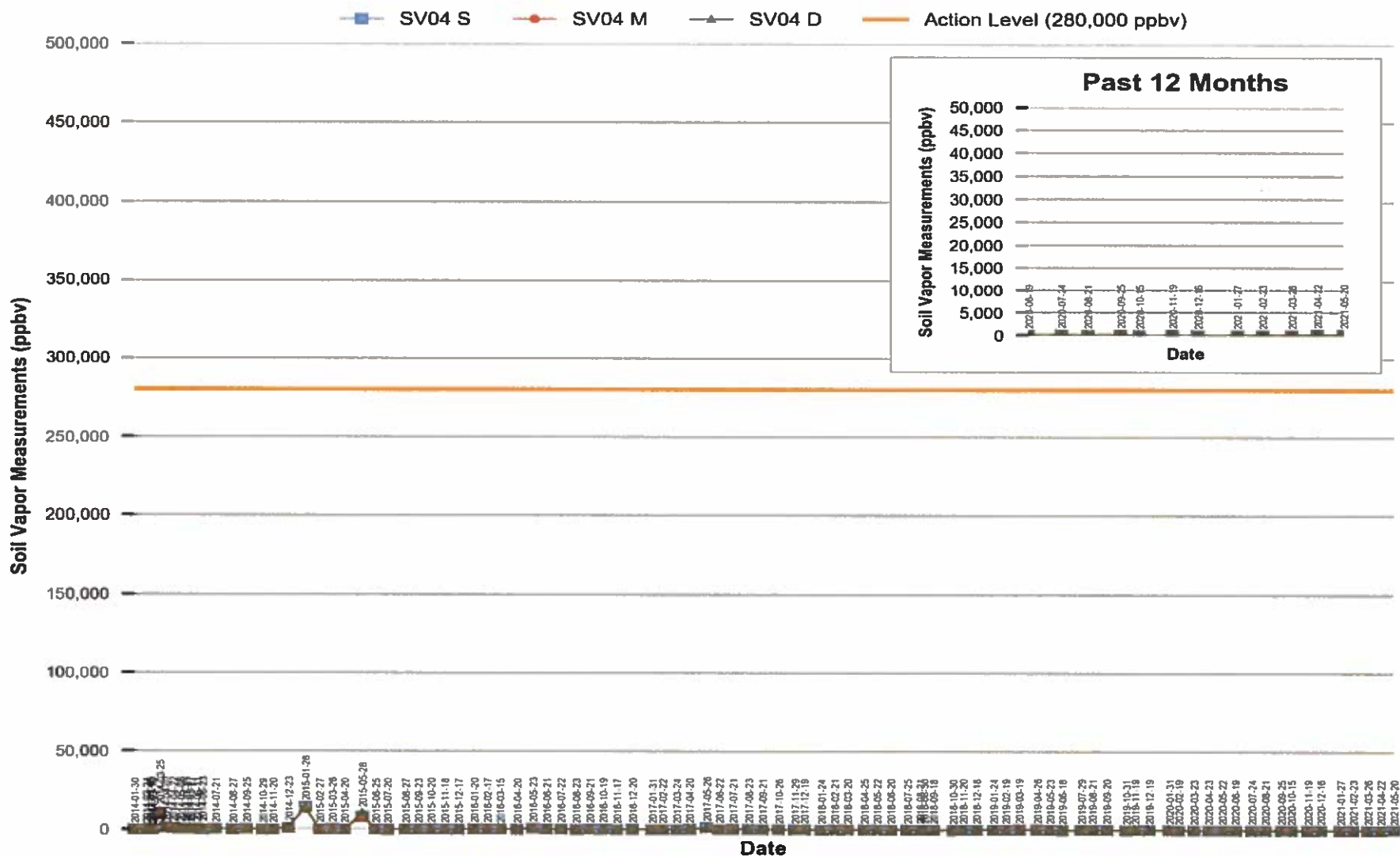
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

**Figure 3
Red Hill - Tank 04 (F-24)
Soil Vapor Measurements (Jan 2014 Through May 2021)**



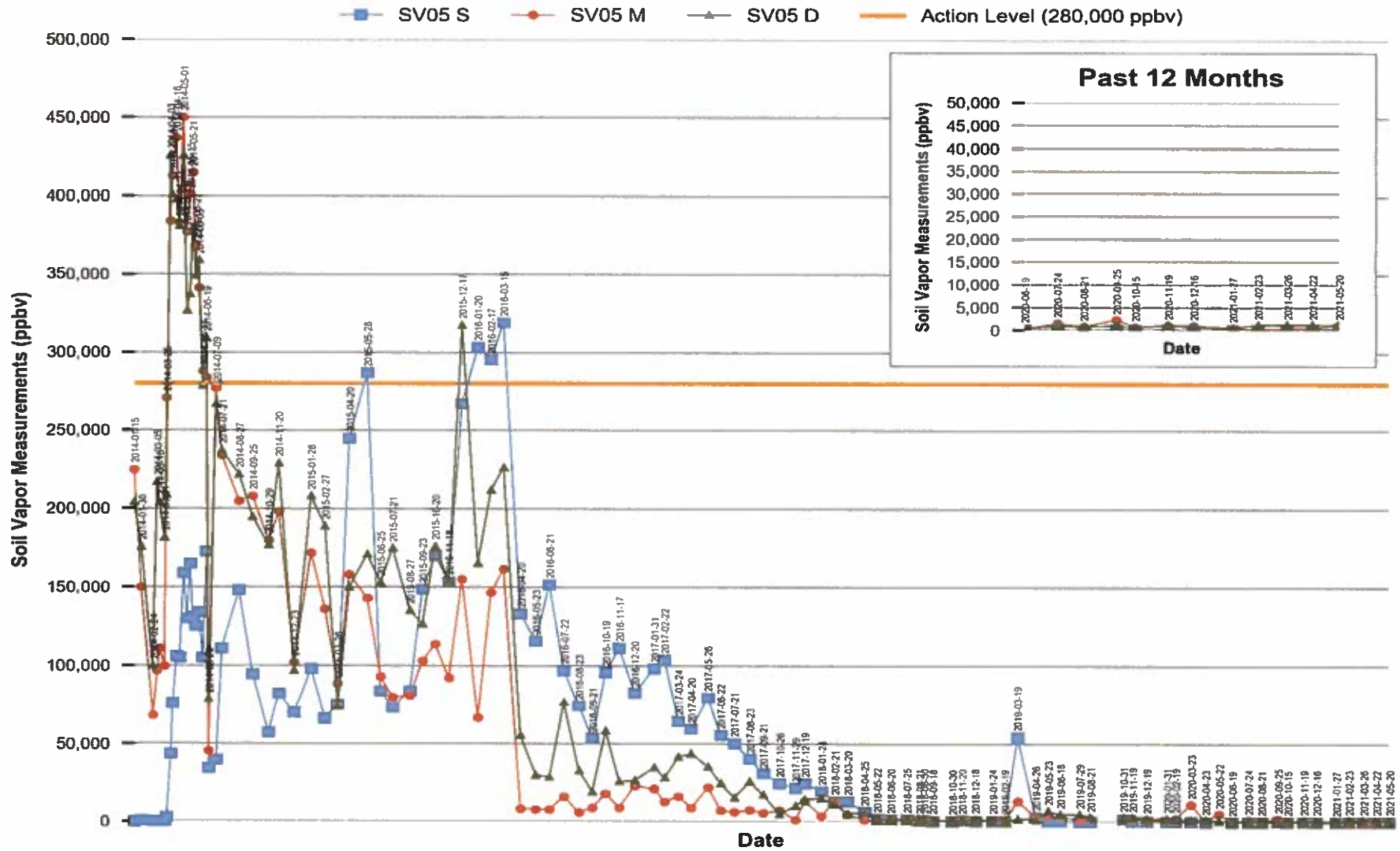
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
ppbv: Parts Per Billion by Volume

Figure 4
Red Hill - Tank 05 (F-24)
Soil Vapor Measurements (Jan 2014 Through May 2021)



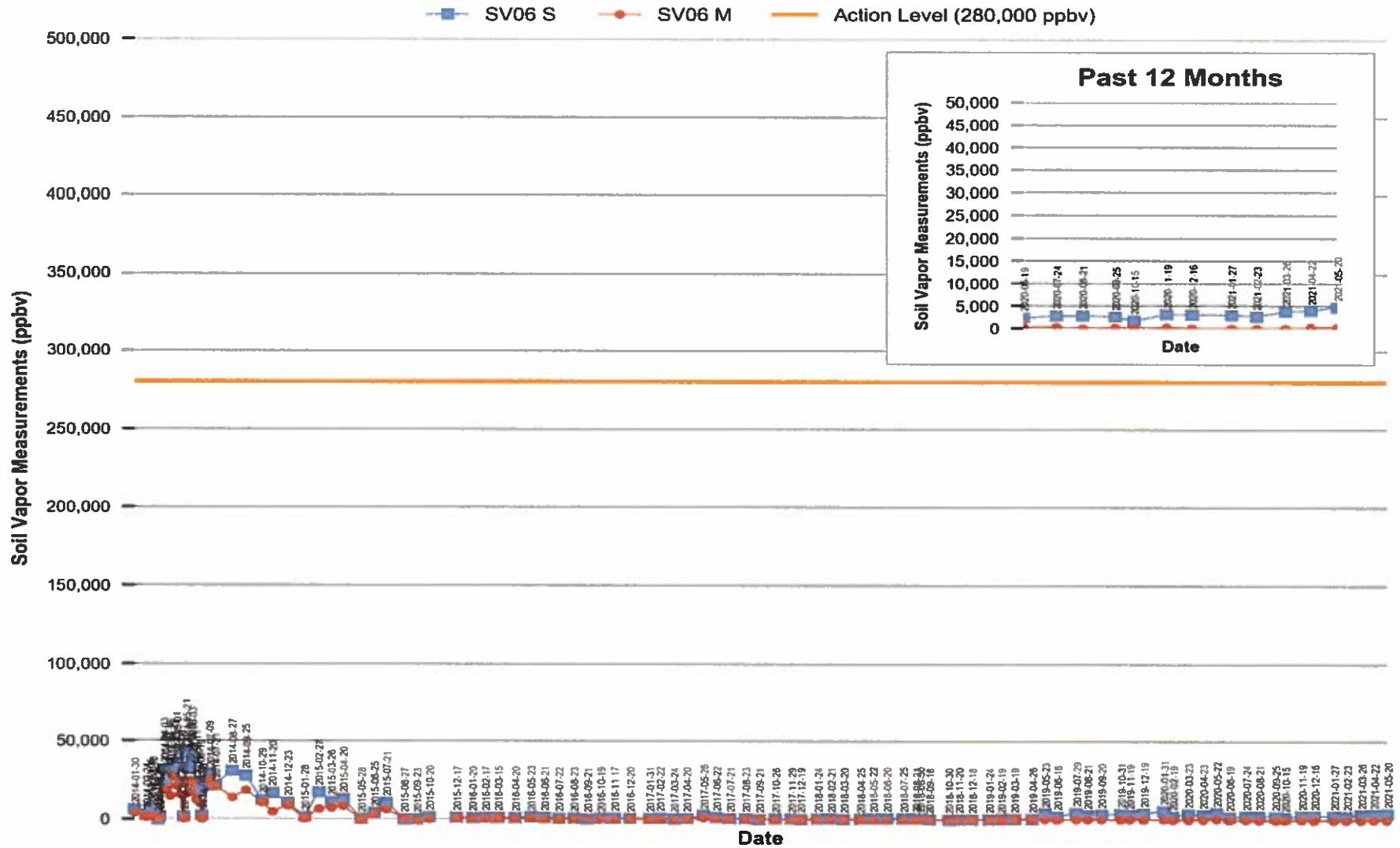
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

**Figure 5
Red Hill - Tank 06 (F-24)
Soil Vapor Measurements (Jan 2014 Through May 2021)**



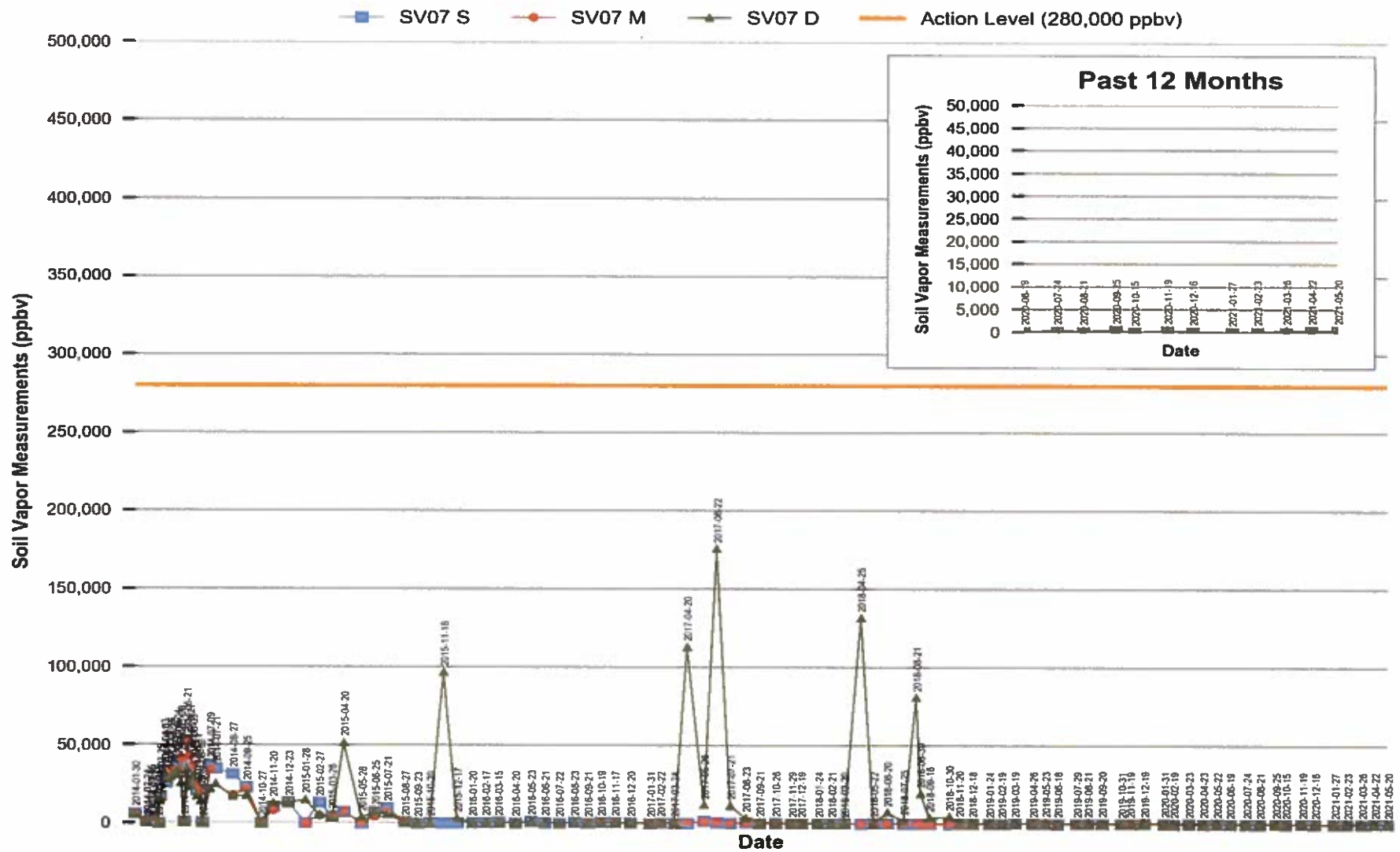
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
ppbv: Parts Per Billion by Volume

Figure 6
Red Hill - Tank 07 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



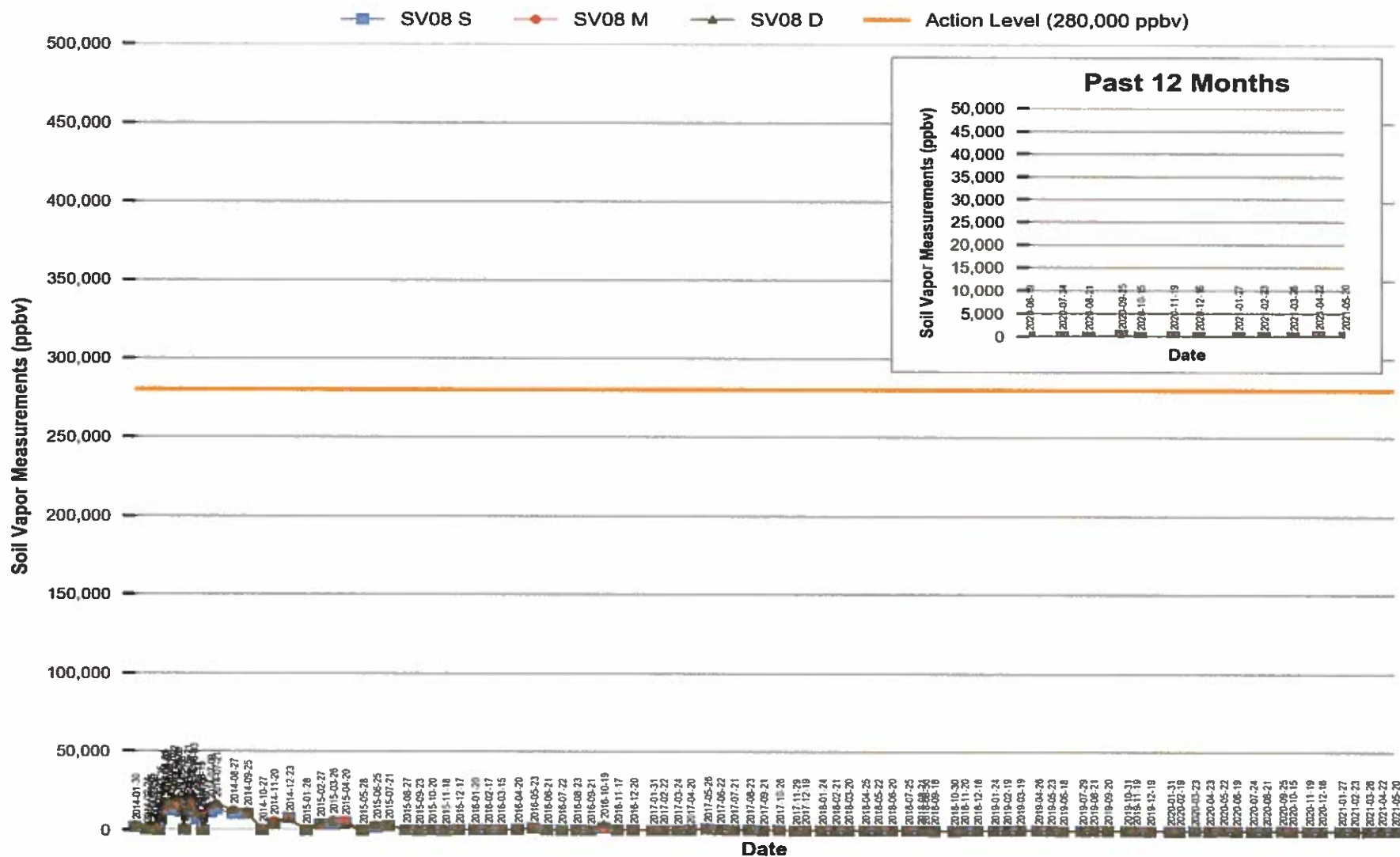
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 7
Red Hill - Tank 08 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



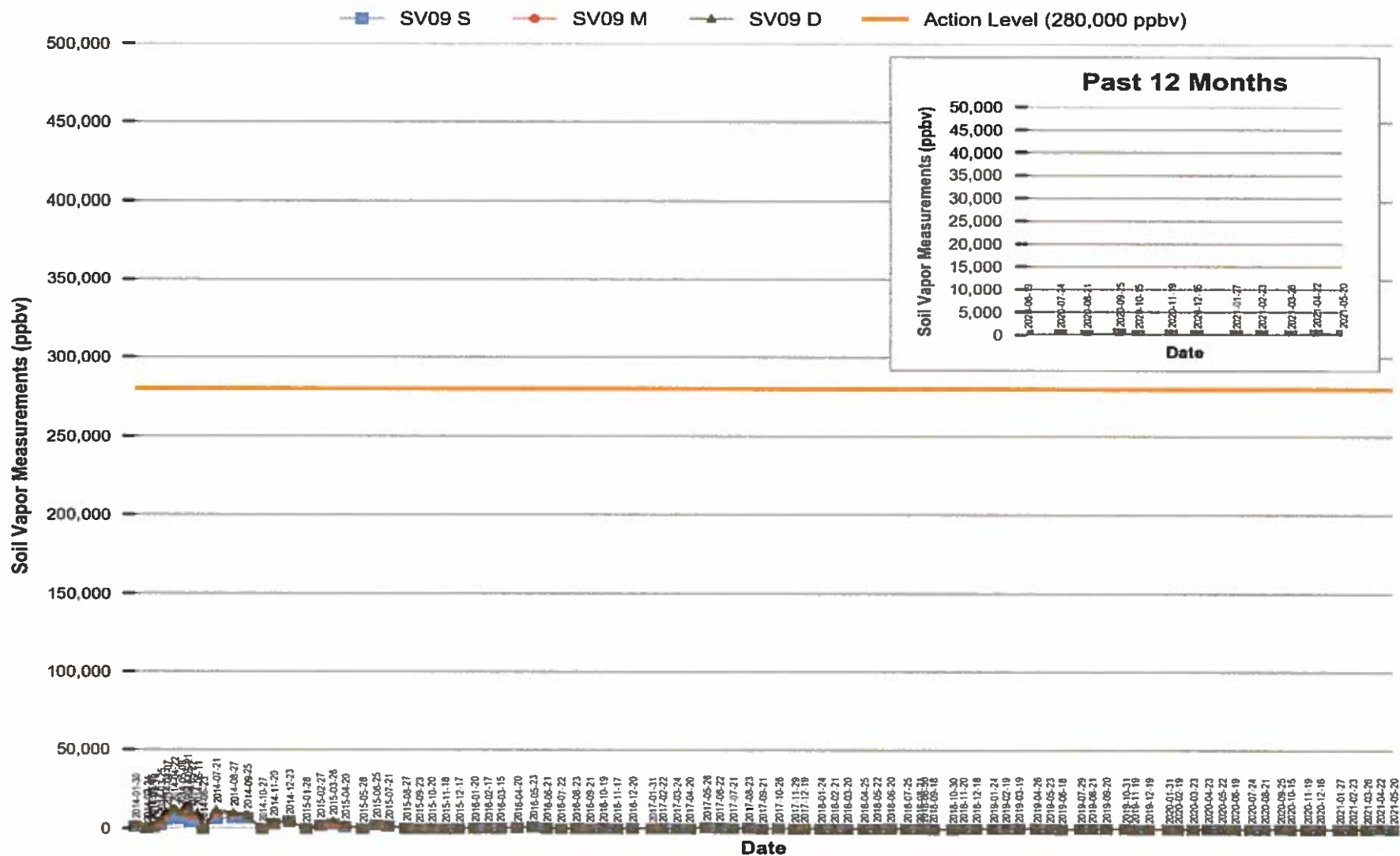
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 8
Red Hill - Tank 09 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



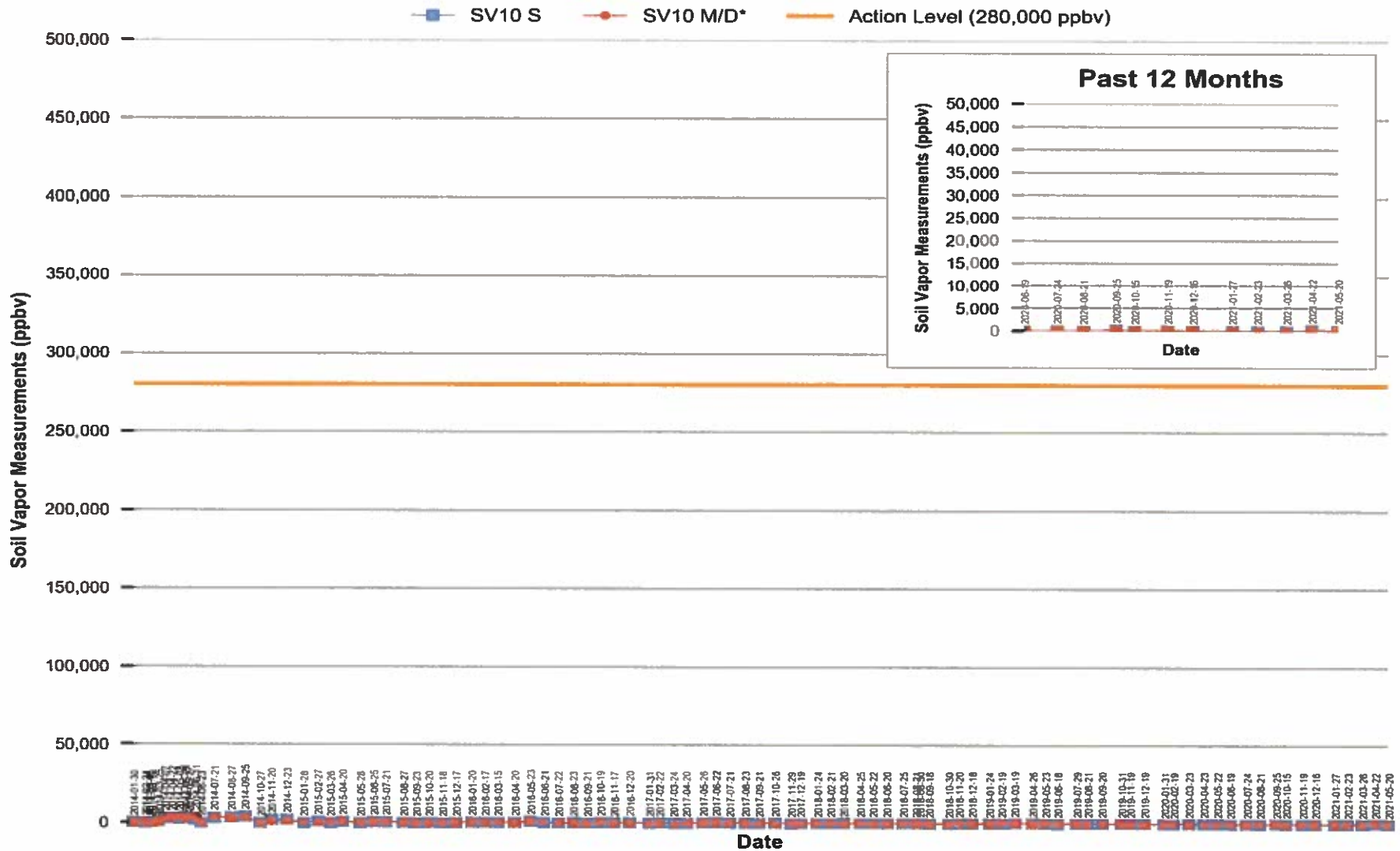
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 9
Red Hill - Tank 10 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



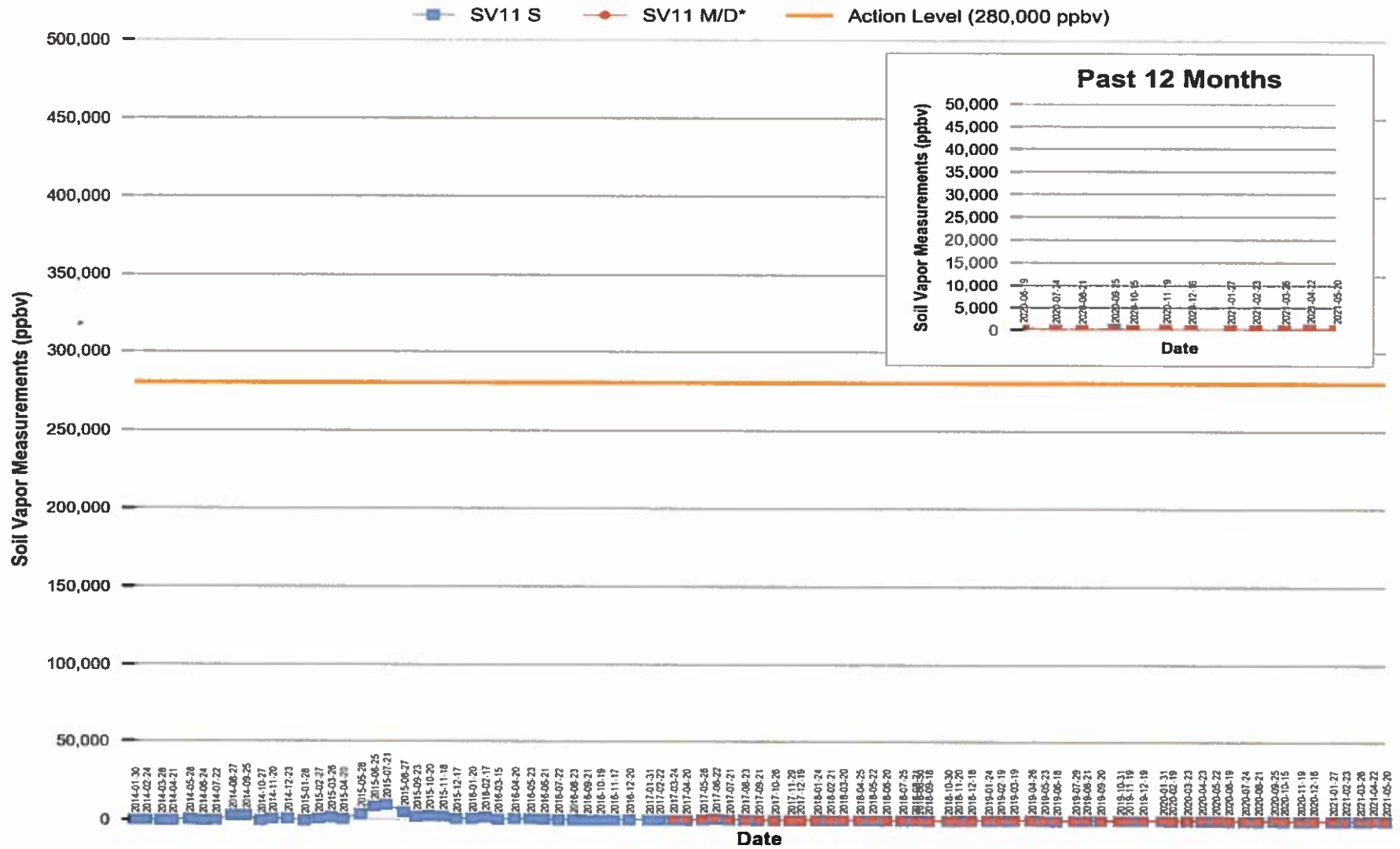
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 10
Red Hill - Tank 11 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



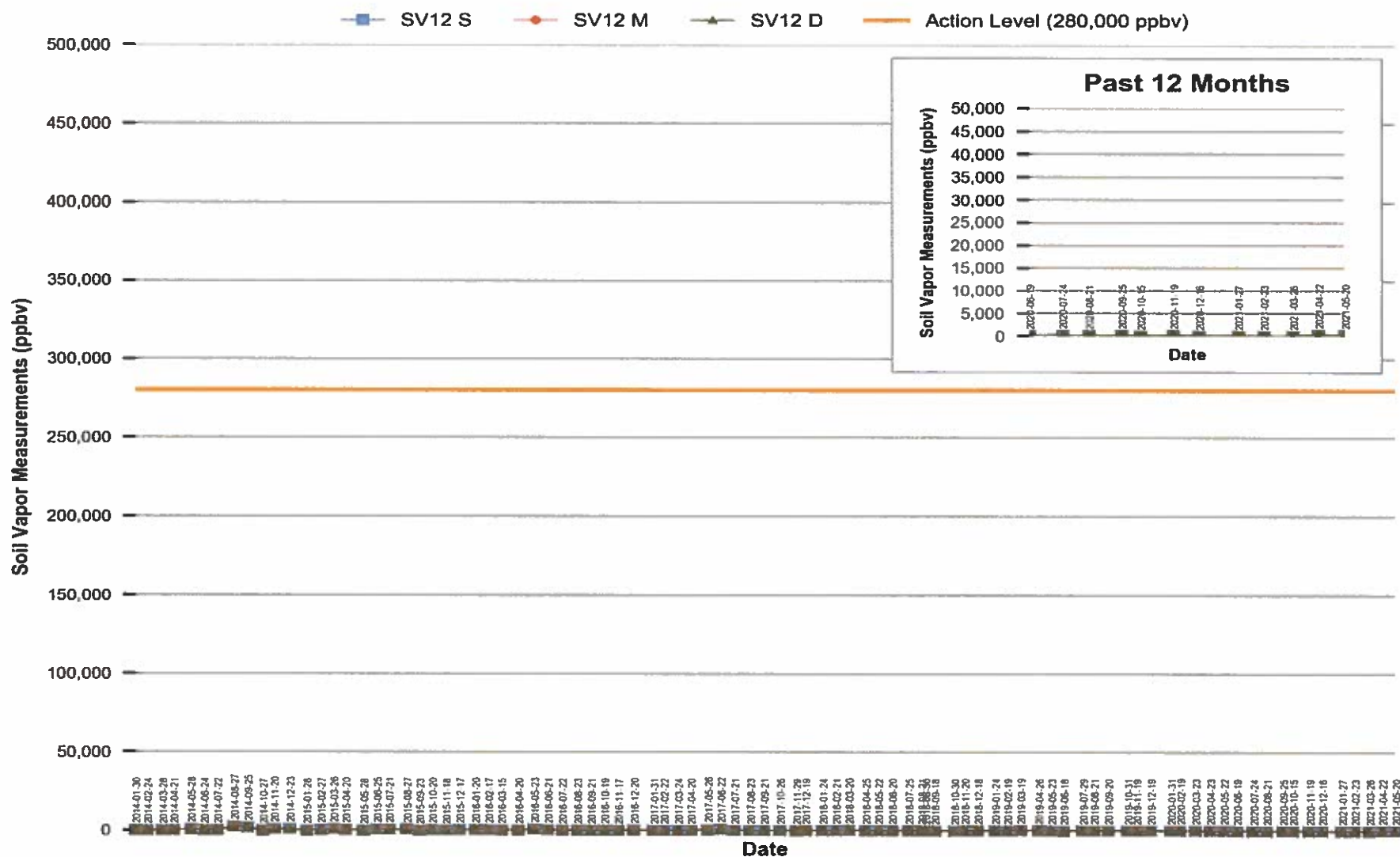
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 11
Red Hill - Tank 12 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



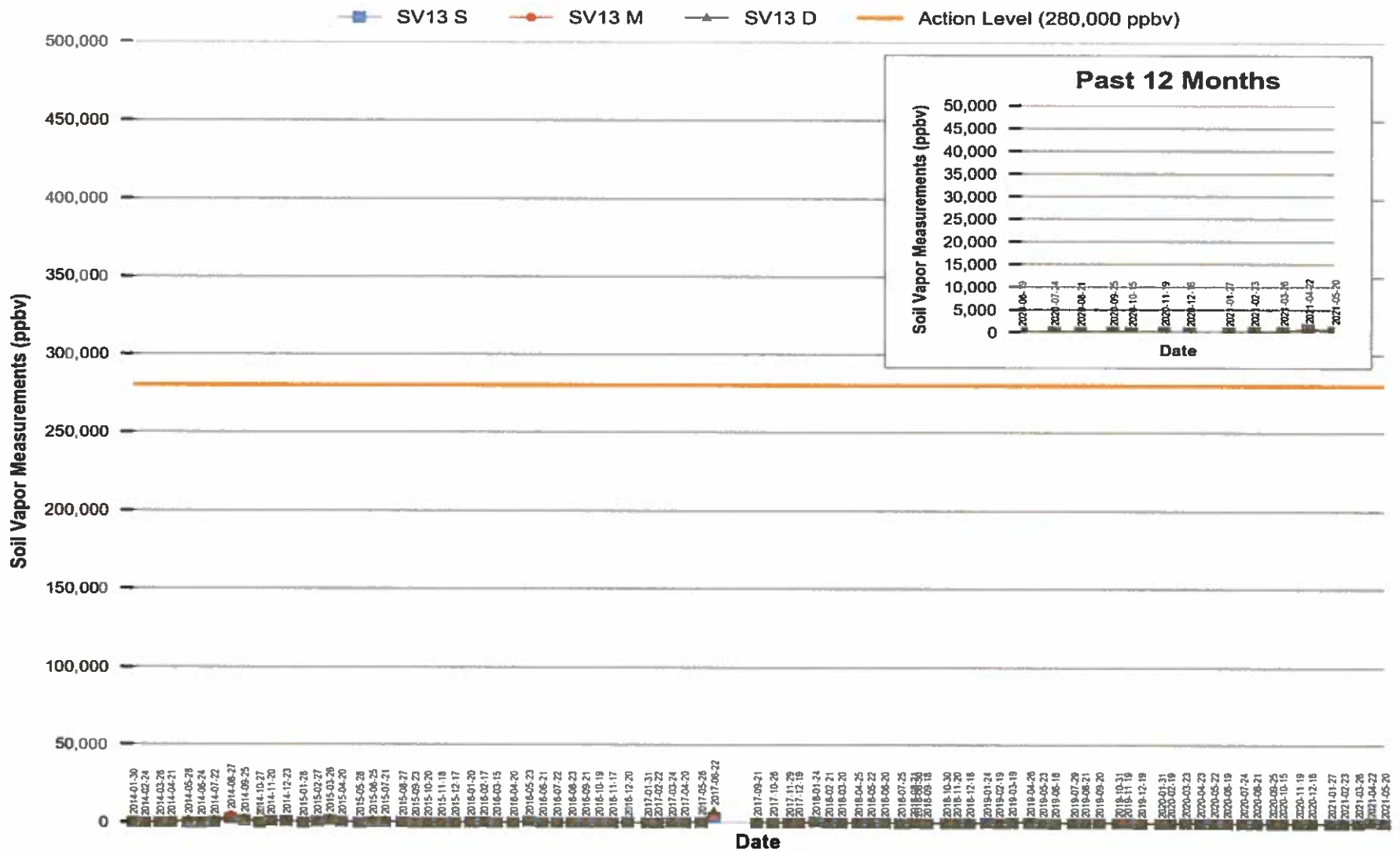
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 12
Red Hill - Tank 13 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



Notes (where applicable):

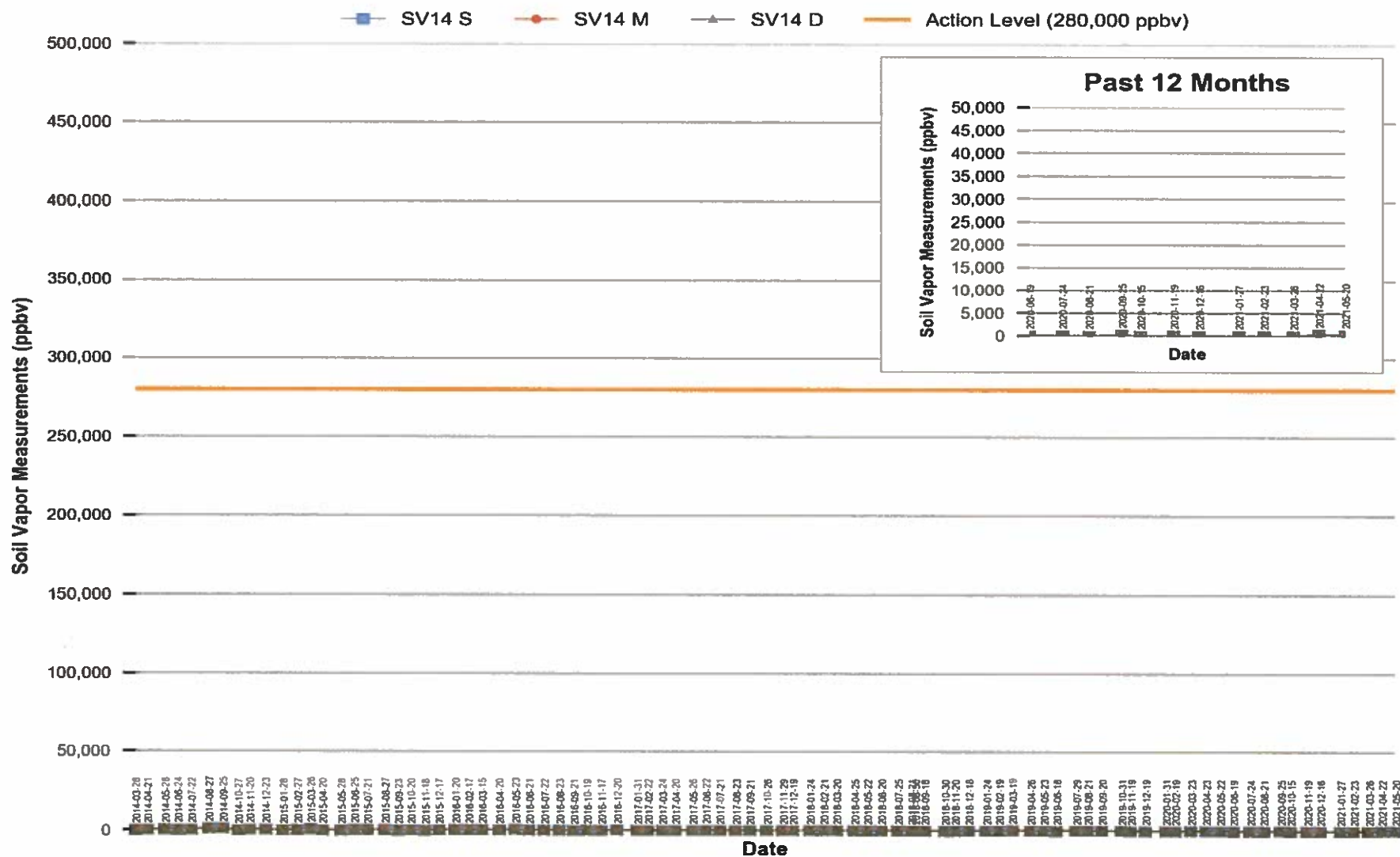
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Tank 13 is empty and inactive, undergoing clean, inspect & repair (CIR), but remains accessible for soil vapor monitoring events.

Figure 13
Red Hill - Tank 14 (JP-5)
Soil Vapor Measurements (Mar 2014 Through May 2021)



Notes (where applicable):

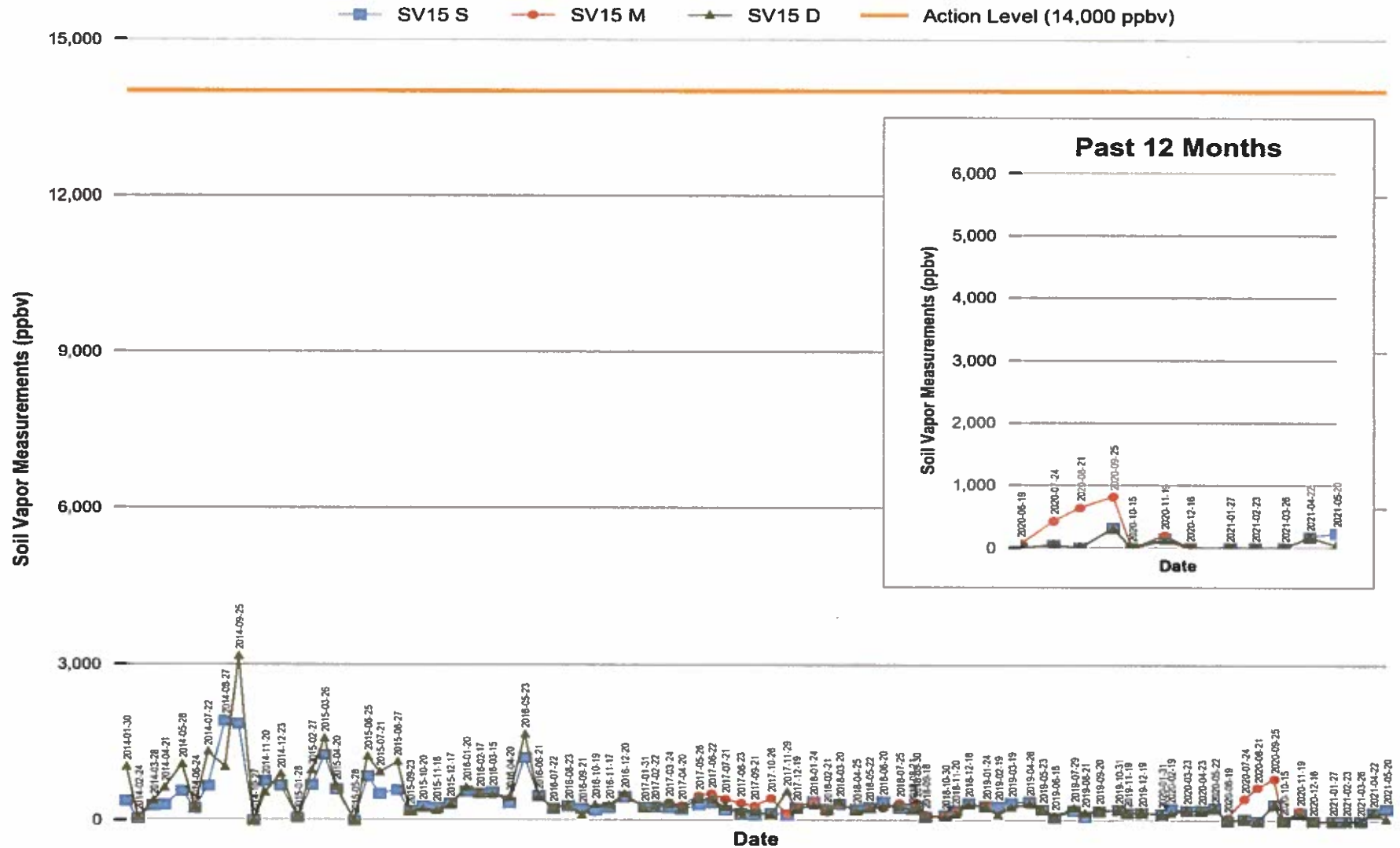
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Tank 14 is empty and inactive, undergoing clean, inspect & repair (CIR), but remains accessible for soil vapor monitoring events.

Figure 14
Red Hill - Tank 15 (F-76)
Soil Vapor Measurements (Jan 2014 Through May 2021)



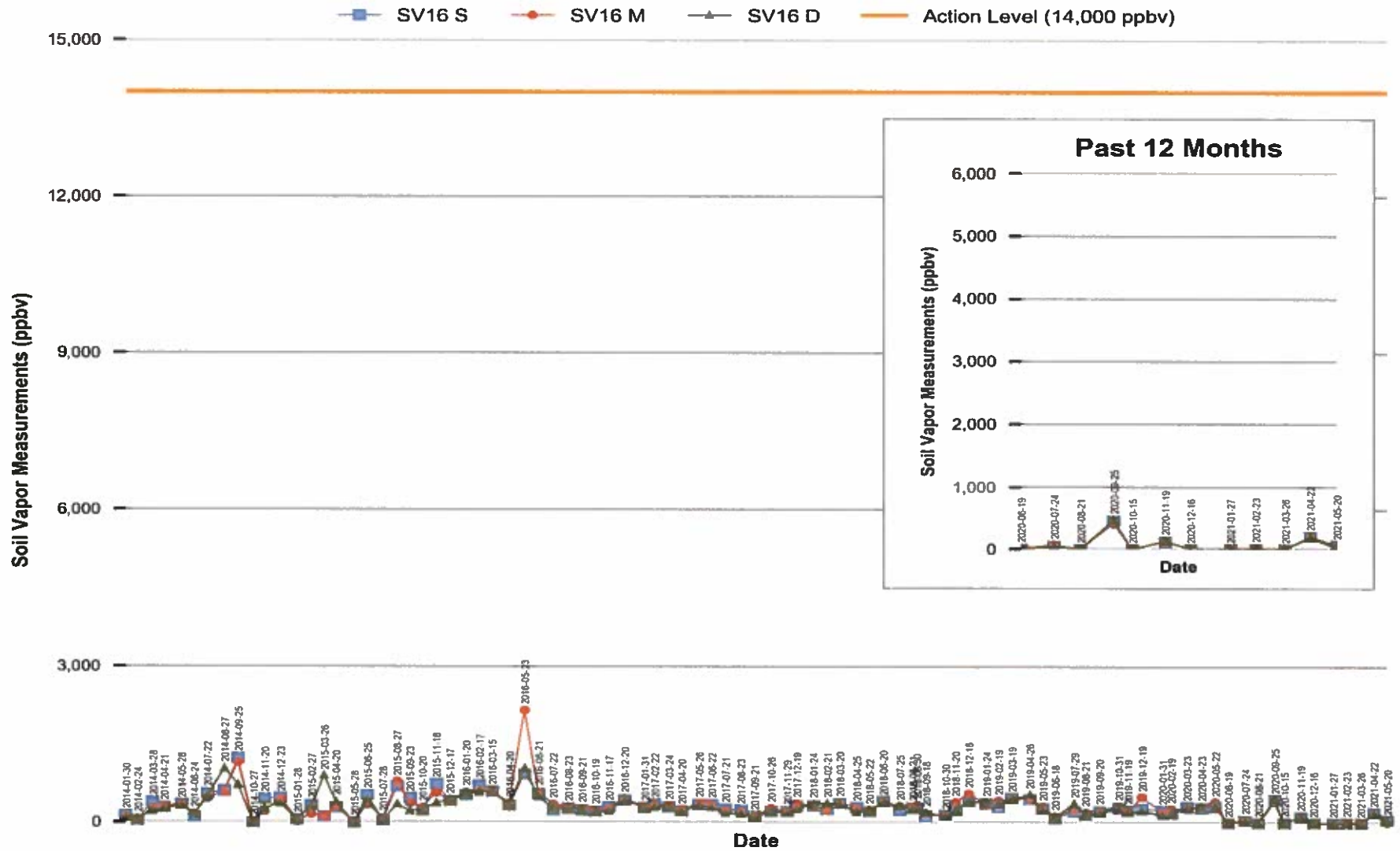
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 15
Red Hill - Tank 16 (F-76)
Soil Vapor Measurements (Jan 2014 Through May 2021)



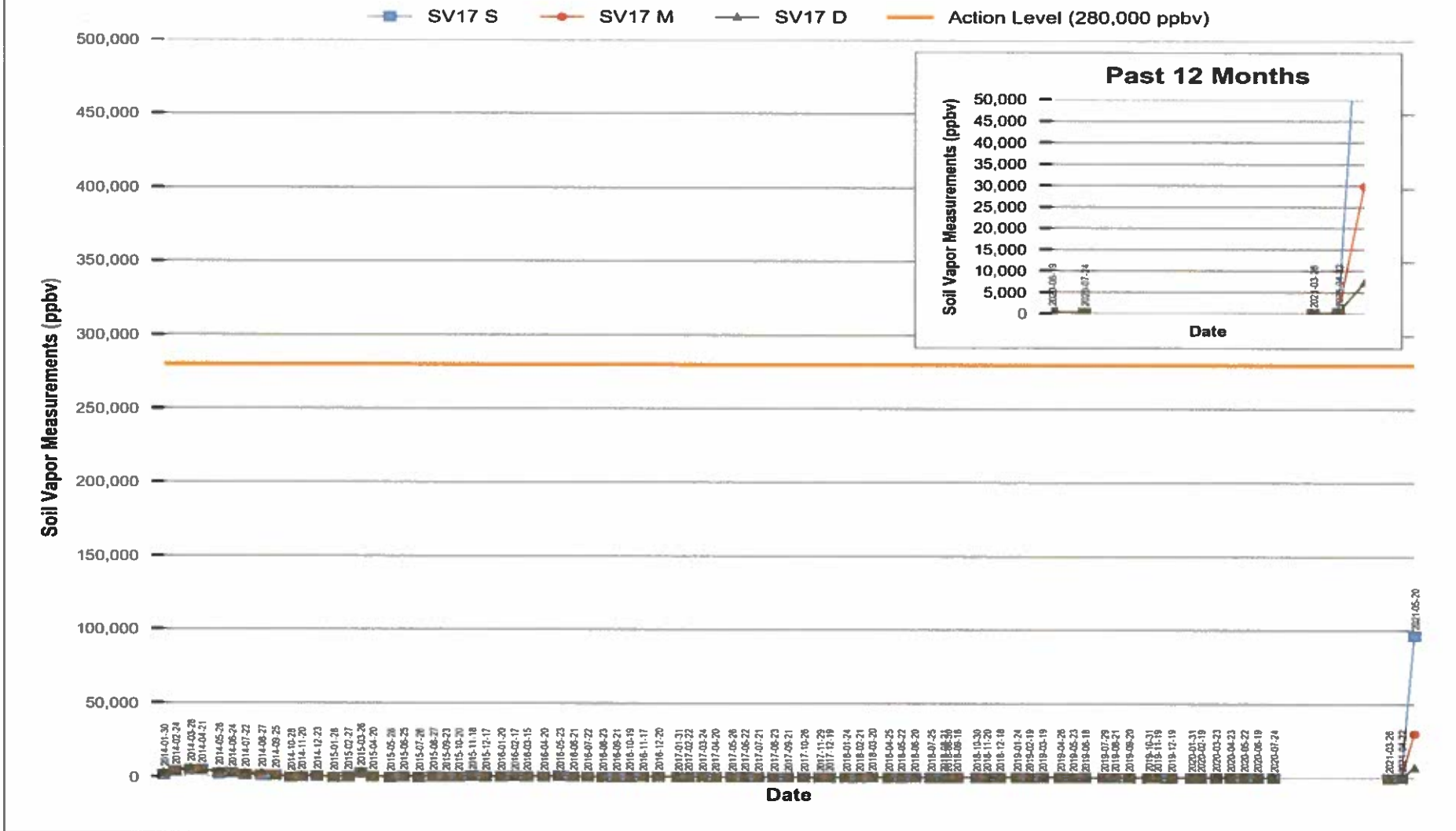
Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Figure 16
Red Hill - Tank 17 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



Notes (where applicable):

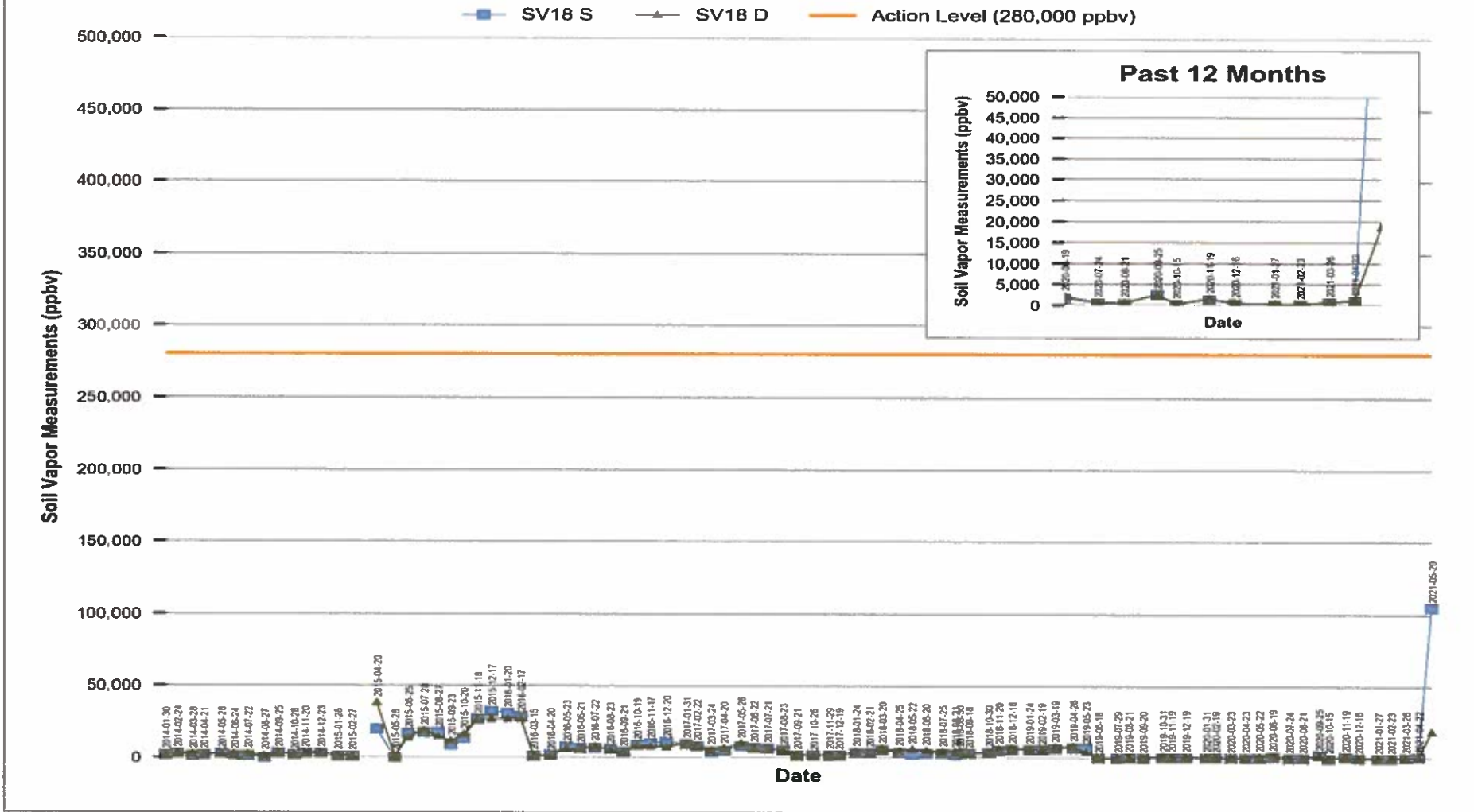
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Tank 17 is empty and inactive, undergoing clean, inspect & repair (CIR), but remains accessible for soil vapor monitoring events.

Figure 17
Red Hill - Tank 18 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



Notes (where applicable):

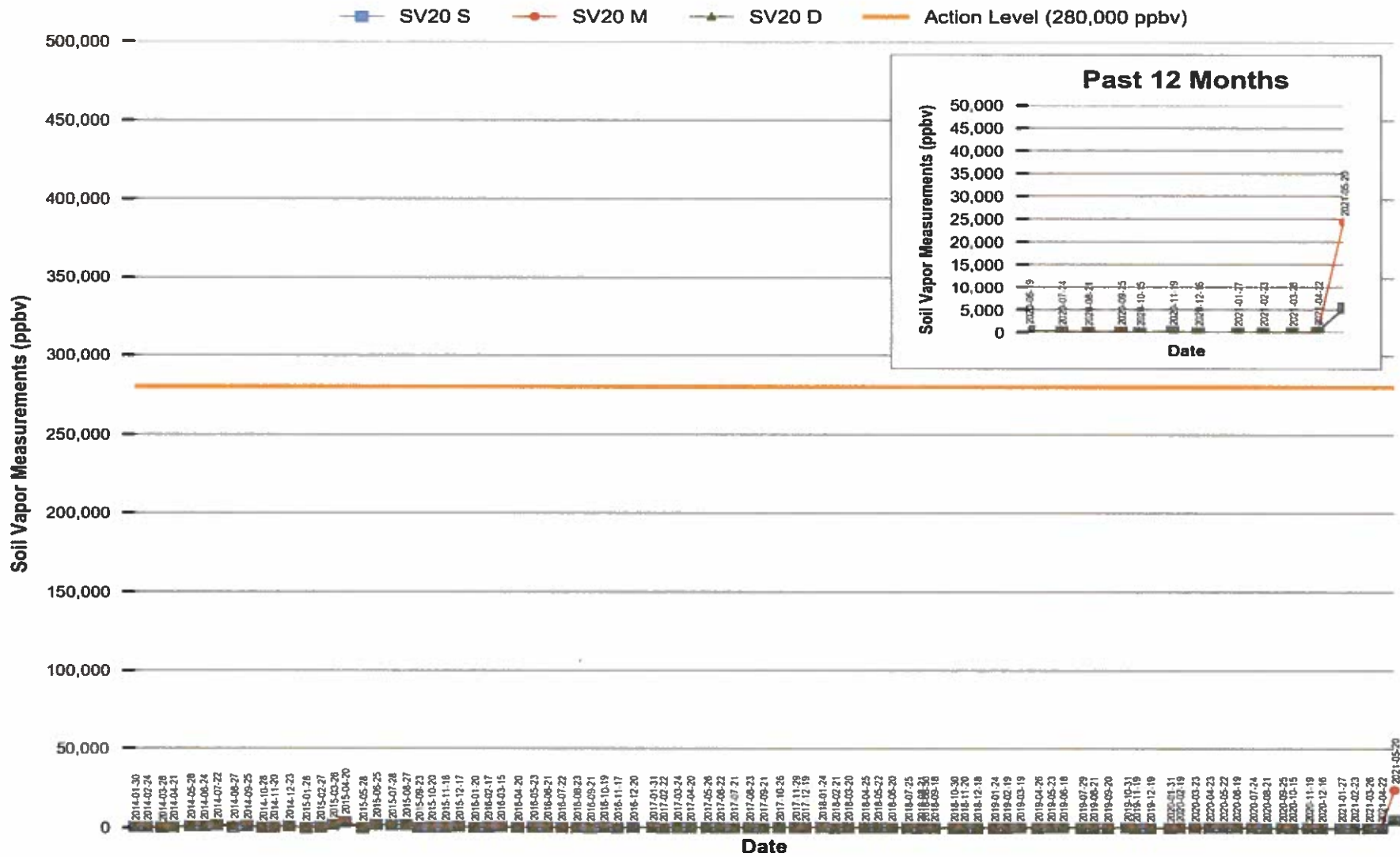
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume

Tank 18 is empty and inactive, undergoing clean, inspect & repair (CIR), but remains accessible for soil vapor monitoring events.

Figure 18
Red Hill - Tank 20 (JP-5)
Soil Vapor Measurements (Jan 2014 Through May 2021)



Notes (where applicable):

* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

F-24: Jet Fuel, Fuel Number 24
 F-76: Marine Diesel, Fuel Number 76

JP-5: Jet Fuel, Propellant Number 5
 ppbv: Parts Per Billion by Volume