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

APR 19 2022

5090
Ser N4/100
APR 11 2022

CERTIFIED NO: 9489 0090 0027 6232 9787 31

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

Dear Mr. Takaba:

SUBJECT: SOIL VAPOR SAMPLING RESULTS FOR JANUARY 2022
RED HILL TANK COMPLEX
DOH FACILITY ID NO. 9-102271
DOH RELEASE ID NO. 990051, 010011, 020028, 140010, AND 210012

Monthly soil vapor samples were collected on January 14, 2022 from beneath all accessible Red Hill tanks, with the exception of Tanks 1 and 19, which are inactive and not included in the sampling network. The 18 tanks in the sampling network have two or three soil vapor monitoring points (SVMPs) screened within designated areas beneath the tanks. These SVMPs are each designated as shallow (S), middle (M), deep (D), or M/D.

To assess the integrity of the associated tank system, an action threshold or level was established as 50 percent of the calculated vapor concentration from fuel-saturated water. This conservative approach generated action thresholds of 280,000 ppbv for SVMPs beneath tanks containing jet fuels (F-24 or JP-5) and 14,000 ppbv for SVMPs beneath tanks containing marine diesel fuel (F-76).

Soil vapor VOC concentrations measured with a photo-ionization detector (PID) in the field are presented with the appropriate action level graphically in Enclosure 1. At Tank 5, the concentrations of VOCs detected in the SVMPs were 171 ppbv (SV05S), 258 ppbv (SV05M), and 440 ppbv (SV05D). VOC concentrations measured in all down-gradient tank SVMPs were between 19 and 337 ppbv.

All VOC concentrations measured in January were below the action levels, with no consistent trends observed over time. Additional monitoring in accordance with the May 6, 2021 and November 20, 2021 Release Groundwater Sampling Plan is ongoing. These results are reported under separate cover. Regular monthly soil vapor VOC concentrations will continue to be sampled and reported. The February18, 2022 event results will be submitted under separate cover.

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If there are any questions regarding the January soil vapor sampling results, or if more information is needed, please contact Ms. Susan Lohr at (808) 471-4619 or Ms. Dayna Fujimoto at (808) 471-4805.

Sincerely,

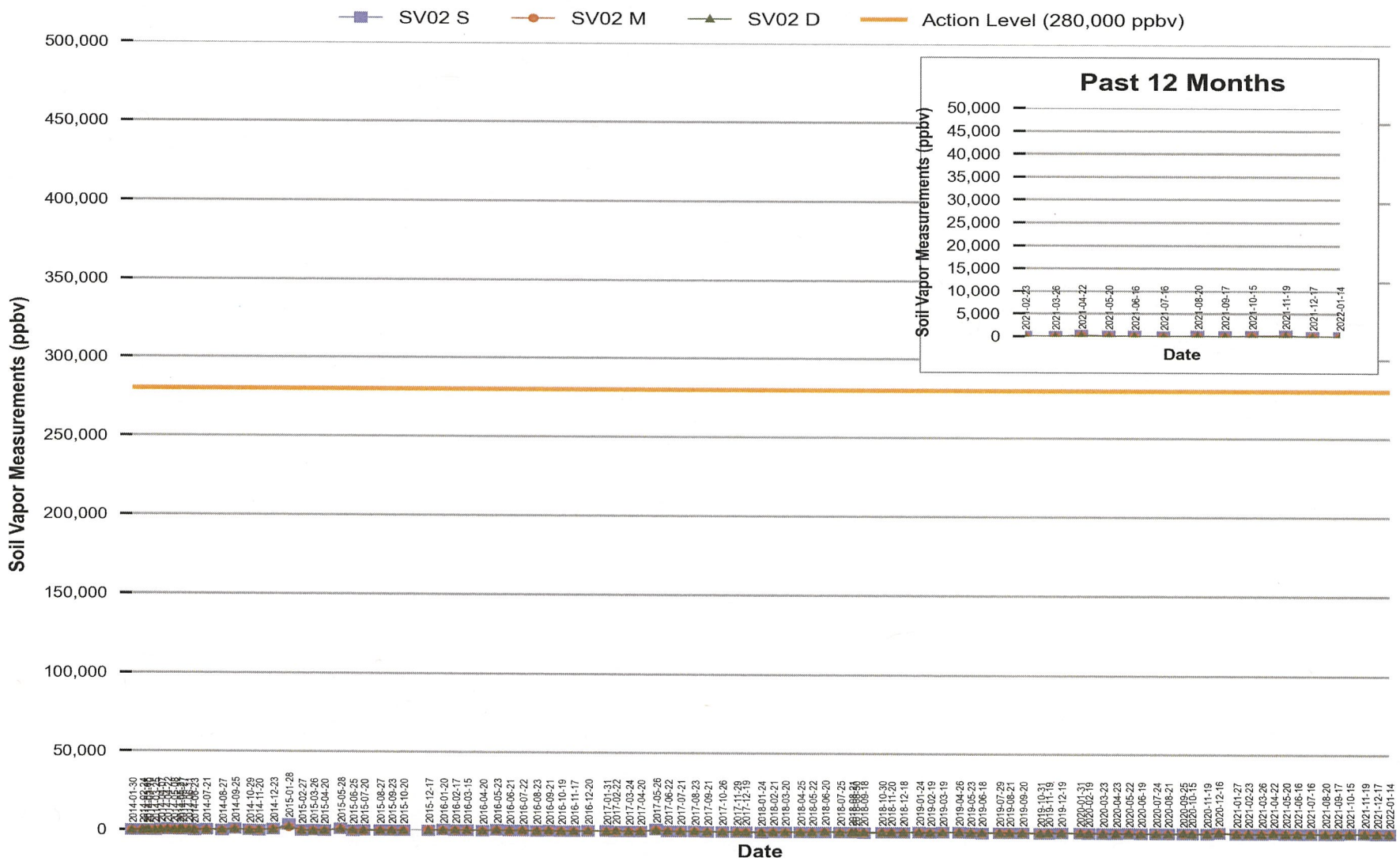
J. G MEYER
Captain, CEC, U.S. Navy
Regional Engineer
By direction of the
Commander

Enclosure: 1. Graphical Summary of Soil Vapor Sampling Results for Tanks 2 - 18 and 20
Data represented through January 2022 (18 pages)

Copy to: Mr. John Floyd, NAVSUP FLC Pearl Harbor

Electronic Copies to: Ms. Gabriela Carvalho, U.S. EPA Region 9, Red Hill Program Coordinator
Mr. John Reed, DLA Energy Pacific
Mr. William Potter, DLA Energy - Engineering, Environmental, Property Directorate

Figure 1
Red Hill - Tank 02 (F-24)
Soil Vapor Measurements (Jan 2014 Through Jan 2022)

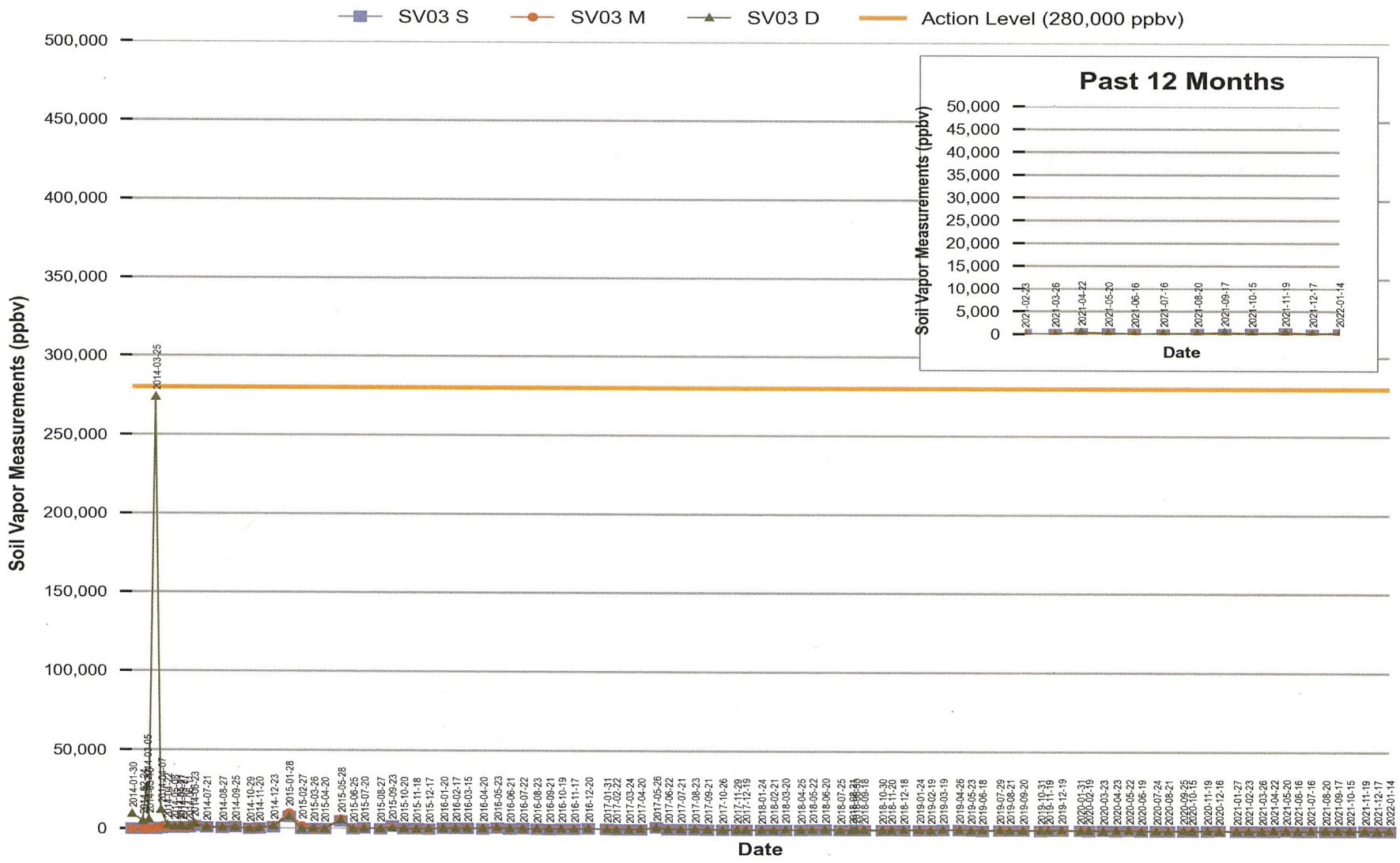


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

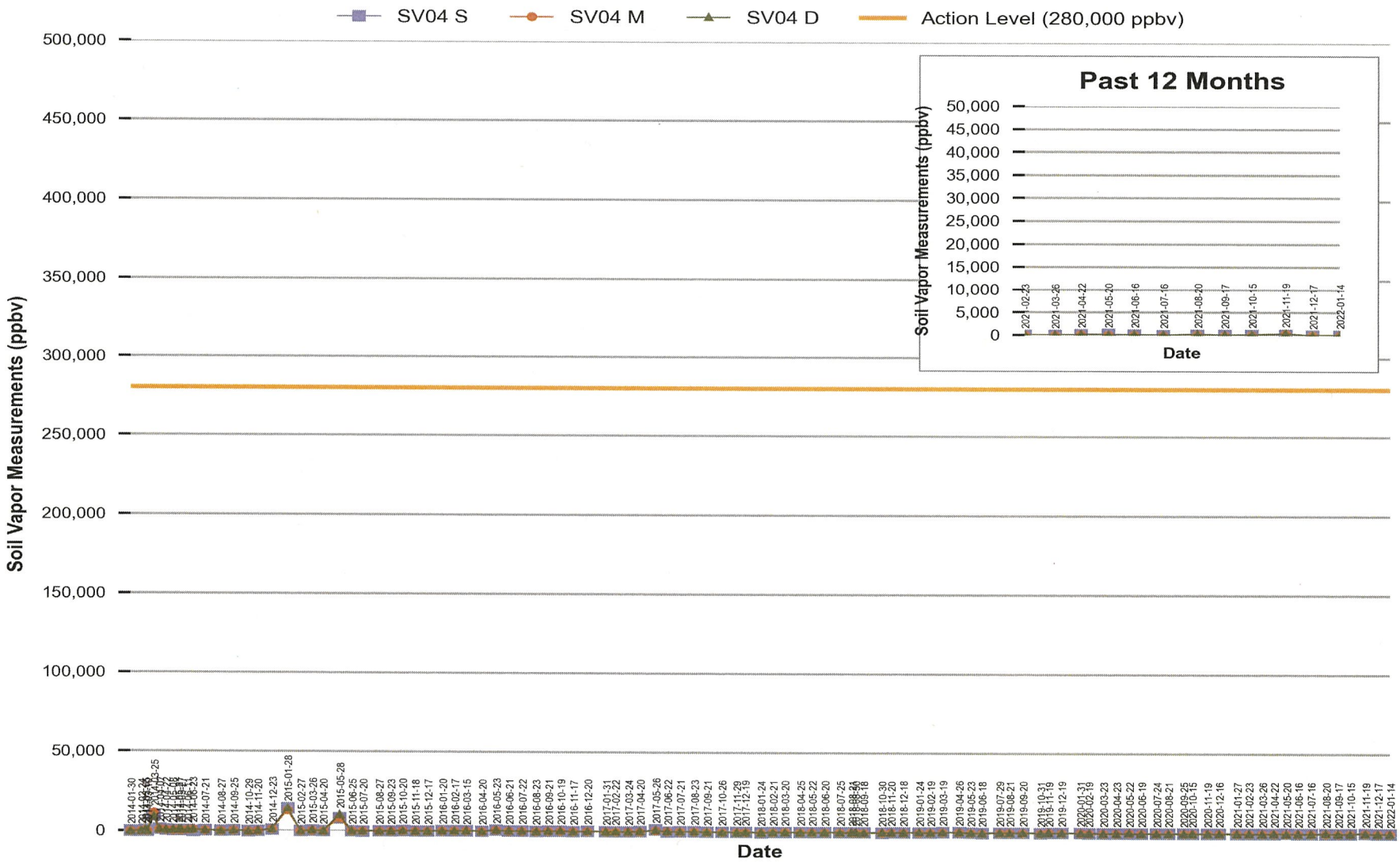


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

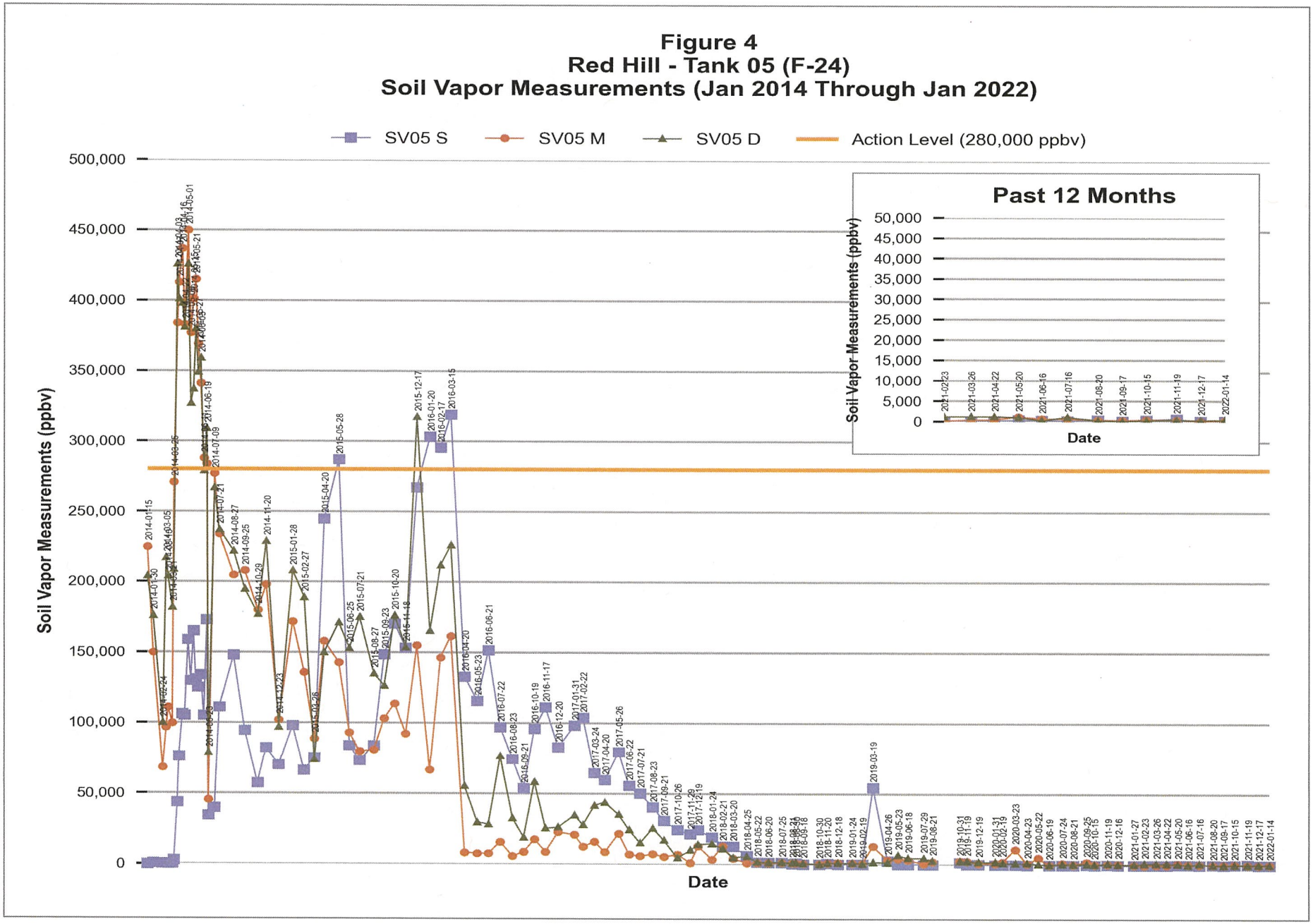


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

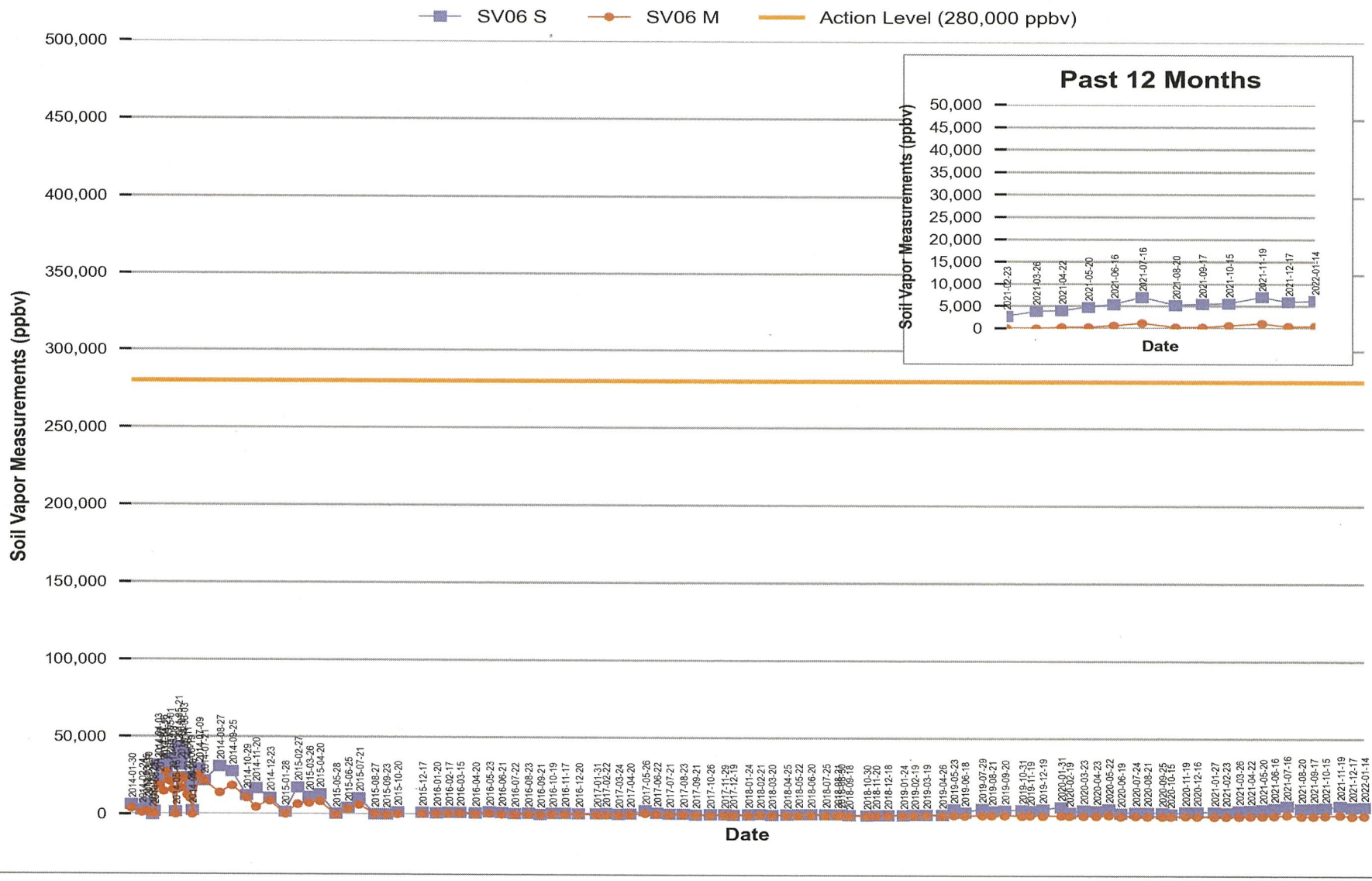


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

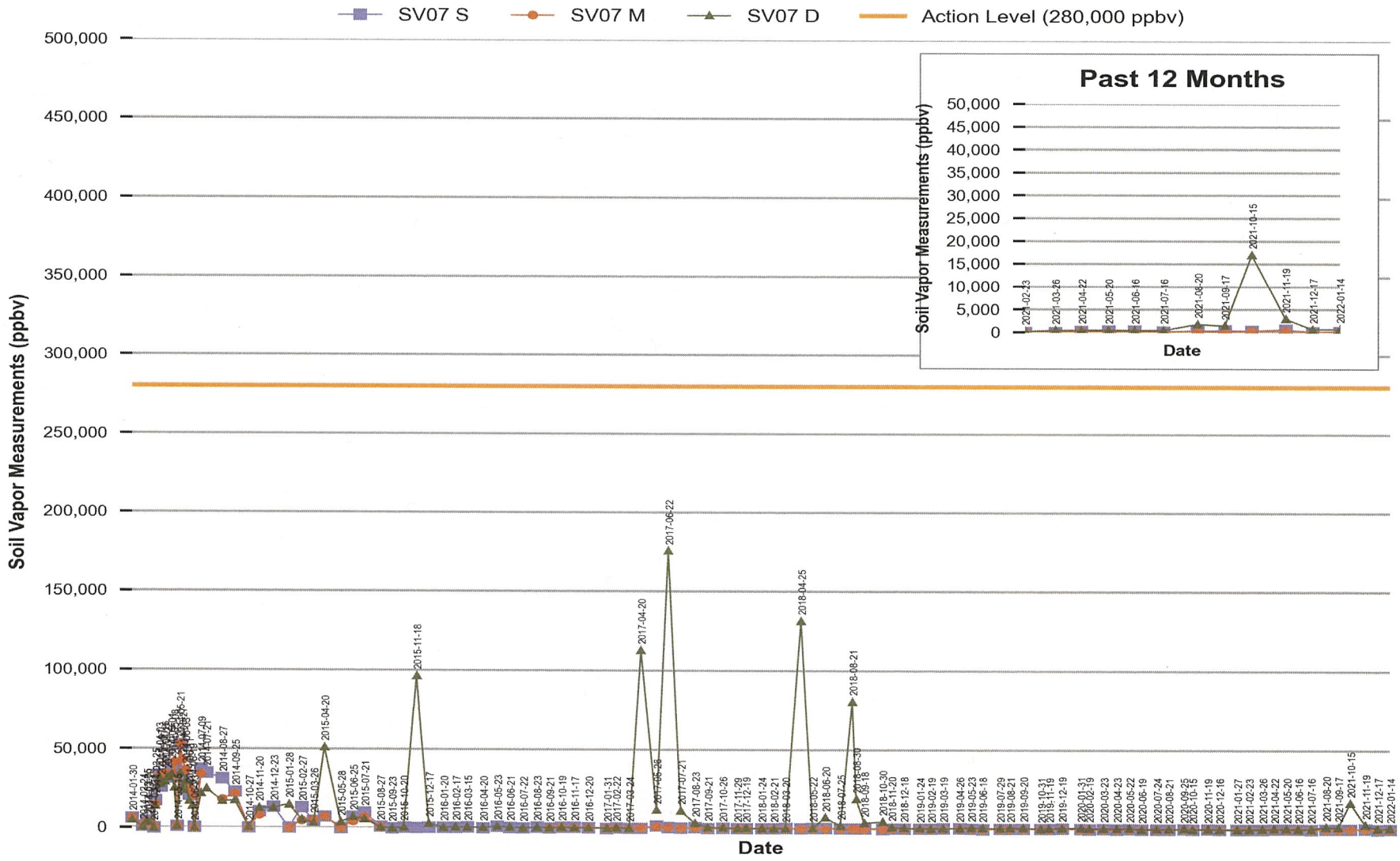


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

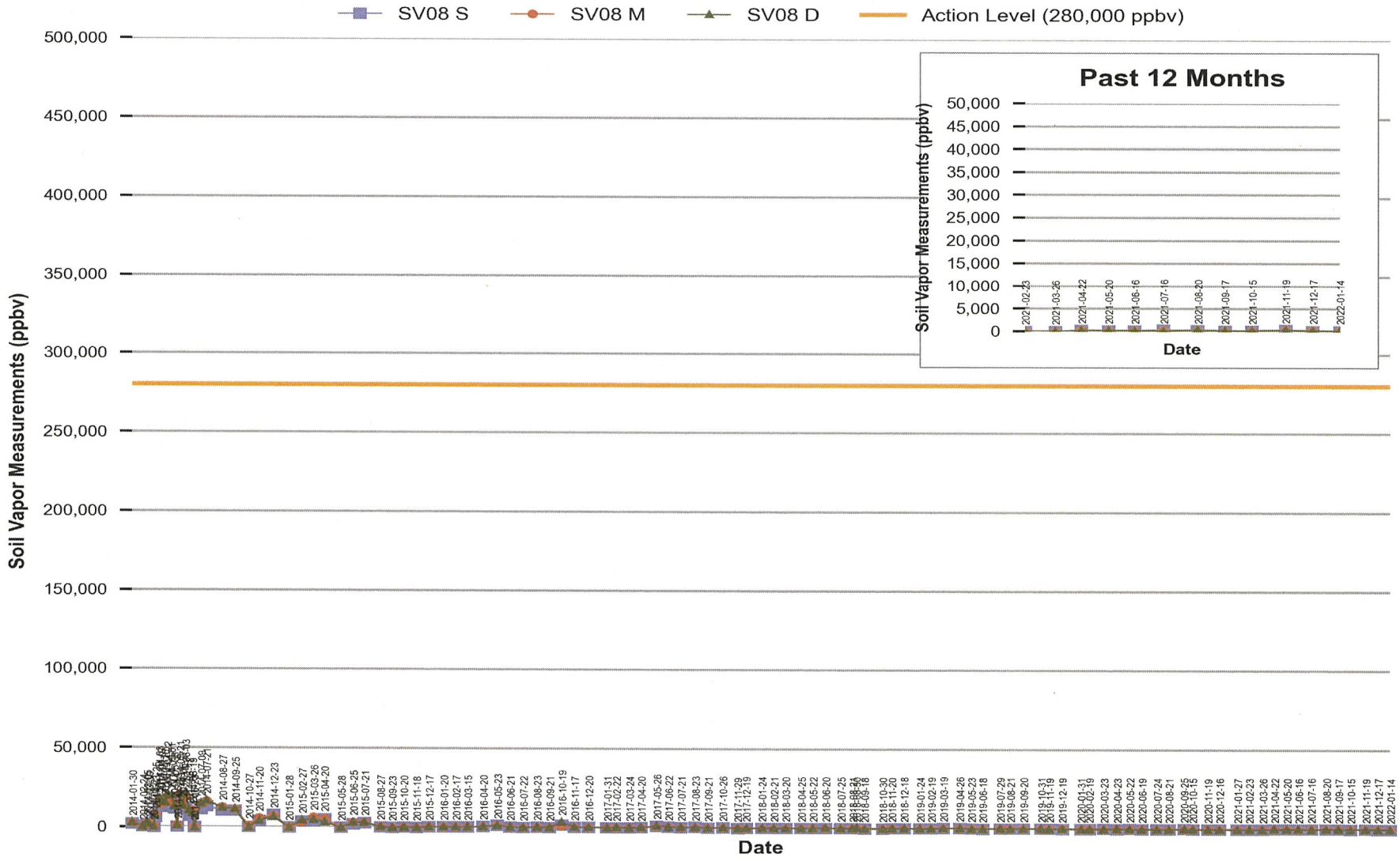


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

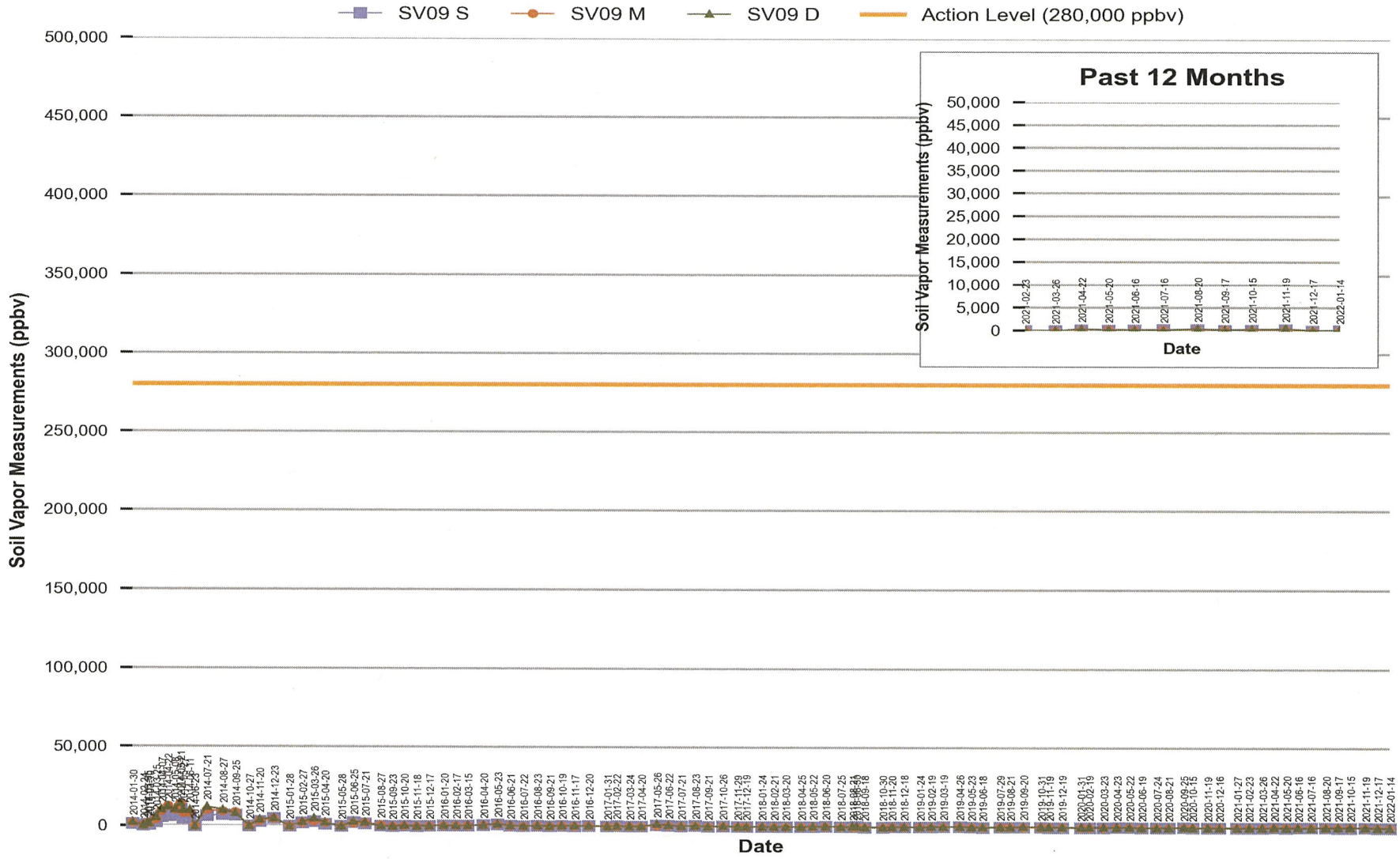


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

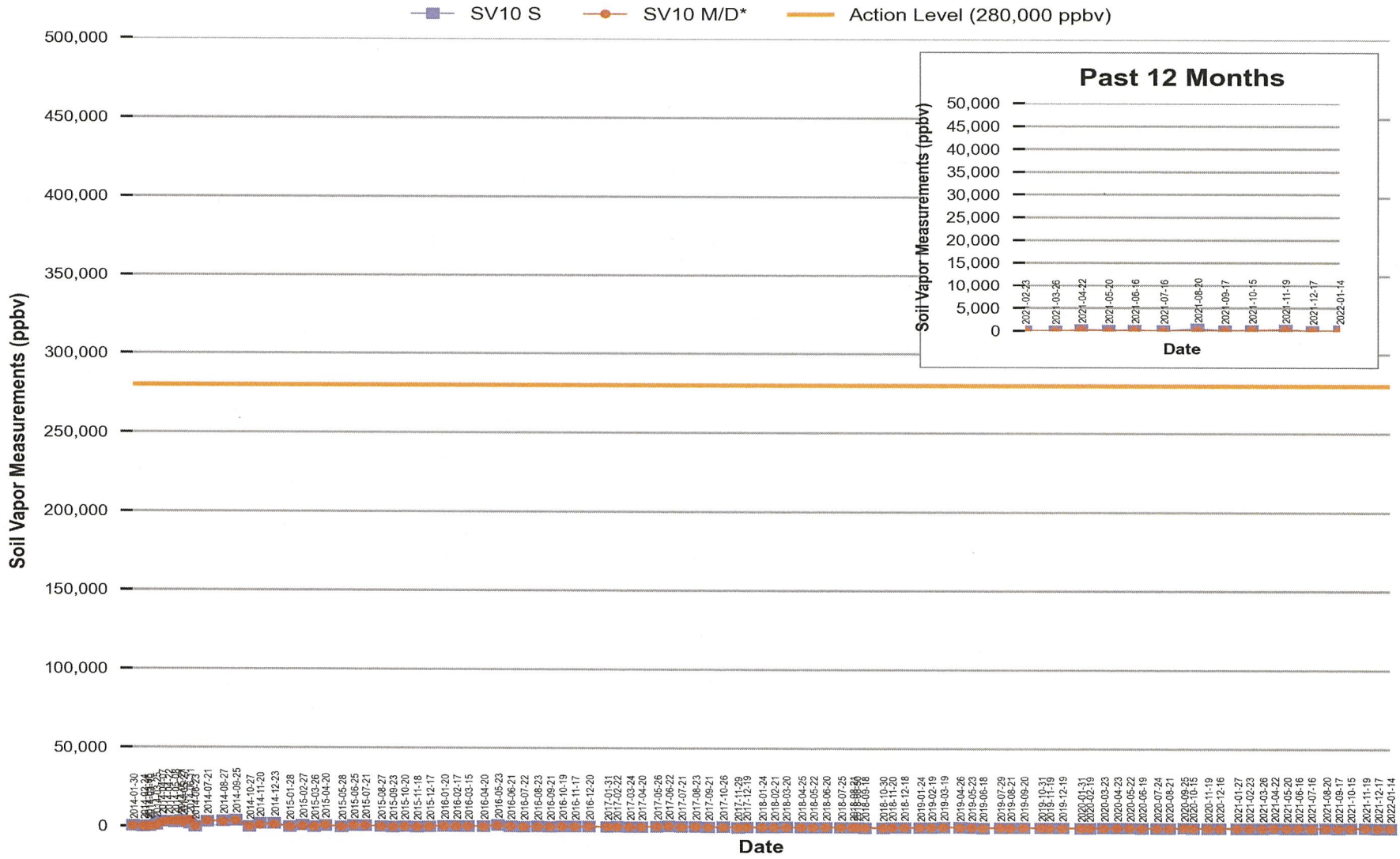


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

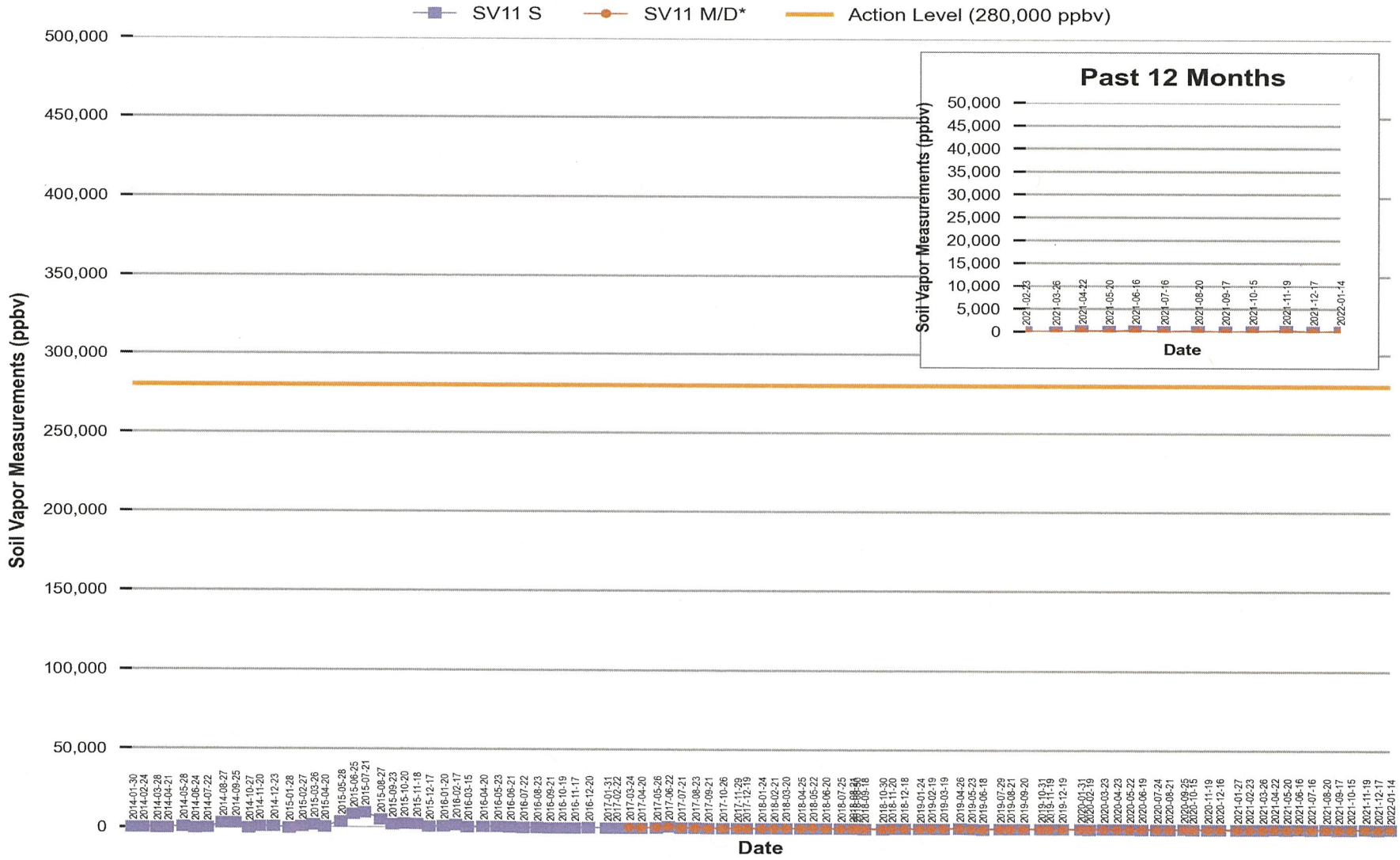


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

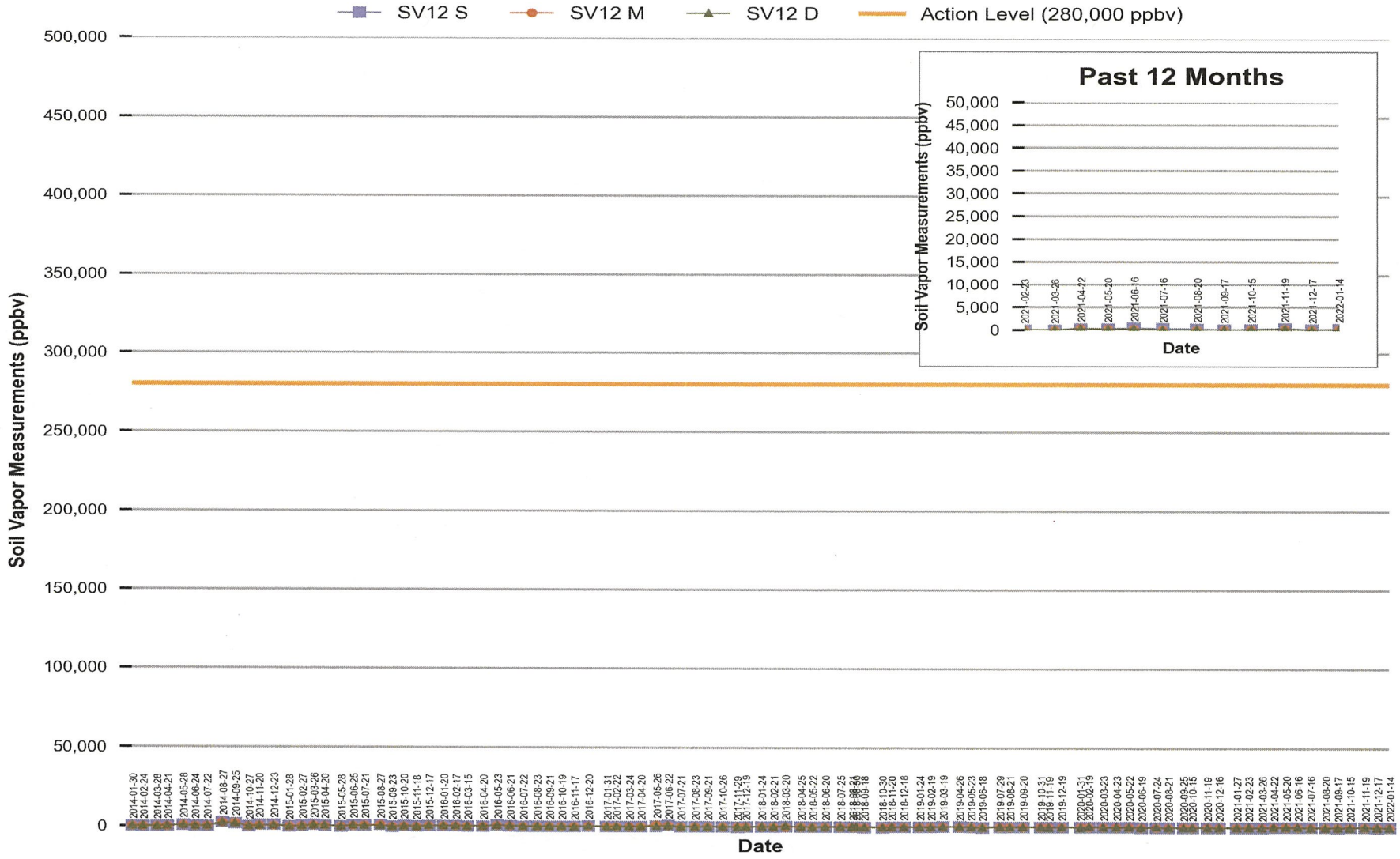


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

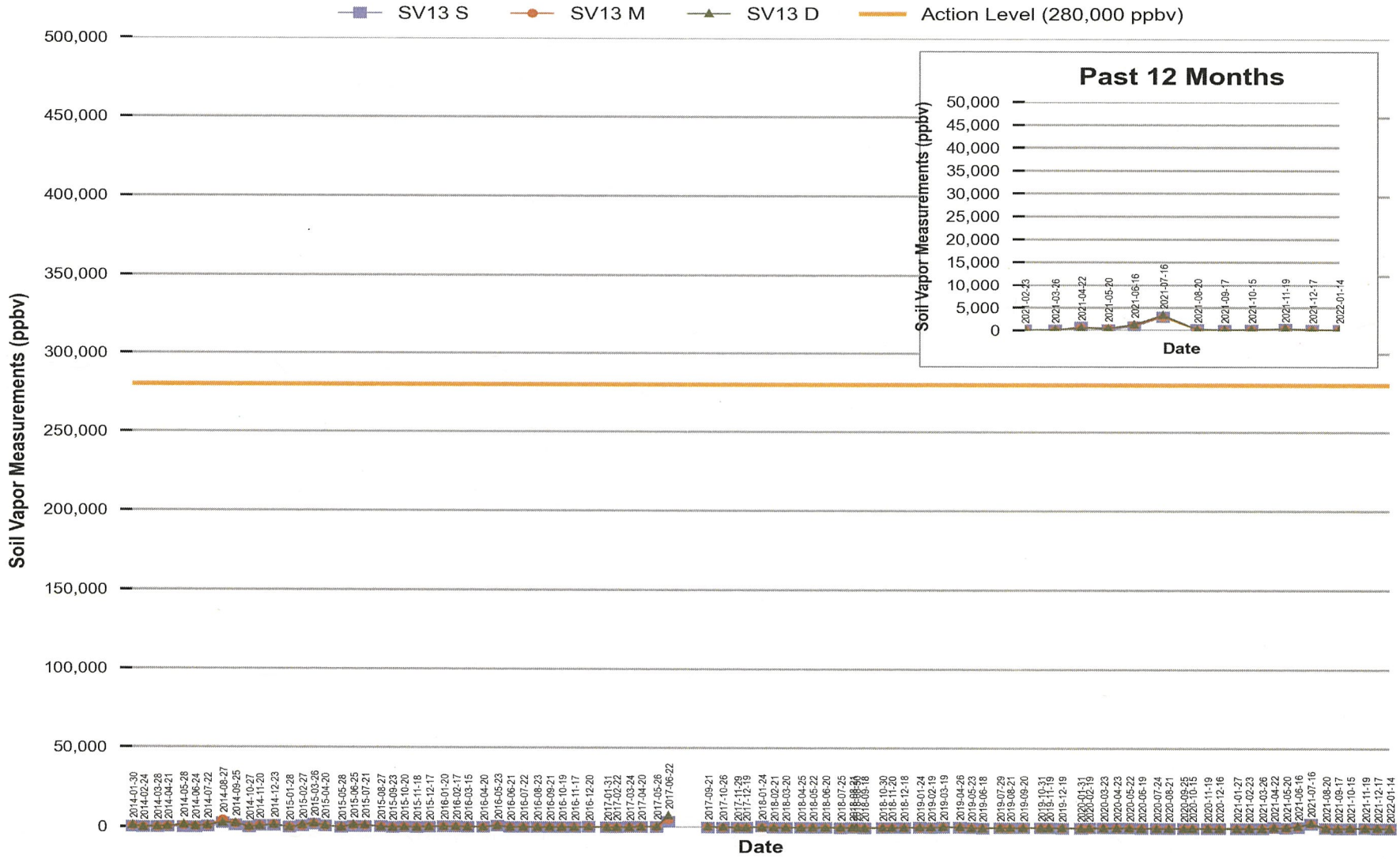


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)



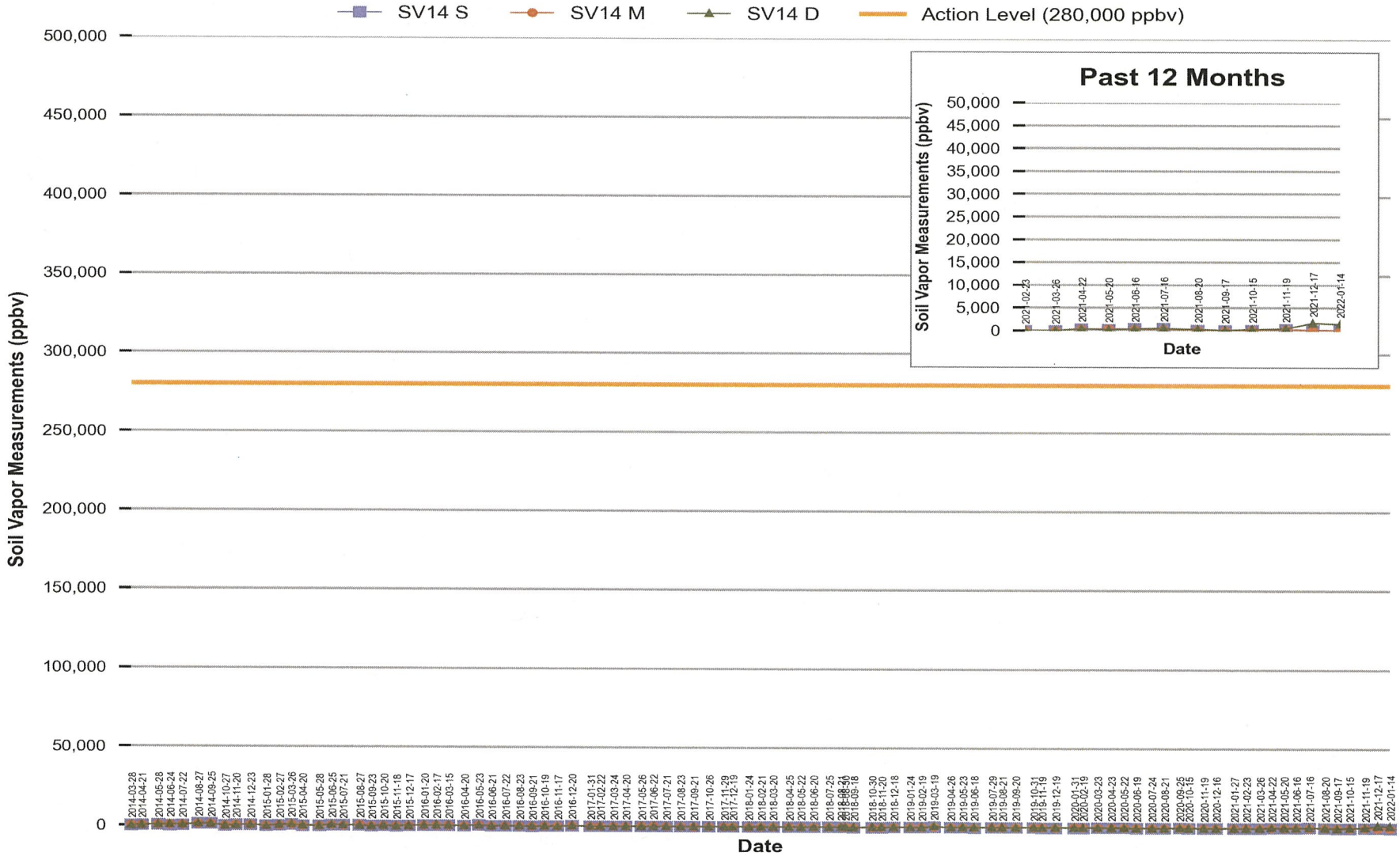
Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)



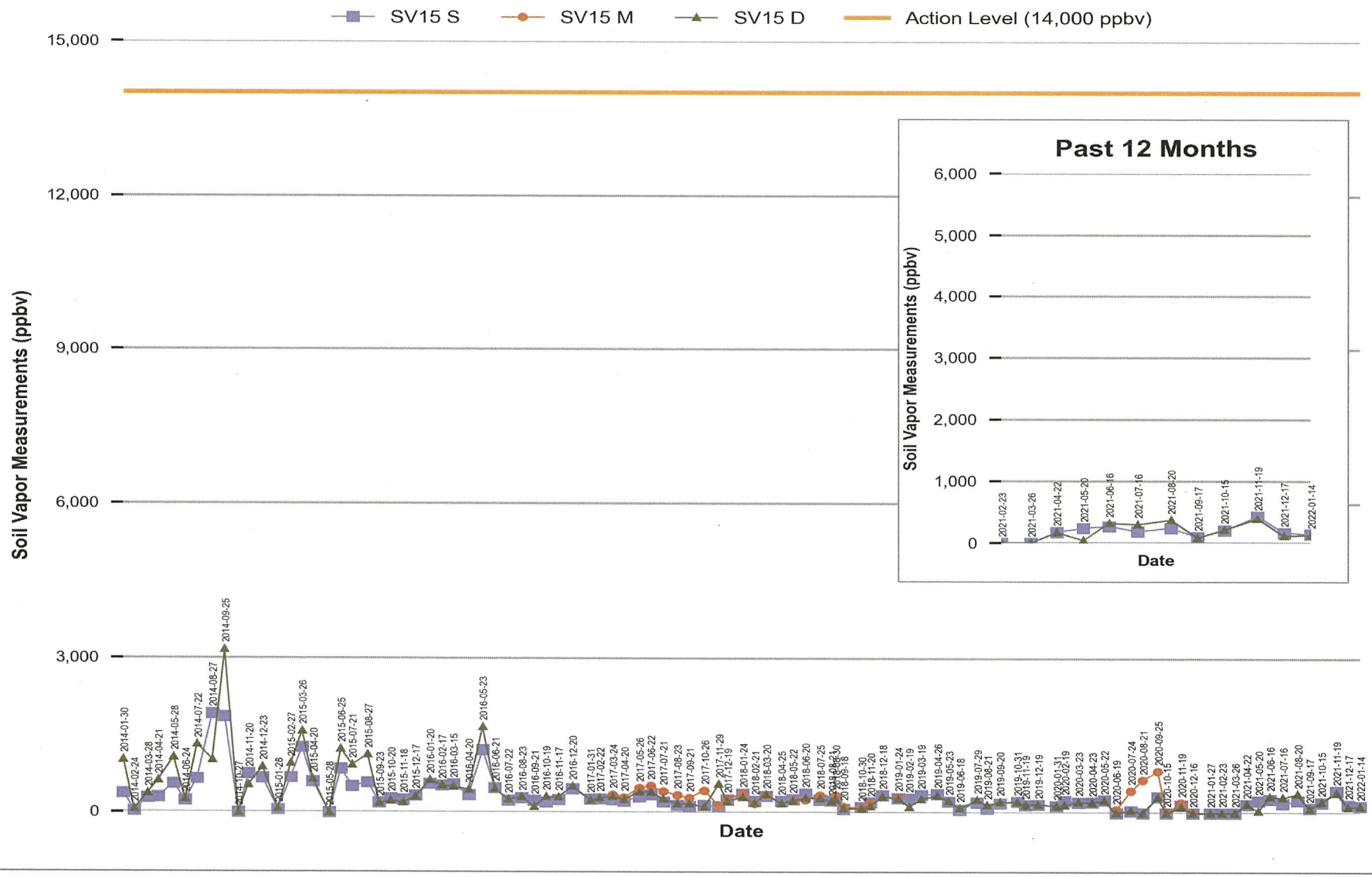
Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

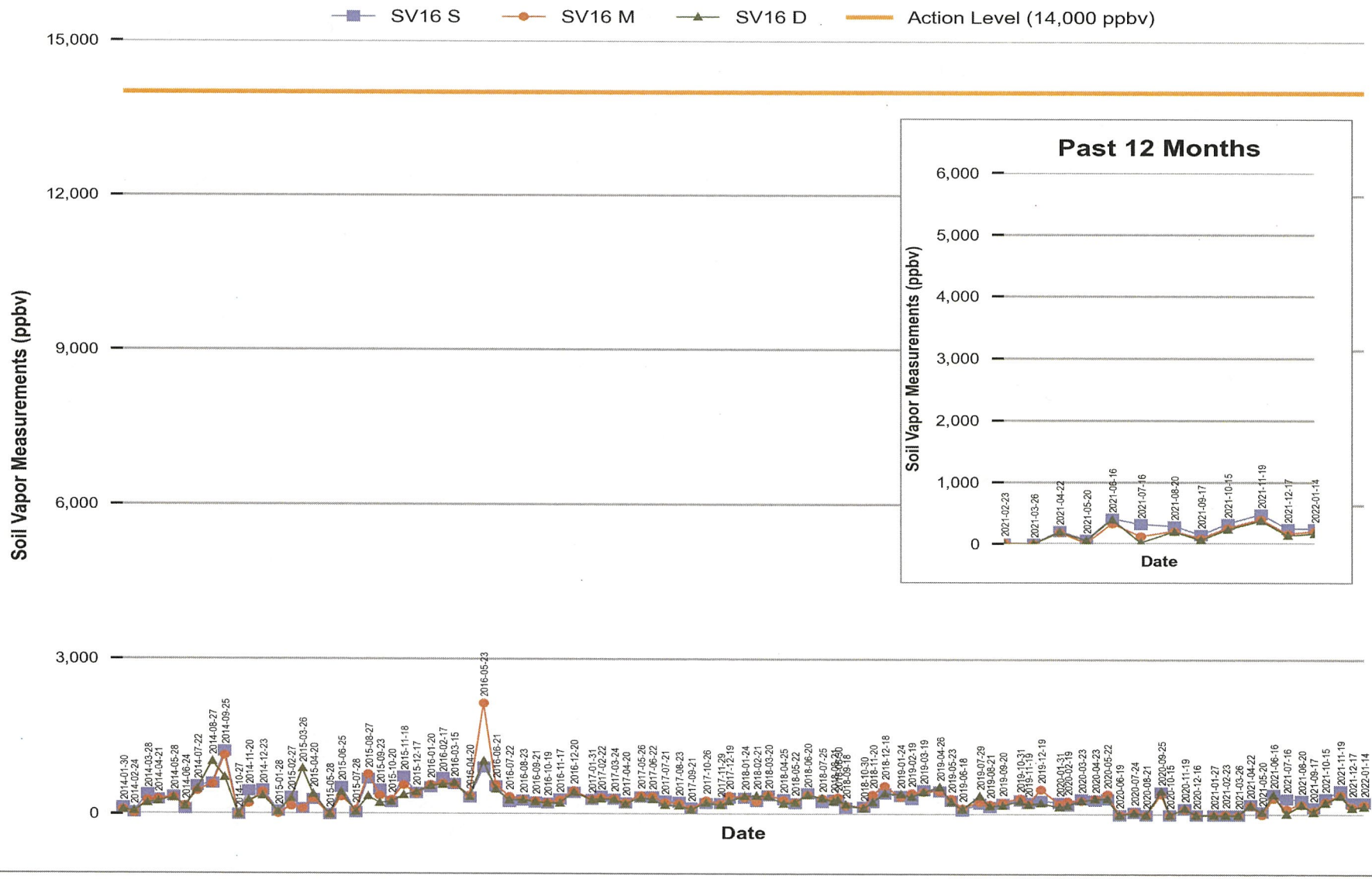


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)

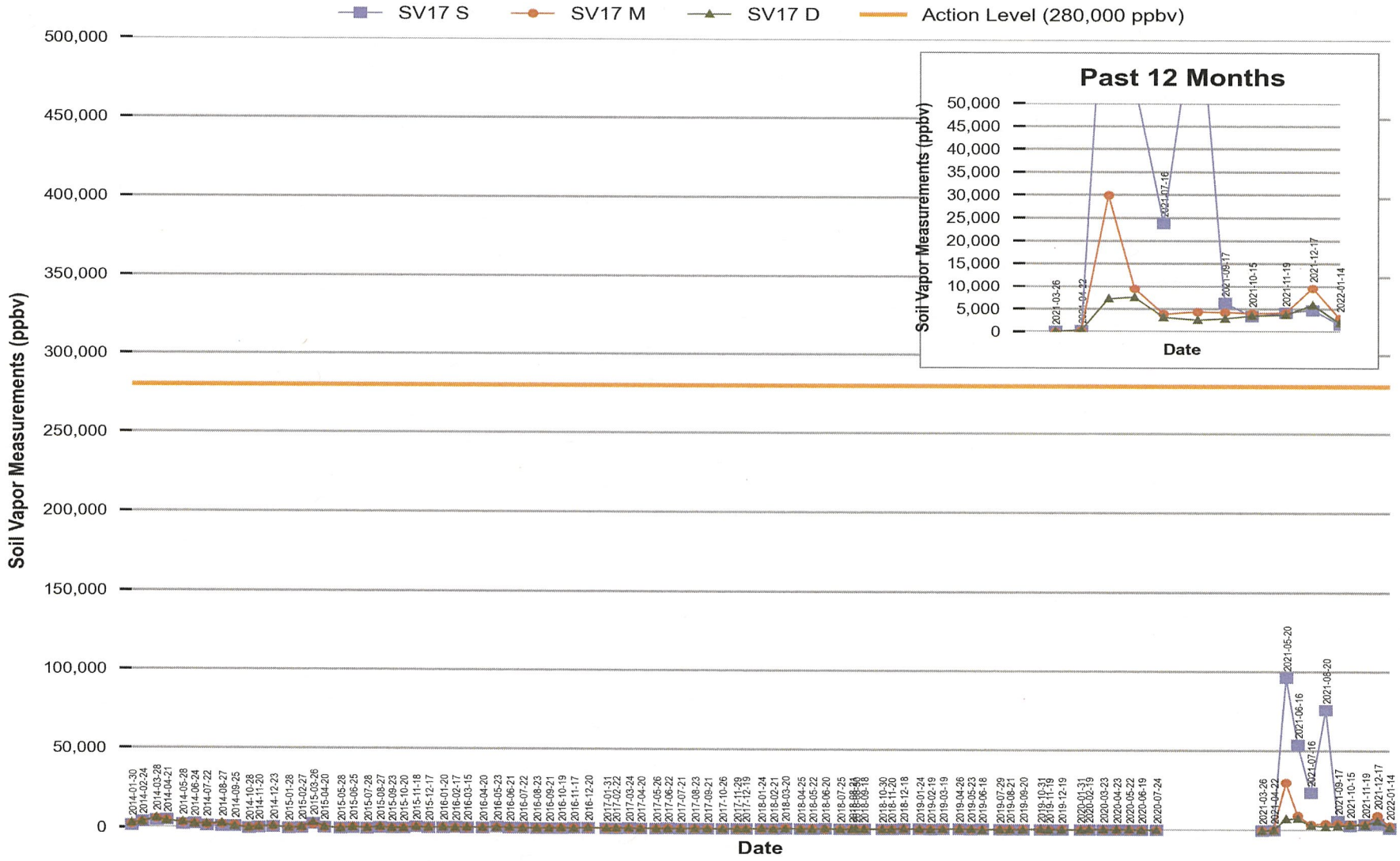


Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)



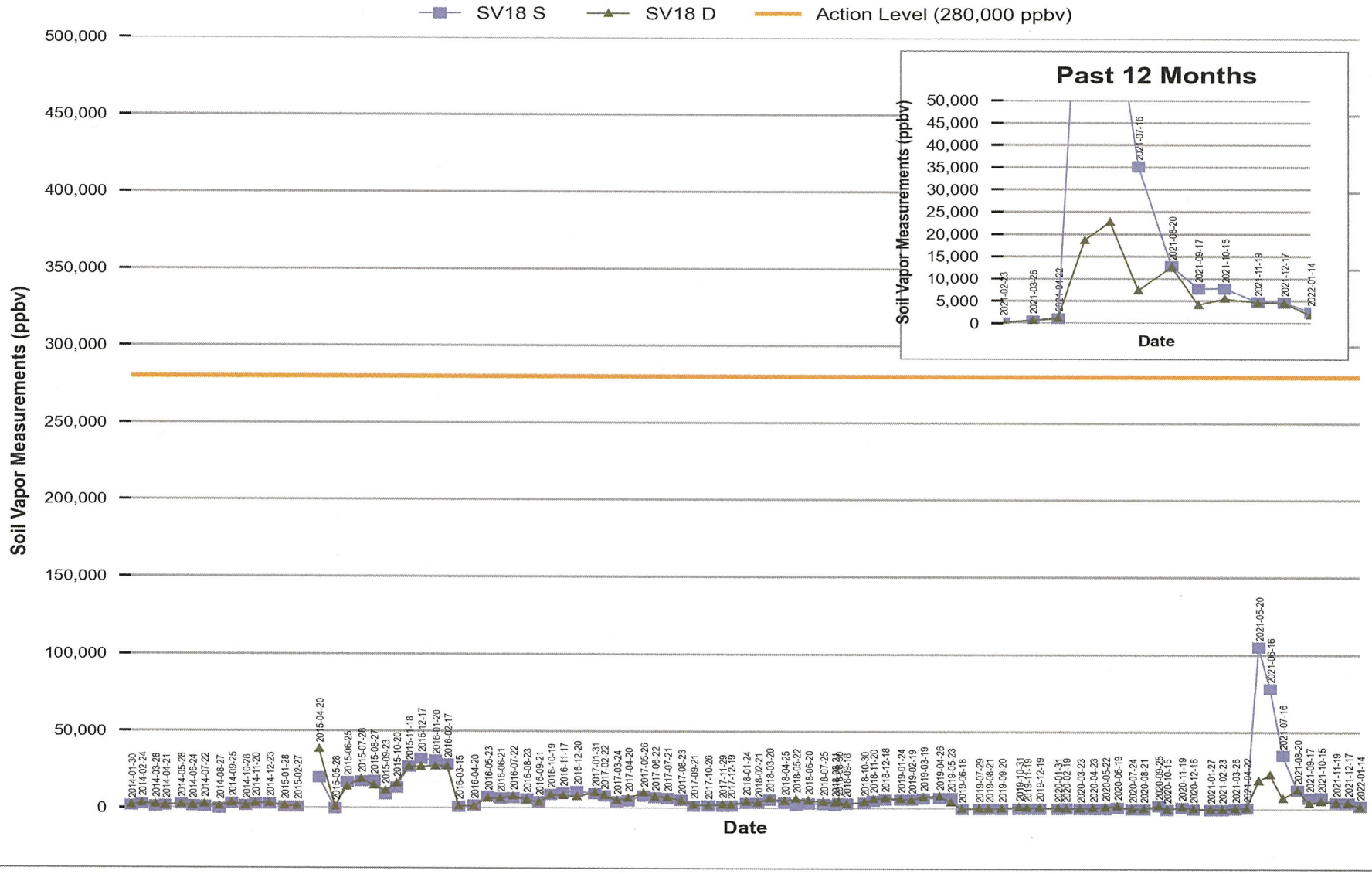
Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)



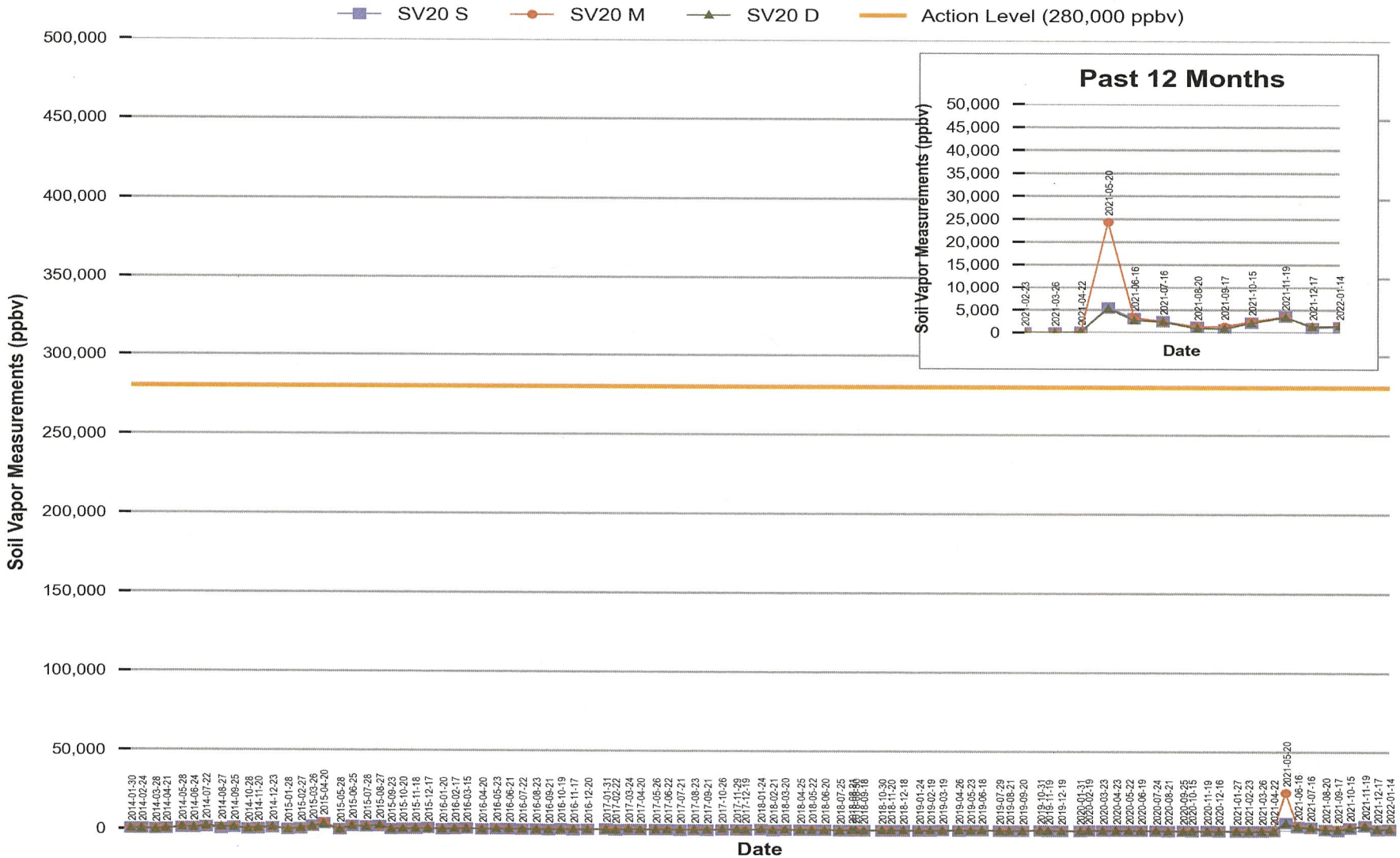
Notes (where applicable):
* "M/D" monitoring points were constructed to screen both middle & deep depth intervals along the respective underground storage tank.

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 Jan 2022)



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