

APR 22 2019



**DEPARTMENT OF THE NAVY**

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

5090  
Ser N45/0499  
April 17, 2019

**CERTIFIED NO: 7016 0910 0001 0891 7185**

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

Dear Mr. Takaba:

SUBJECT: RED HILL TANK COMPLEX  
SOIL VAPOR SAMPLING RESULTS FOR MARCH 2019  
DOH FACILITY ID NO. 9-102271  
DOH RELEASE ID NO. 990051, 010011, 020028, AND 140010

Soil vapor samples were collected from beneath all active and accessible Red Hill tanks on March 19, 2019.

Soil vapor VOC concentrations were measured in the field using a photo-ionization detector. The soil vapor sampling results are being submitted as Enclosure 1.

A conservative approach is to assess the integrity of the associated tank system if VOC concentrations exceed 280,000 ppbv in soil vapor monitoring points (SVMPs) beneath tanks containing JP-5 or JP-8, or 14,000 ppbv in SVMPs beneath tanks containing marine diesel fuel. These values are 50 percent of the calculated vapor concentration from fuel-saturated water.

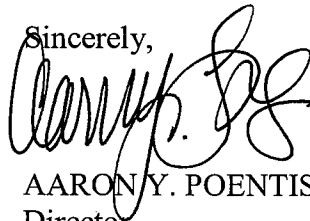
At Tank 5, the concentrations of VOCs detected in the front, middle, and outer edge soil vapor monitoring probes were 56,640 ppbv, 13,280 ppbv, and 1,979 ppbv, respectively. Tank 5 was emptied in January 2014 and has not contained fuel since that time. VOC concentrations in all down-gradient soil vapor monitors were below 775 ppbv.

All other VOC concentrations measured in March were about 35 to 900 times below the action levels, with no consistent trends observed. NAVSUP FLC Pearl Harbor Causative Research Report is submitted as Enclosure 2. Possible reasons for the results are speculative and may include, but not be limited to, ongoing projects in the tunnel, groundwater level fluctuations, rainfall (or lack thereof), bi-product of biodegradation, and fuel movement in the tanks and piping.

5090  
Ser N45/0499  
April 17, 2019

Soil vapor VOC concentration trends will continue to be monitored. The next soil vapor sampling event is scheduled for April 2019, 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 Mr. Melvin Muraoka at (808) 471-3869.

Sincerely,  


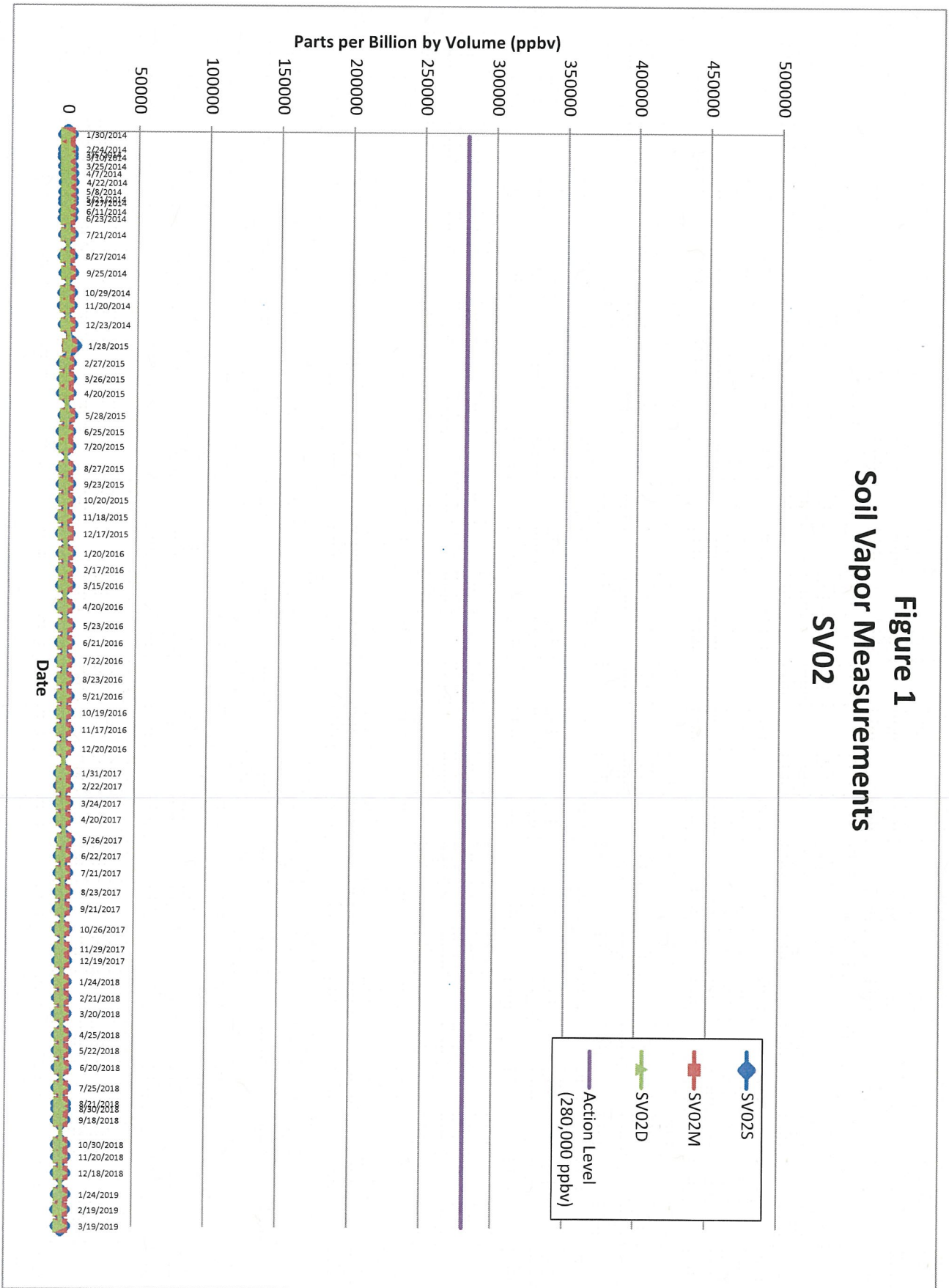
AARON Y. POENTIS  
Director  
Regional Environmental Department  
By direction of the  
Commander

- Enclosure: 1. Summary of Soil Vapor Sampling Results for Tanks 2 through 18 and 20 through March 2019 (18 pages)  
2. NAVSUP FLC Pearl Harbor Causative Research Report IRT Red Hill Soil Vapor Monitoring Report for March 2019

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

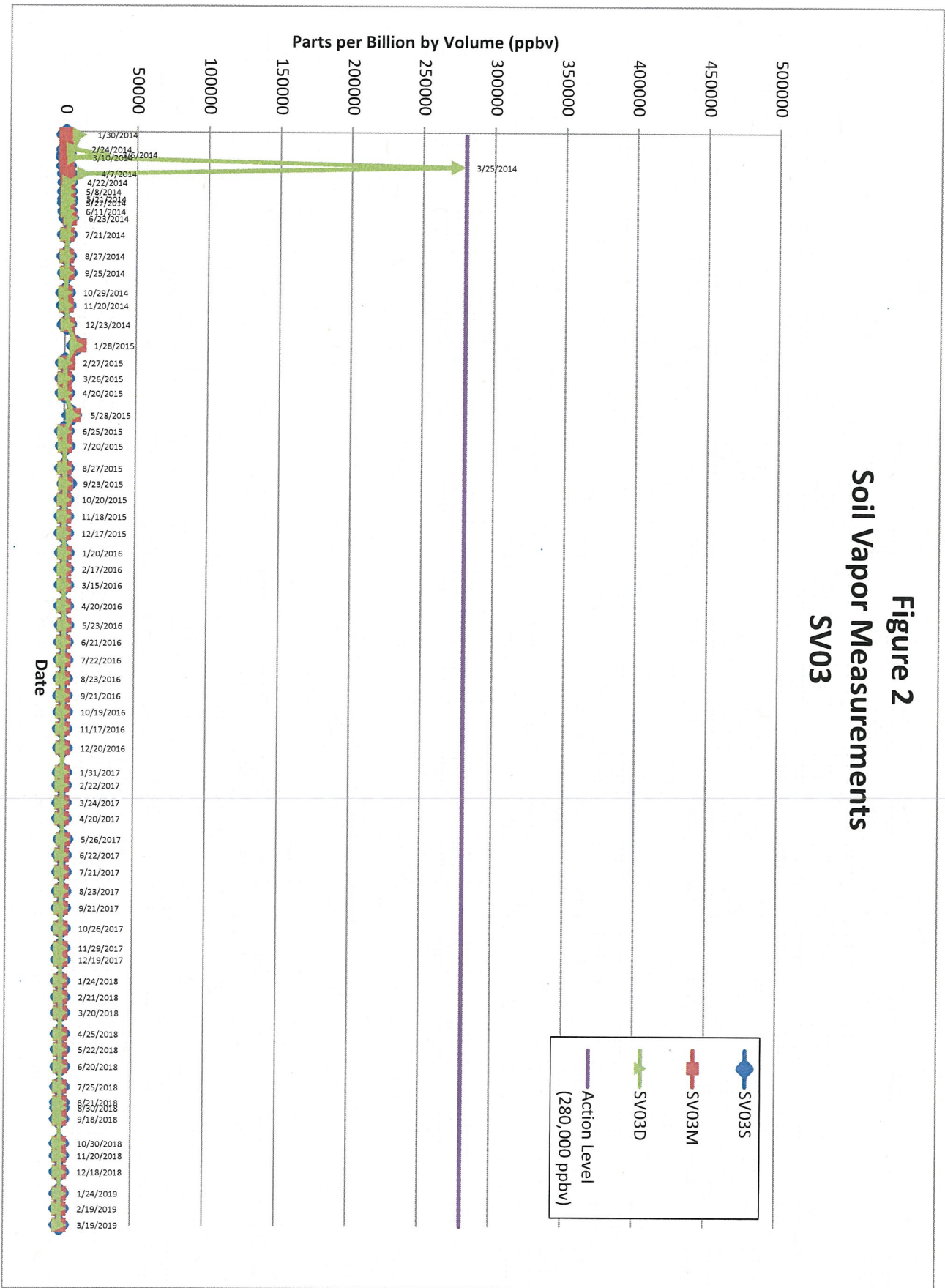
---

**Figure 1**  
**Soil Vapor Measurements**  
**SV02**



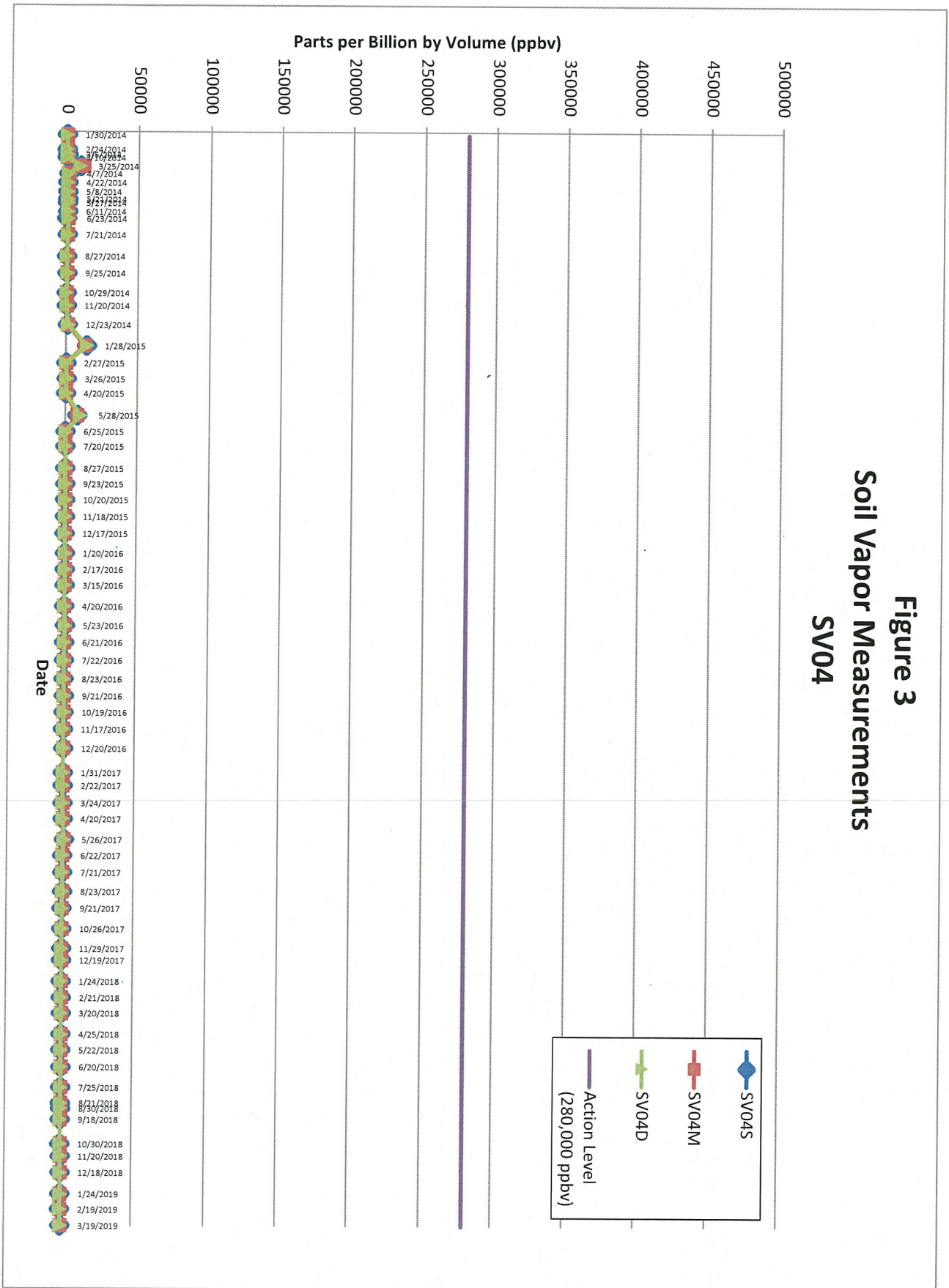
ENCLOSURE(1)

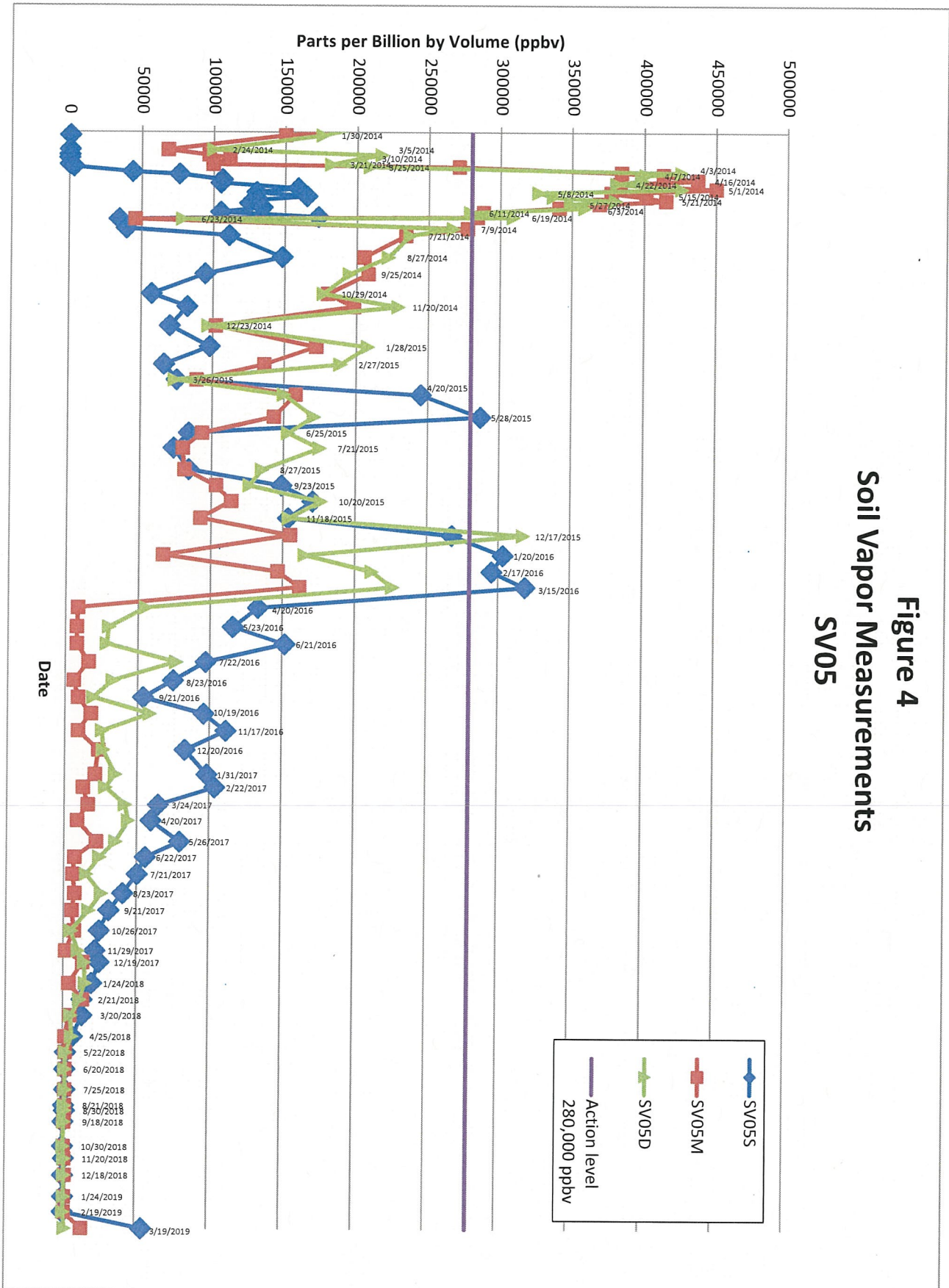
**Figure 2**  
**Soil Vapor Measurements**  
**SV03**





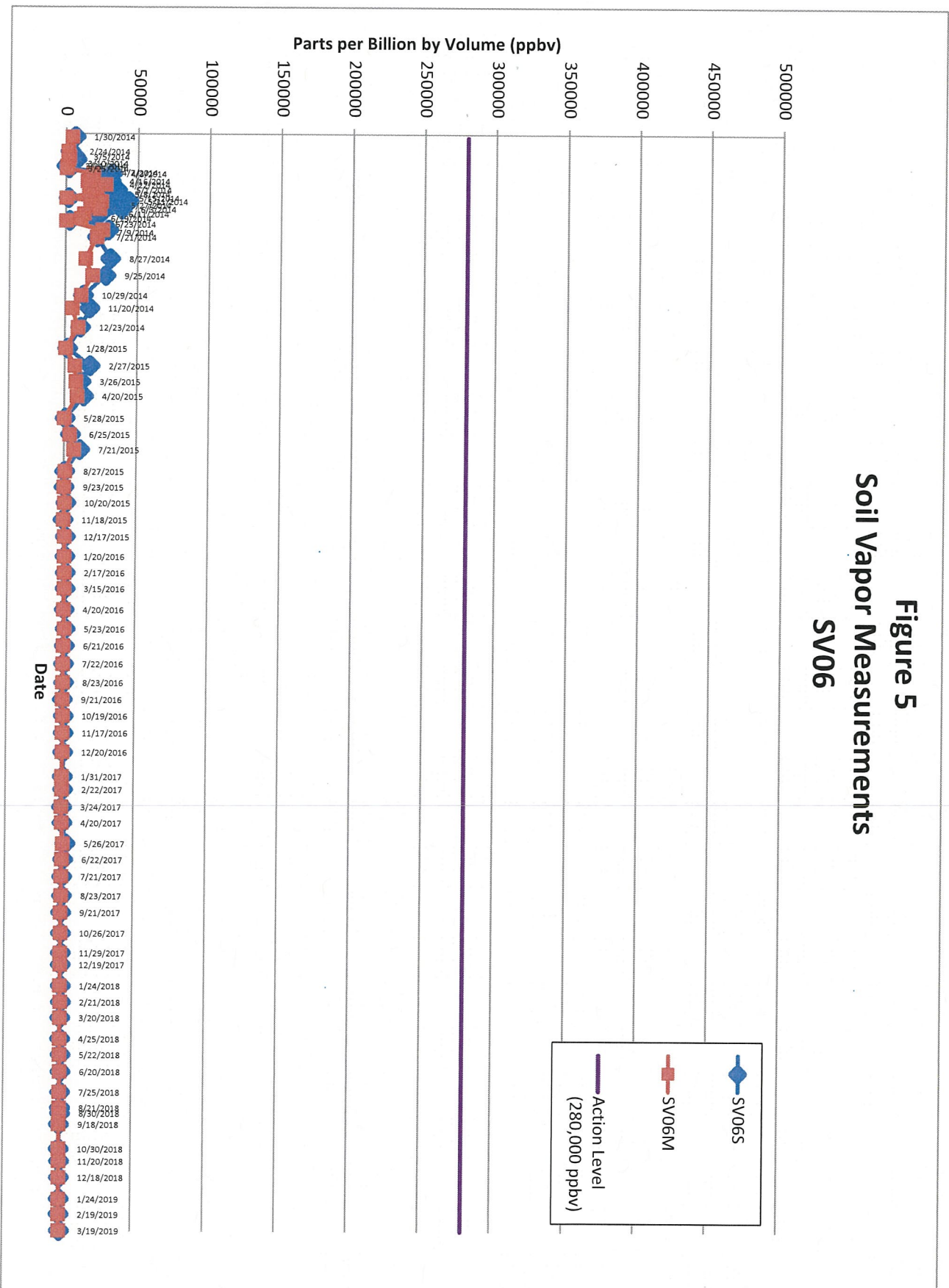
**Figure 3**  
**Soil Vapor Measurements**  
**SV04**



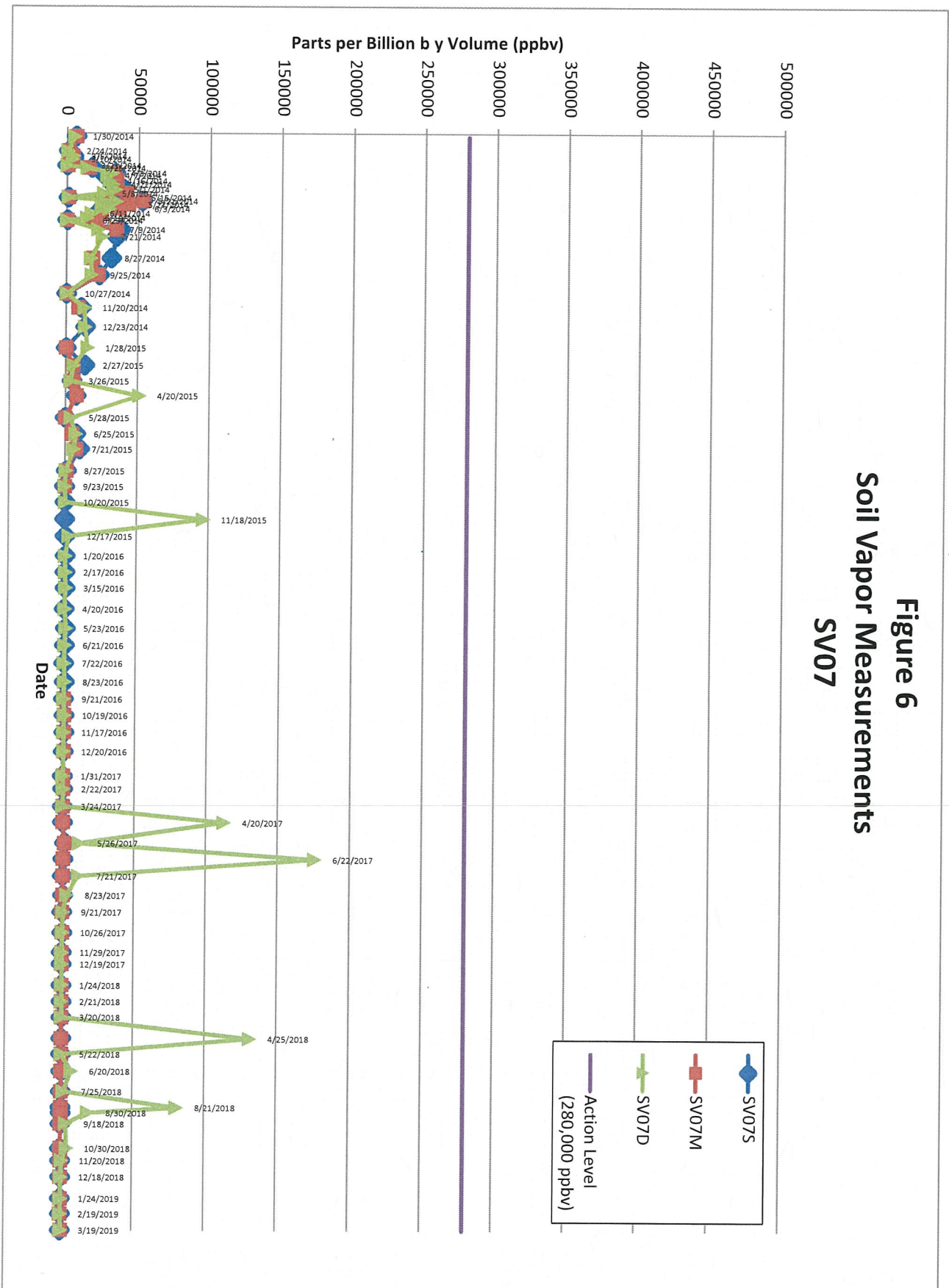


**Figure 4**  
**Soil Vapor Measurements**  
**SV05**

**Figure 5**  
**Soil Vapor Measurements**  
**SV06**

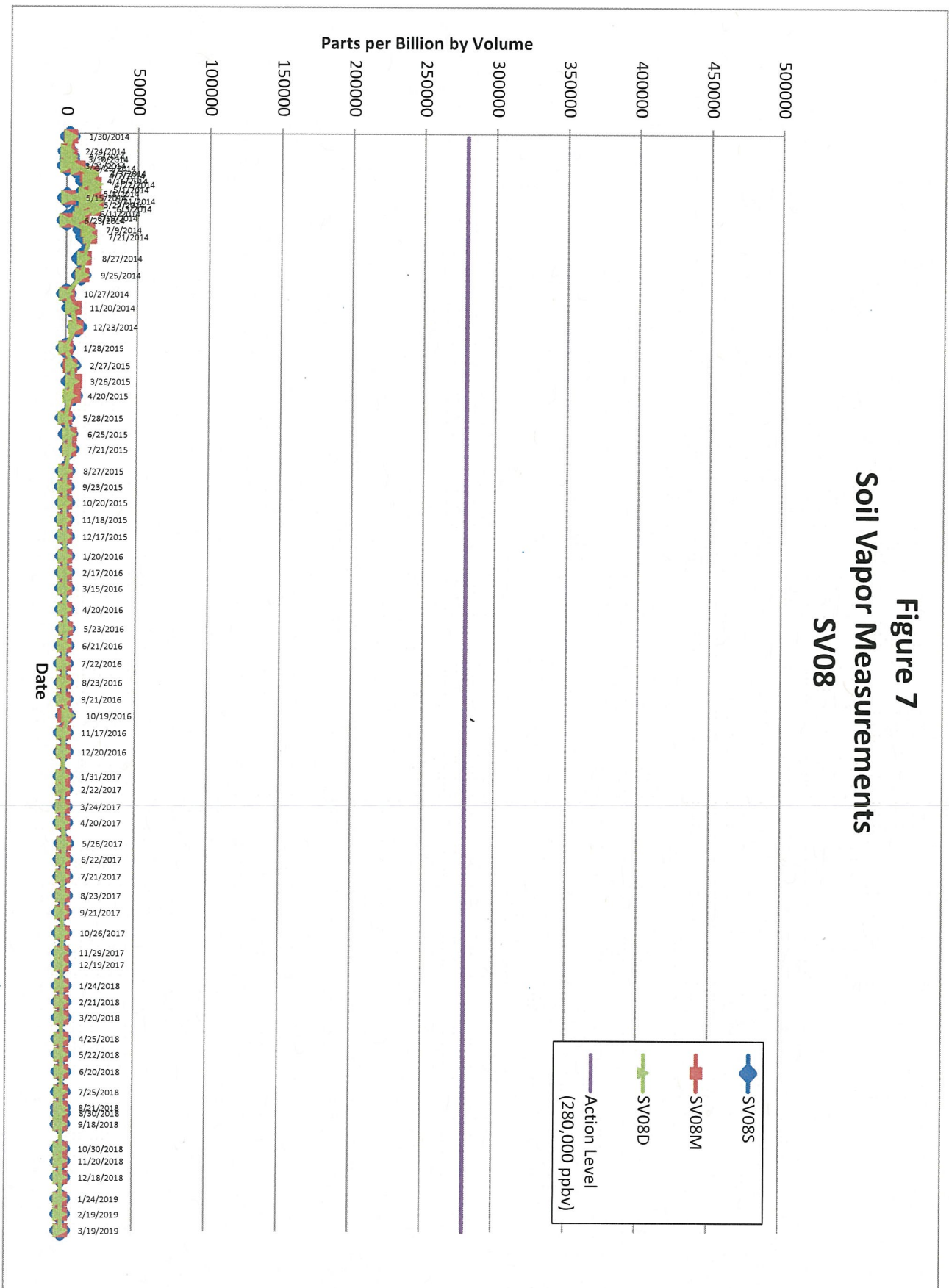


**Figure 6**  
**Soil Vapor Measurements**  
**SV07**

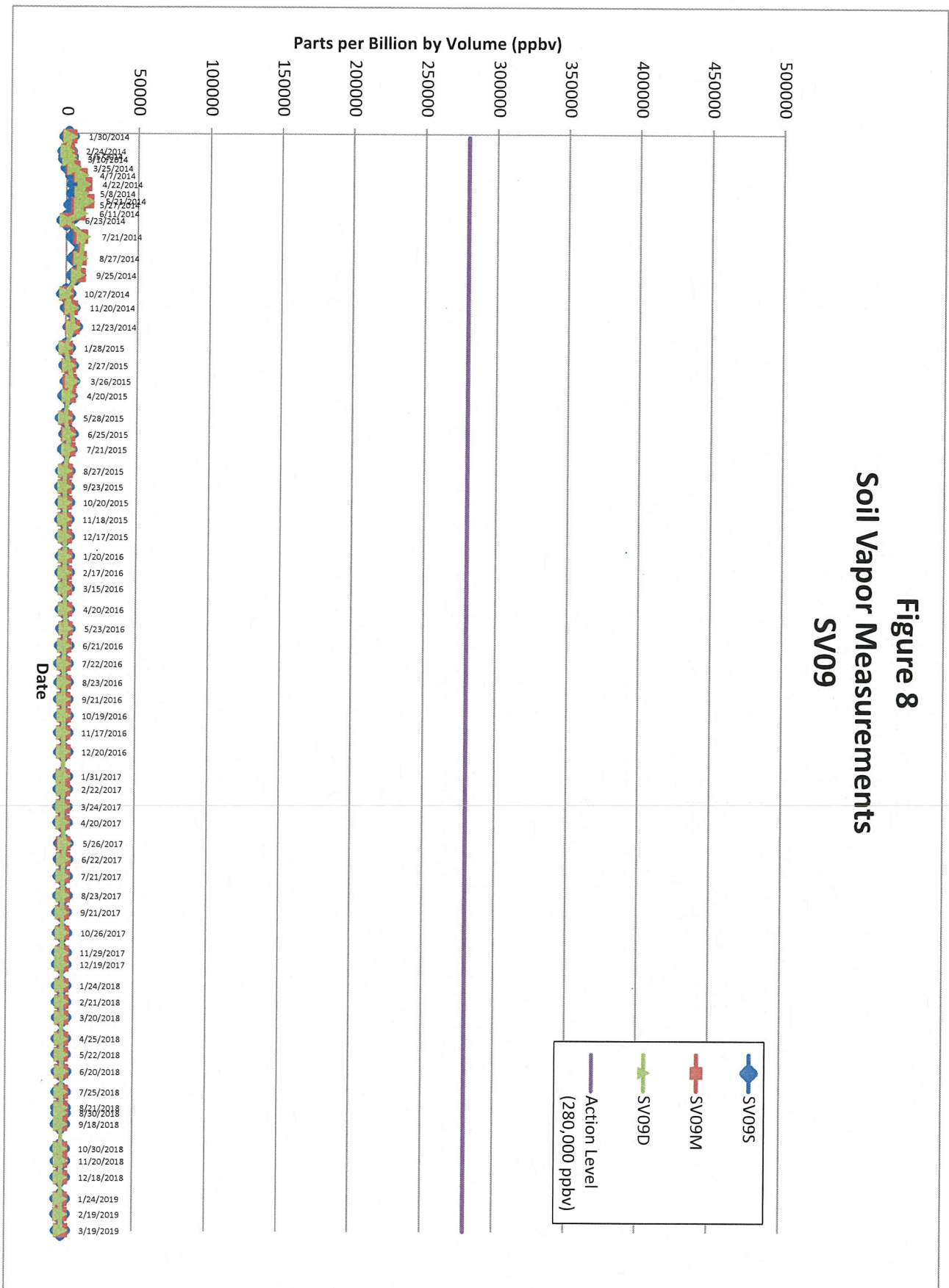




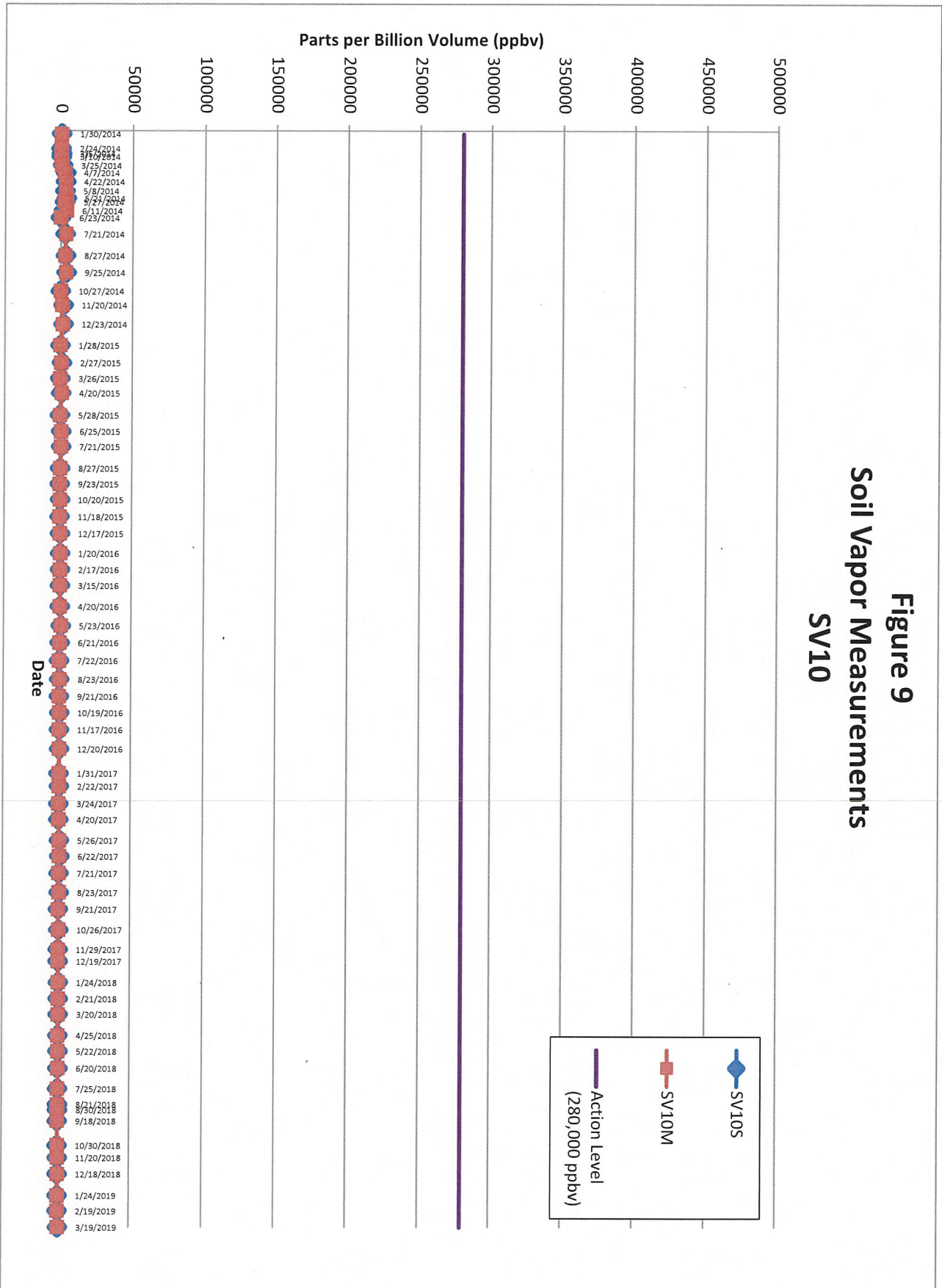
**Figure 7**  
**Soil Vapor Measurements**  
**SV08**



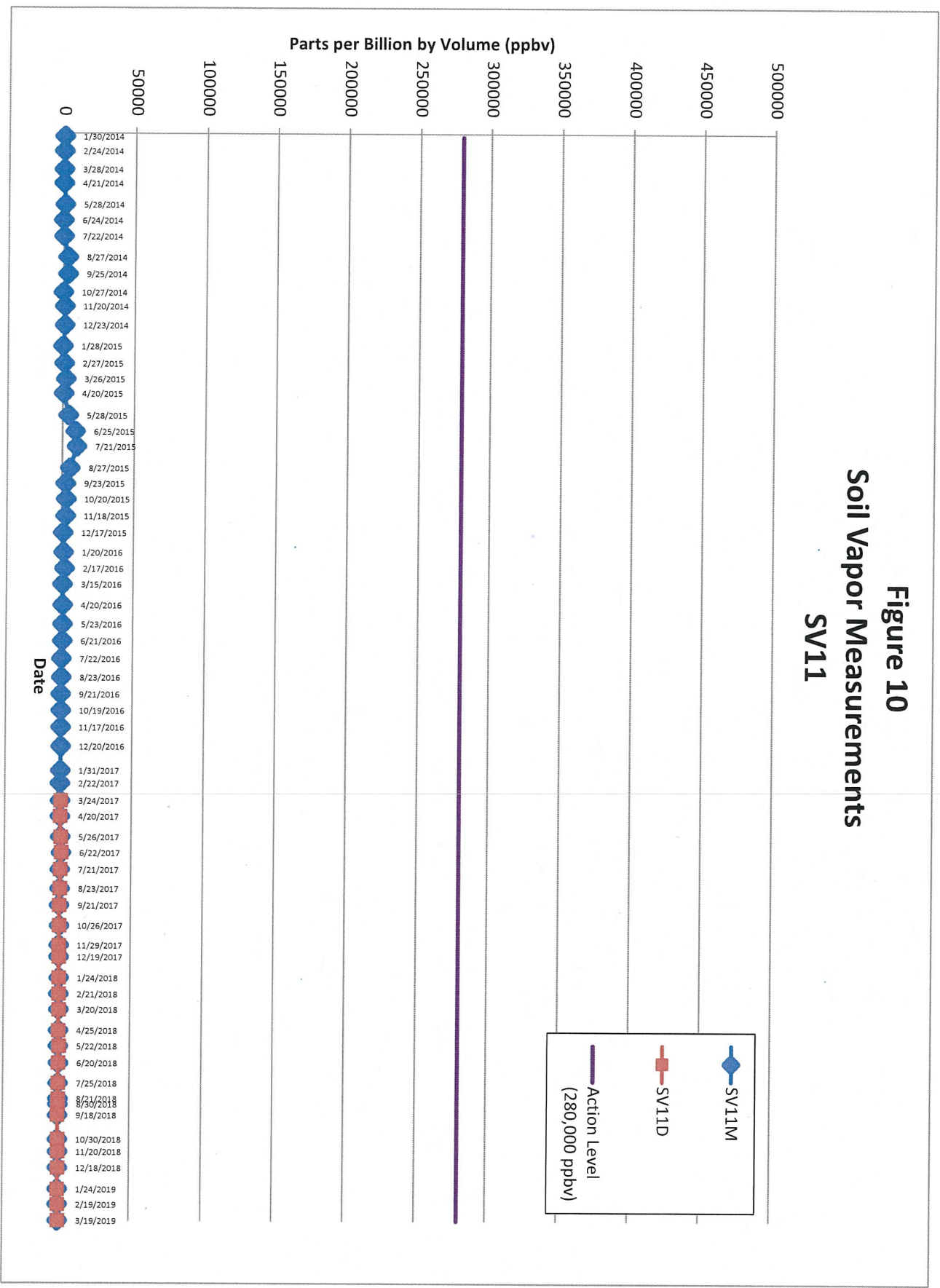
**Figure 8**  
**Soil Vapor Measurements**  
**SV09**



**Figure 9**  
**Soil Vapor Measurements**  
**SV10**

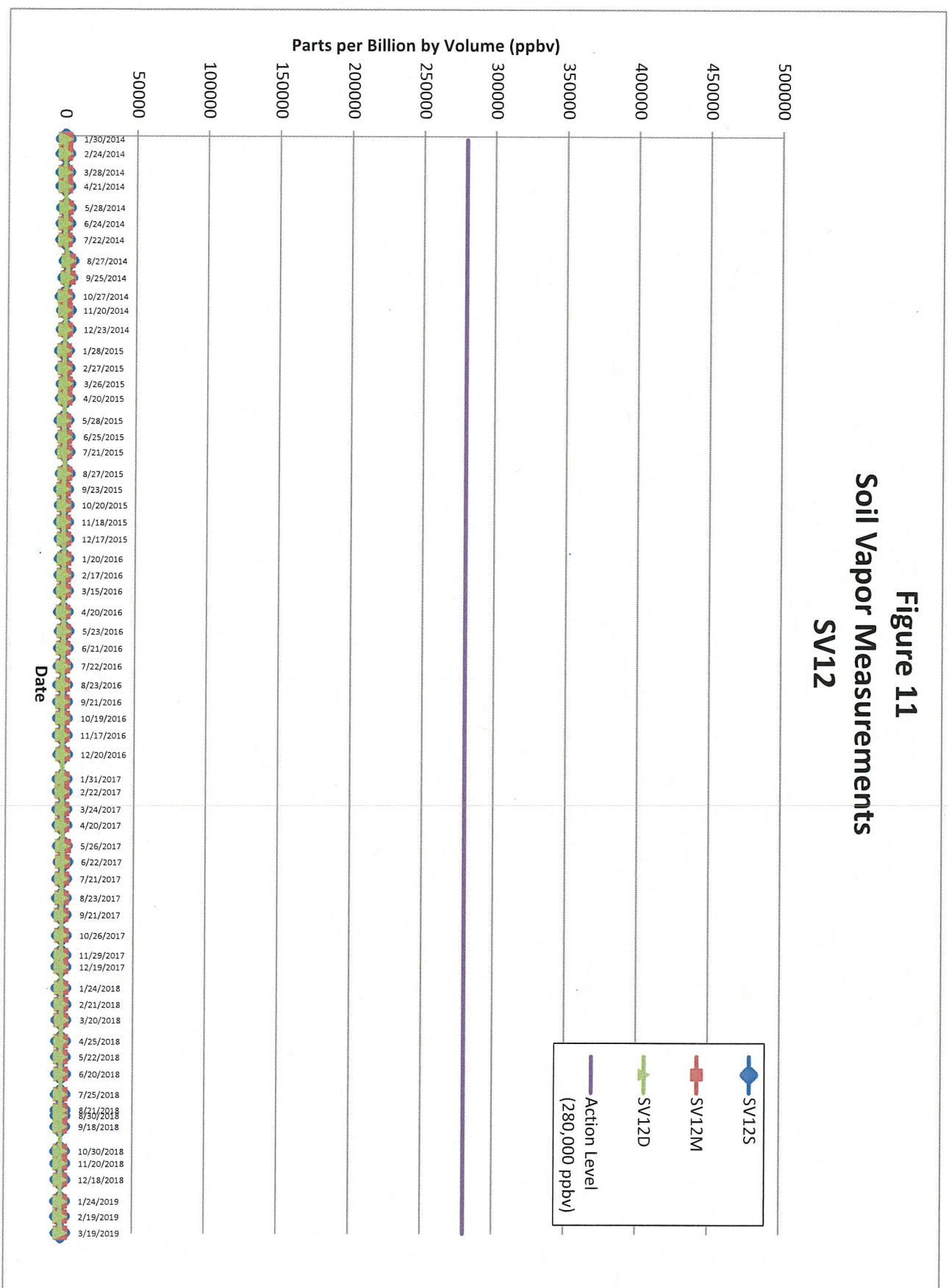


**Figure 10**  
**Soil Vapor Measurements**  
**SV11**

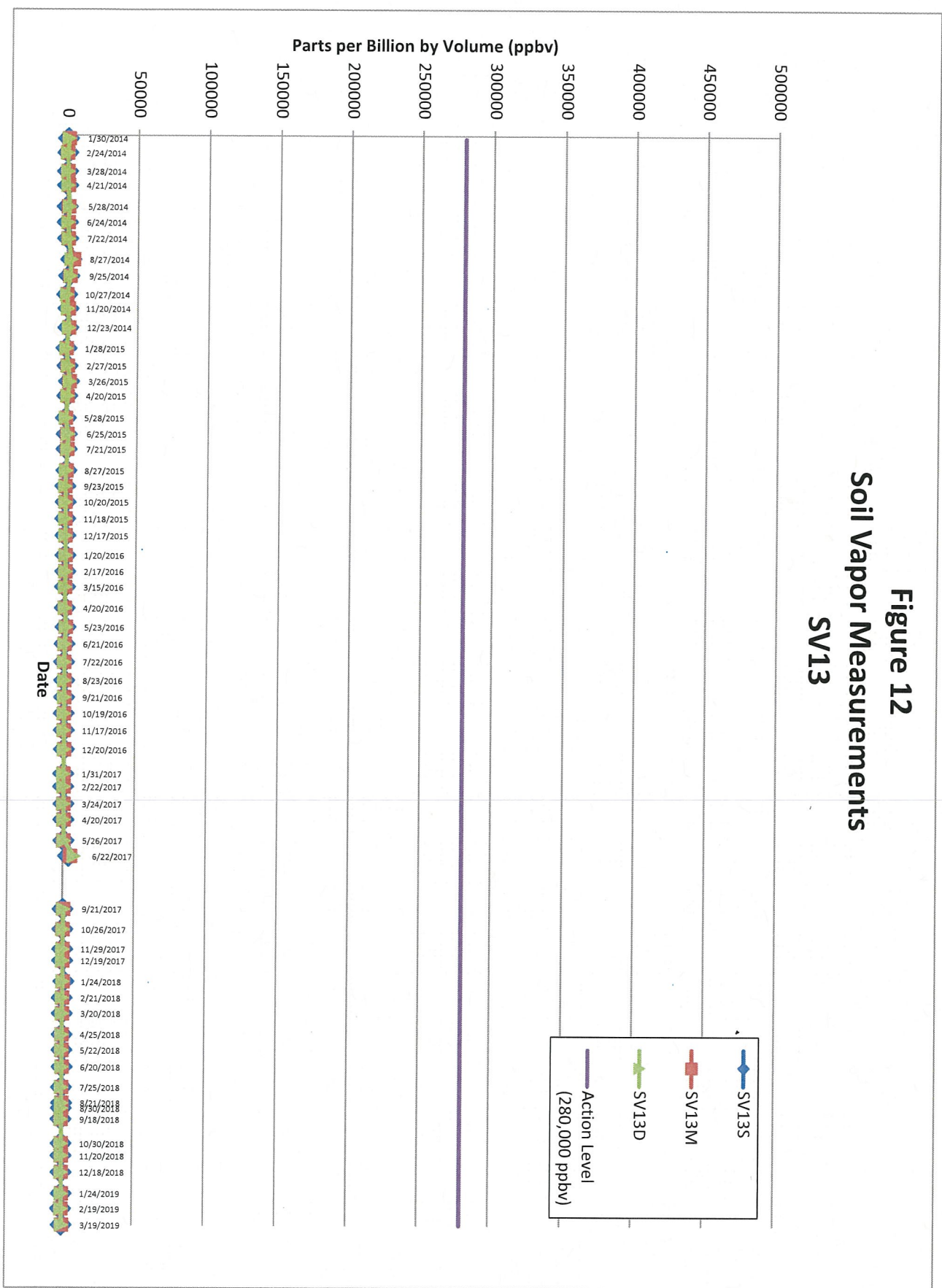




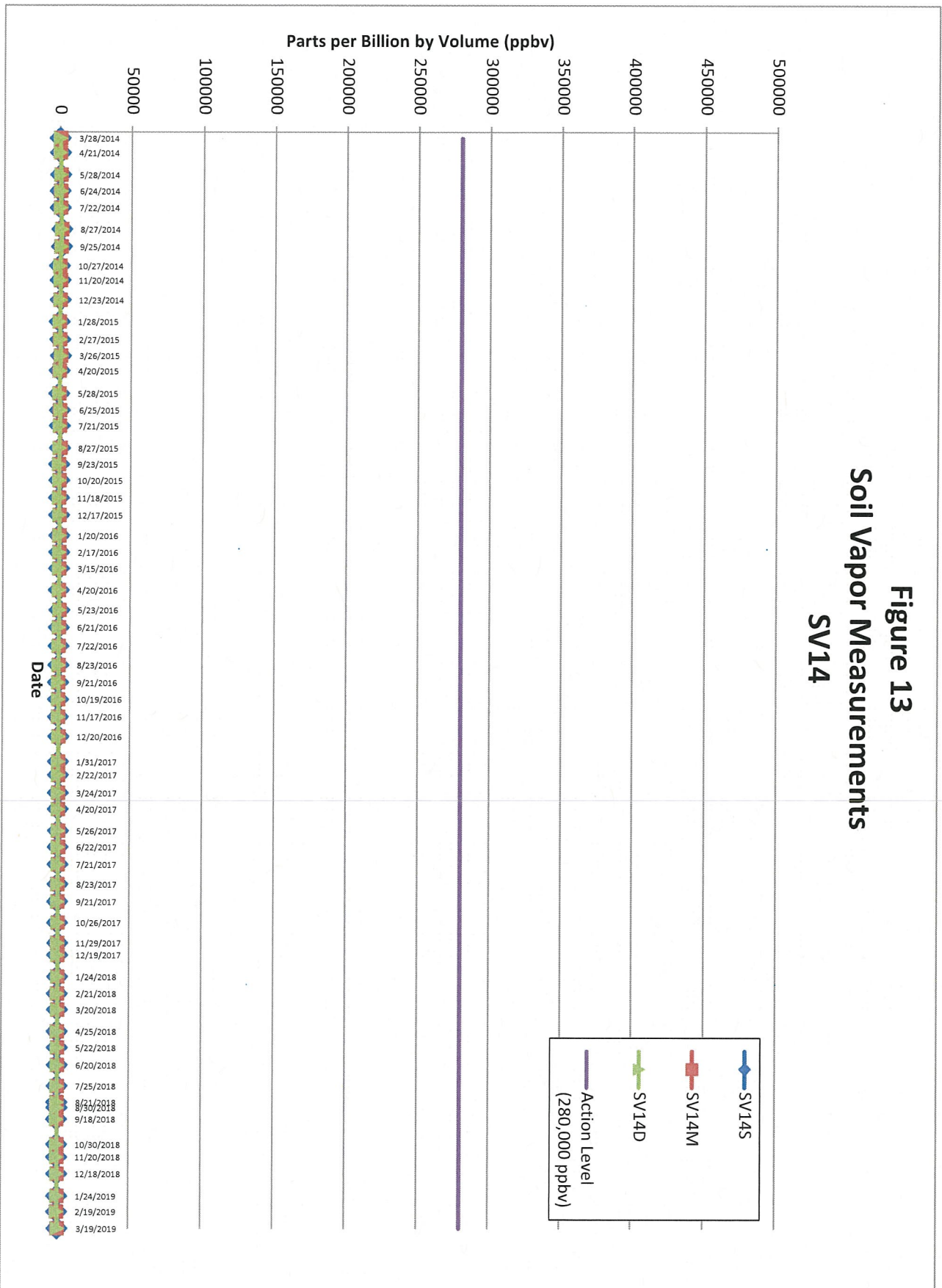
**Figure 11**  
**Soil Vapor Measurements**  
**SV12**



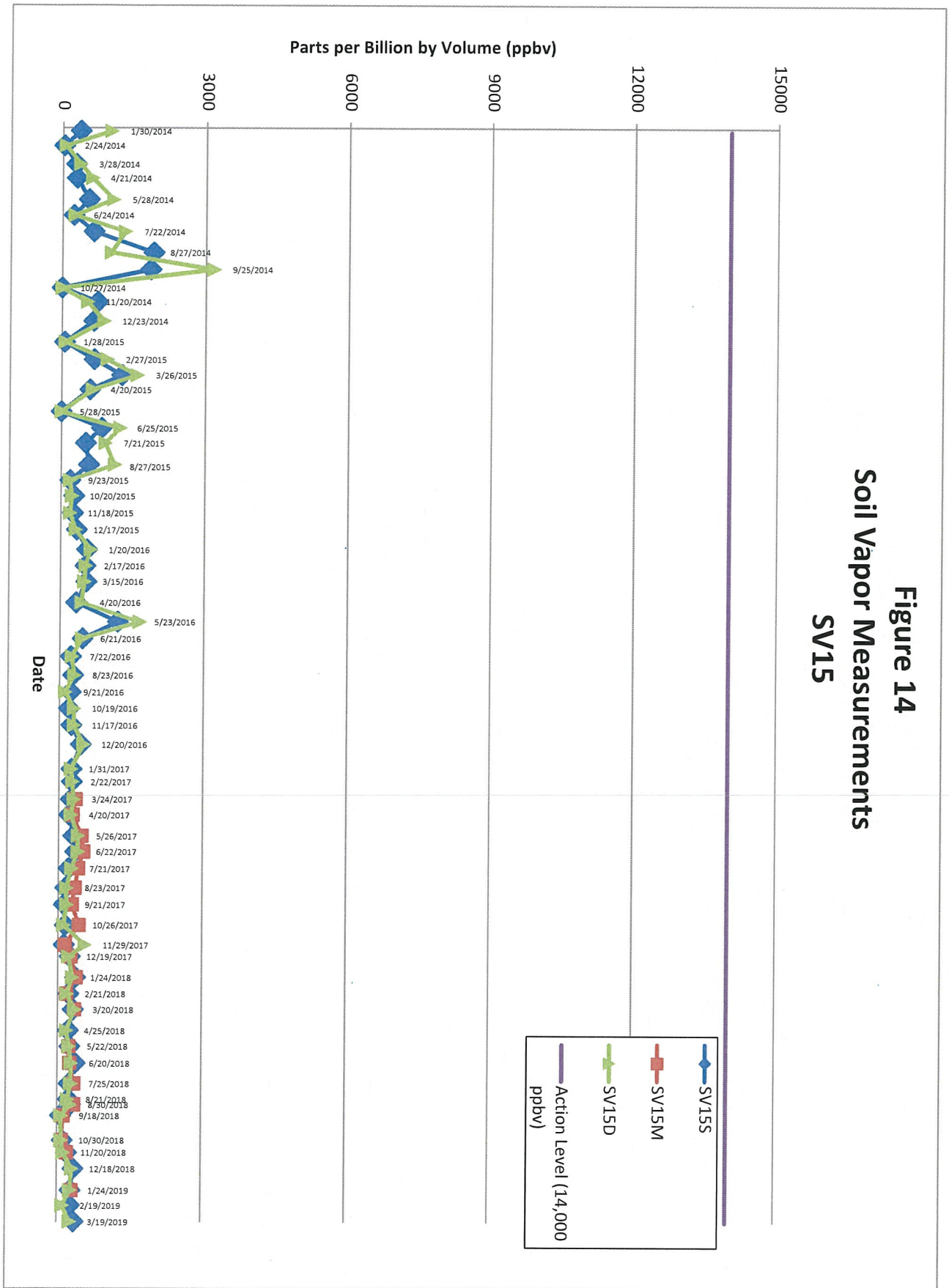
**Figure 12**  
**Soil Vapor Measurements**  
**SV13**



**Figure 13**  
**Soil Vapor Measurements**  
**SV14**

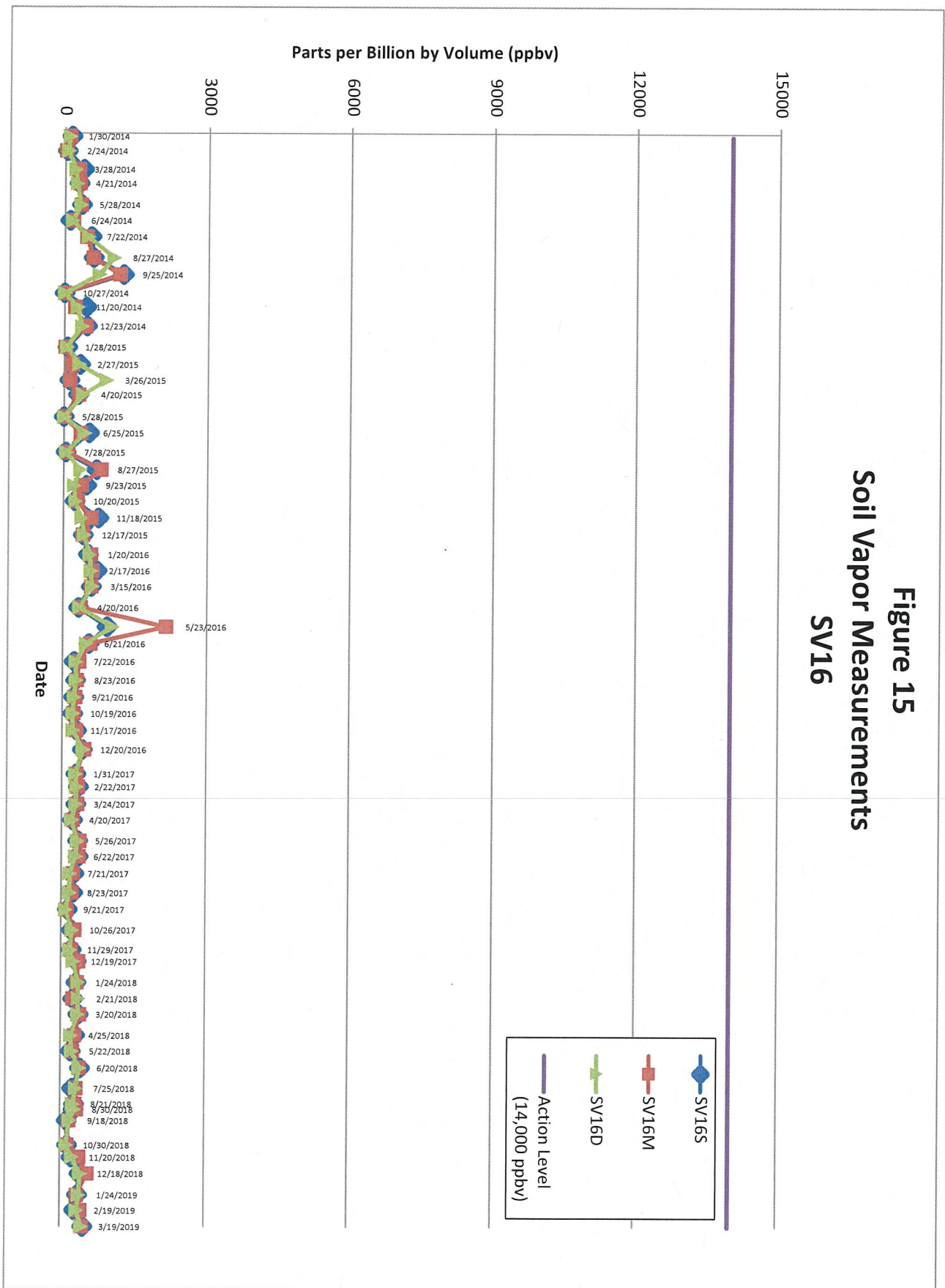


**Figure 14**  
**Soil Vapor Measurements**  
**SV15**

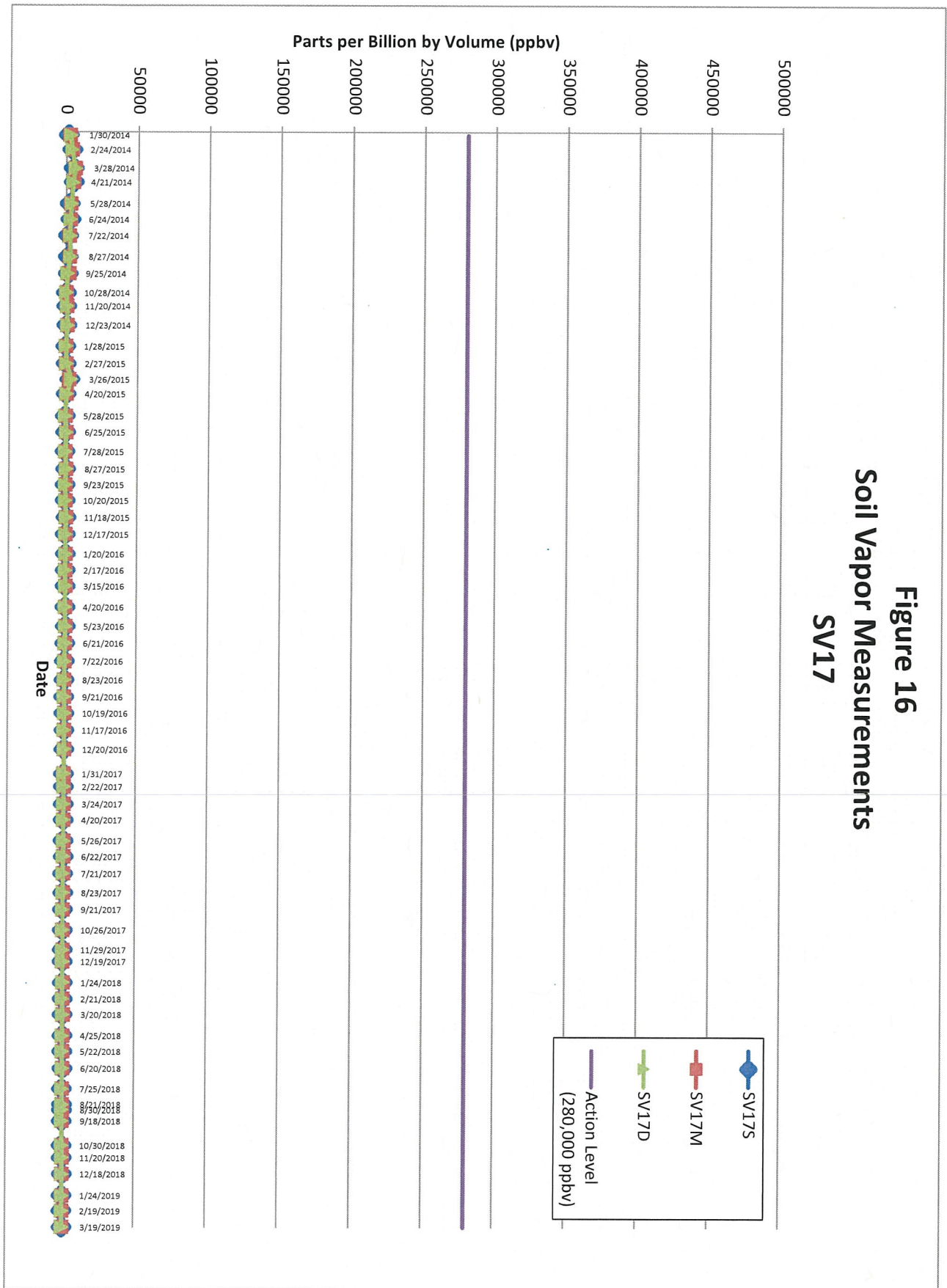




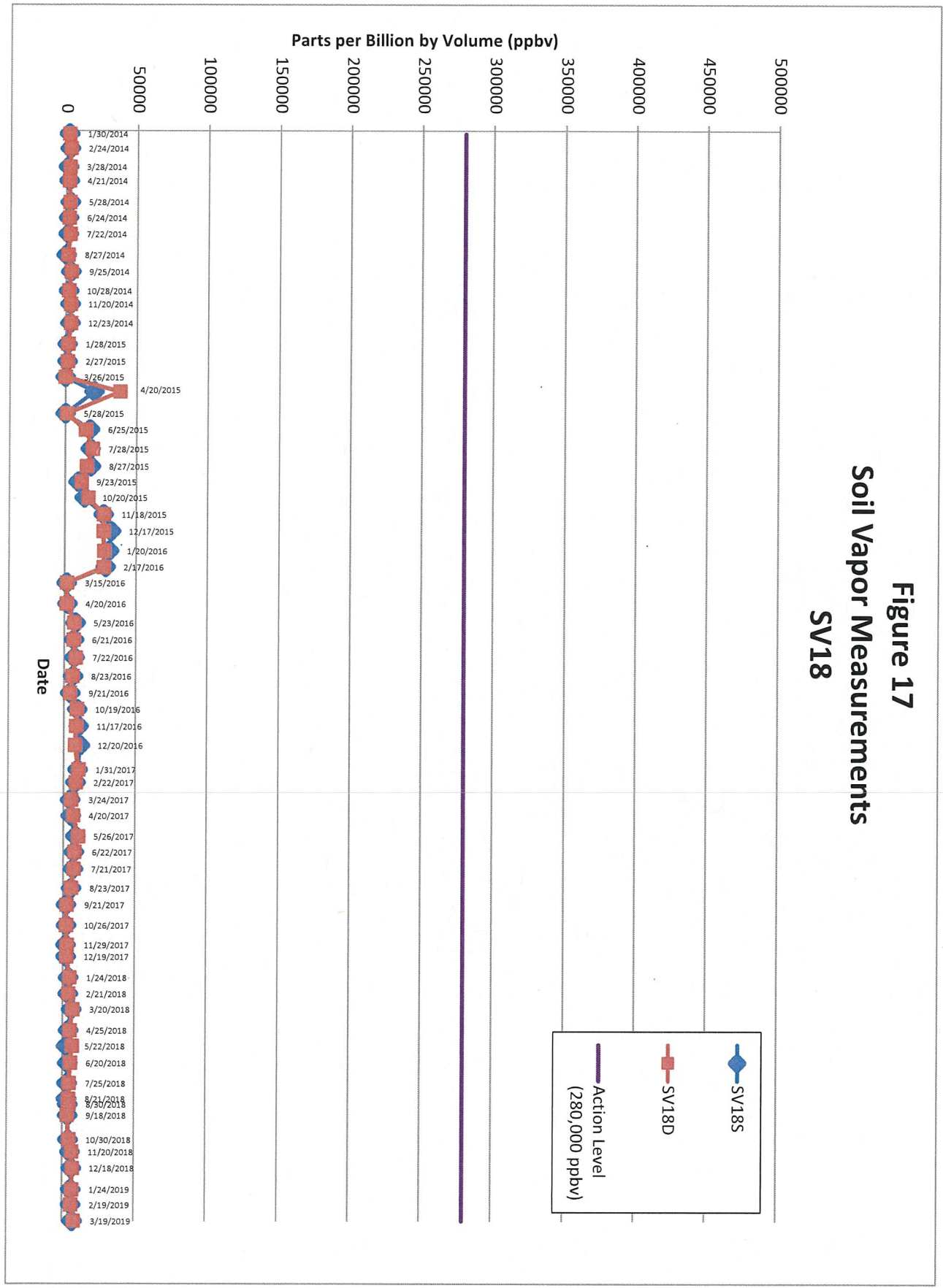
**Figure 15**  
**Soil Vapor Measurements**  
**SV16**



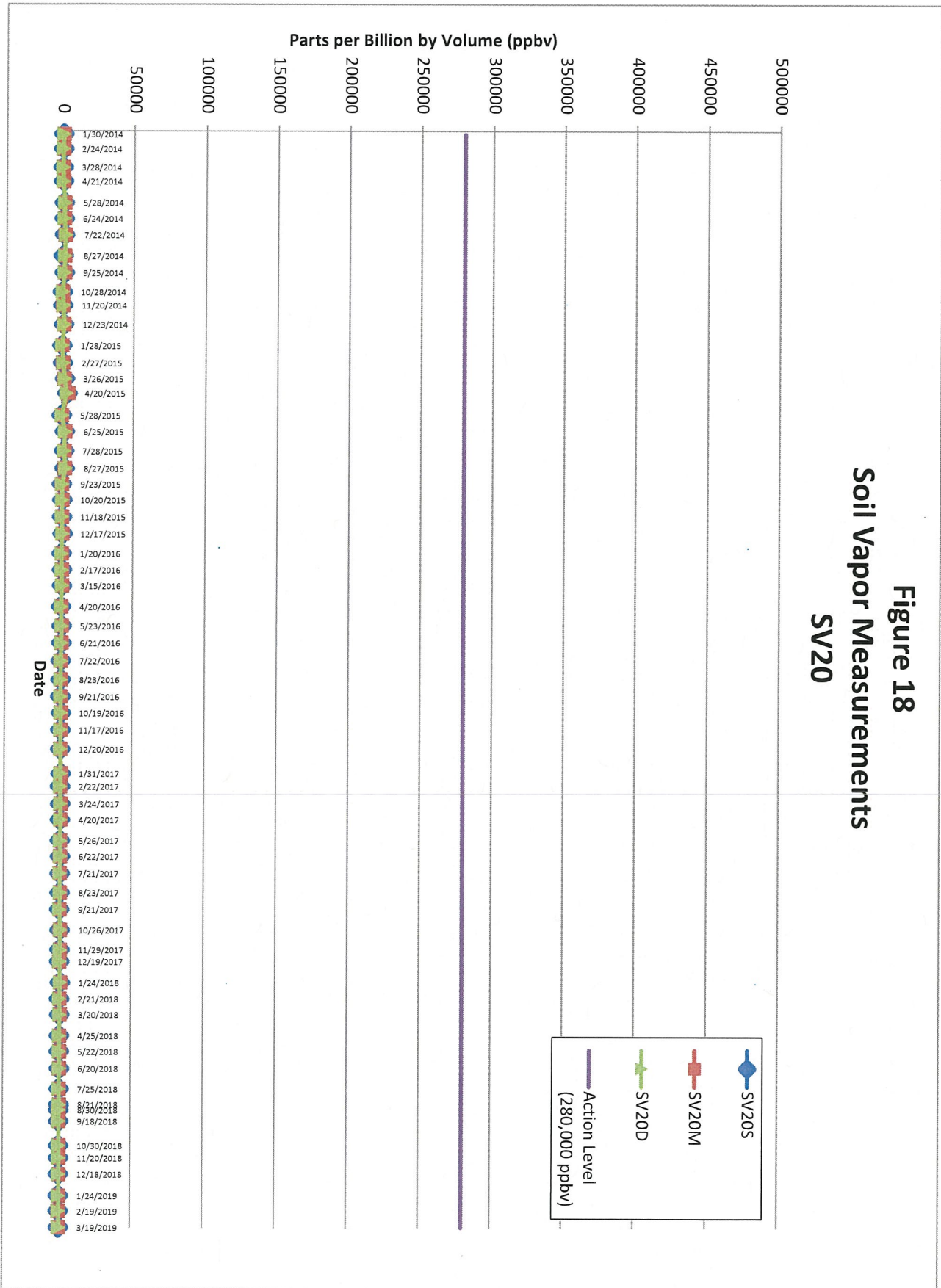
**Figure 16**  
**Soil Vapor Measurements**  
**SV17**



**Figure 17**  
**Soil Vapor Measurements**  
**SV18**



**Figure 18**  
**Soil Vapor Measurements**  
**SV20**





15 April 2019

From: Deputy Director, Fuel Department, NAVSUP FLC Pearl Harbor, HI  
To: Environmental Department, NAVFAC Pearl Harbor, HI

Subj: NAVSUP FLC PEARL HARBOR CAUSATIVE RESEARCH REPORT IRT RED HILL  
SOIL VAPOR MONITORING REPORT FOR MARCH 2019

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan  
(b) Red Hill Soil Vapor Monitoring Report for Round 132, dtd 25 Mar 2019

1. Ref (a) requires NAVSUP FLCPH investigate possible fuel leaks. Refs (b) reported the following soil vapor monitoring results at the Red Hill Fuel Storage Facility:

- Slight increase trends at tanks 2-4, 6-18, and 20
- Strong Increase trend at tank 5

2. FLCPH causative research and findings:

a. Reviewed all AFHE Unscheduled Fuel Movement (UFM) Alarm Summaries and UFM Reports. The following UFM's were recorded between sampling events 131 and 132 during the period of 19 Feb to 25 March 2019:

26 Feb: RH 16 - Low UFM warning occurred after completing an evolution to the truck loading rack. Control Room Operator (CRO) and Maintenance Contractor concluded that the cause was the delay on movement of the settling time. CRO created an evolution to clear the alarm. The tank was top-gauged, and tank valves were verified to be closed. Confirmed no release of fuel from the tank occurred.

27 Feb: RH 15 - Low UFM warning occurred, caused by probe drift. Rover conducted tank inspection; tank appeared to be normal, and all valves closed. Tank was top-gauged, with the level the same as what was recorded two weeks ago. Confirmed no release of fuel from the tank occurred.

13-15 Mar: Maintenance contractor troubleshooting the system created UFM's on RH 16 and RH 20. Confirmed no release of fuel from the tank occurred.

b. Reviewed Red Hill Inventory Trend Analysis Reports for March 2019; reports did not reveal evidence of a loss of fuel in any Red Hill tank.

c. Red Hill maintenance and repair contractors did not report any factors that could have influenced increase in trends.

d. Inspection of the area surrounding all Red Hill tanks did not show evidence of a fuel leak or evidence that fuel was spilled in the area.

ENCLOSURE(2)

Subj: NAVSUP FLC PEARL HARBOR CAUSATIVE RESEARCH REPORT IRT RED HILL  
SOIL VAPOR MONITORING REPORT FOR MARCH 2019

- e. All active tanks have passed tank tightness testing within the required periodicity.
4. There's no evidence of a leaking tank in the Red Hill Complex or evidence of a spill that may have contributed to elevated soil vapor VOC levels in the area of elevated VOC concentrations.

FLOYD.JOHN.LEWIS.10  
64149357

Digitally signed by FLOYD.JOHN.LEWIS.1064149357  
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,  
ou=USN, cn=FLOYD.JOHN.LEWIS.1064149357  
Date: 2019.04.15 16:34:42 -1000

JOHN FLOYD

---