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

5090  
Ser N45/0694  
January 8, 2019

**CERTIFIED NO: 7016 0910 0001 0892 1403**

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 OCTOBER 2018  
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 October 30, 2018.

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 503 ppbv, 802 ppbv, and 725 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 400 ppbv.

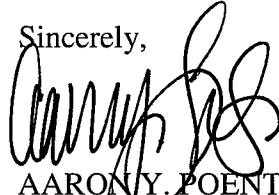
All other VOC concentrations measured in October were about 60 to 1,780 times below the action levels, with no consistent trends observed. NAVSUP FLC Pearl Harbor Causative Research Report is submitted as Enclosure 2. Possible reasons for the results are speculative and may include, but not be limited 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.

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Soil vapor VOC concentration trends will continue to be monitored. The next soil vapor sampling event is scheduled for November 2018, 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

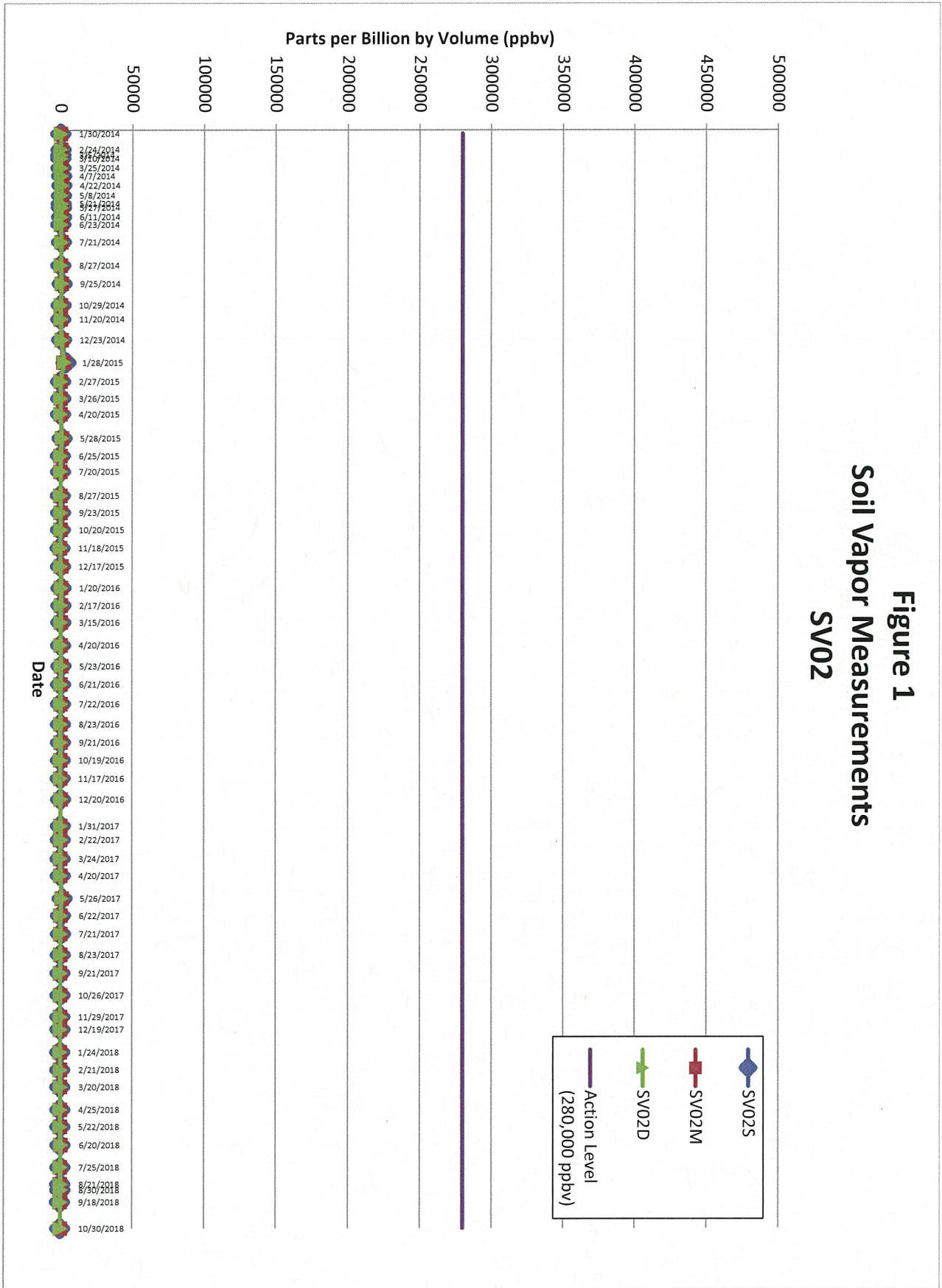
By direction of the

Commander

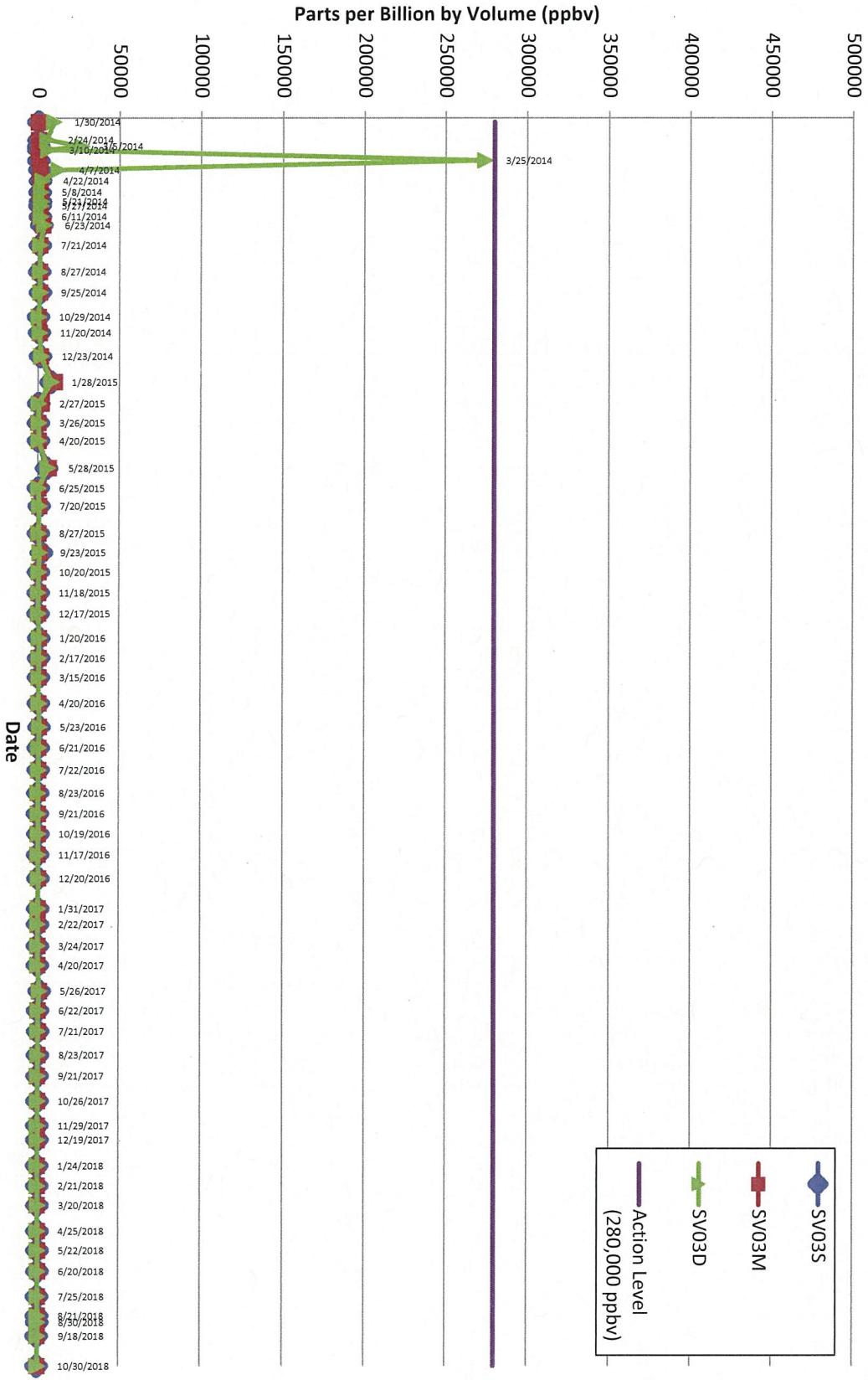
- Enclosures: 1. Summary of Soil Vapor Sampling Results for Tanks 2 through 18 and 20 through October 2018 (18 pages)  
2. NAVSUP FLC Pearl Harbor Causative Research Report IRT Red Hill Soil Vapor Monitoring Report for October 2018

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

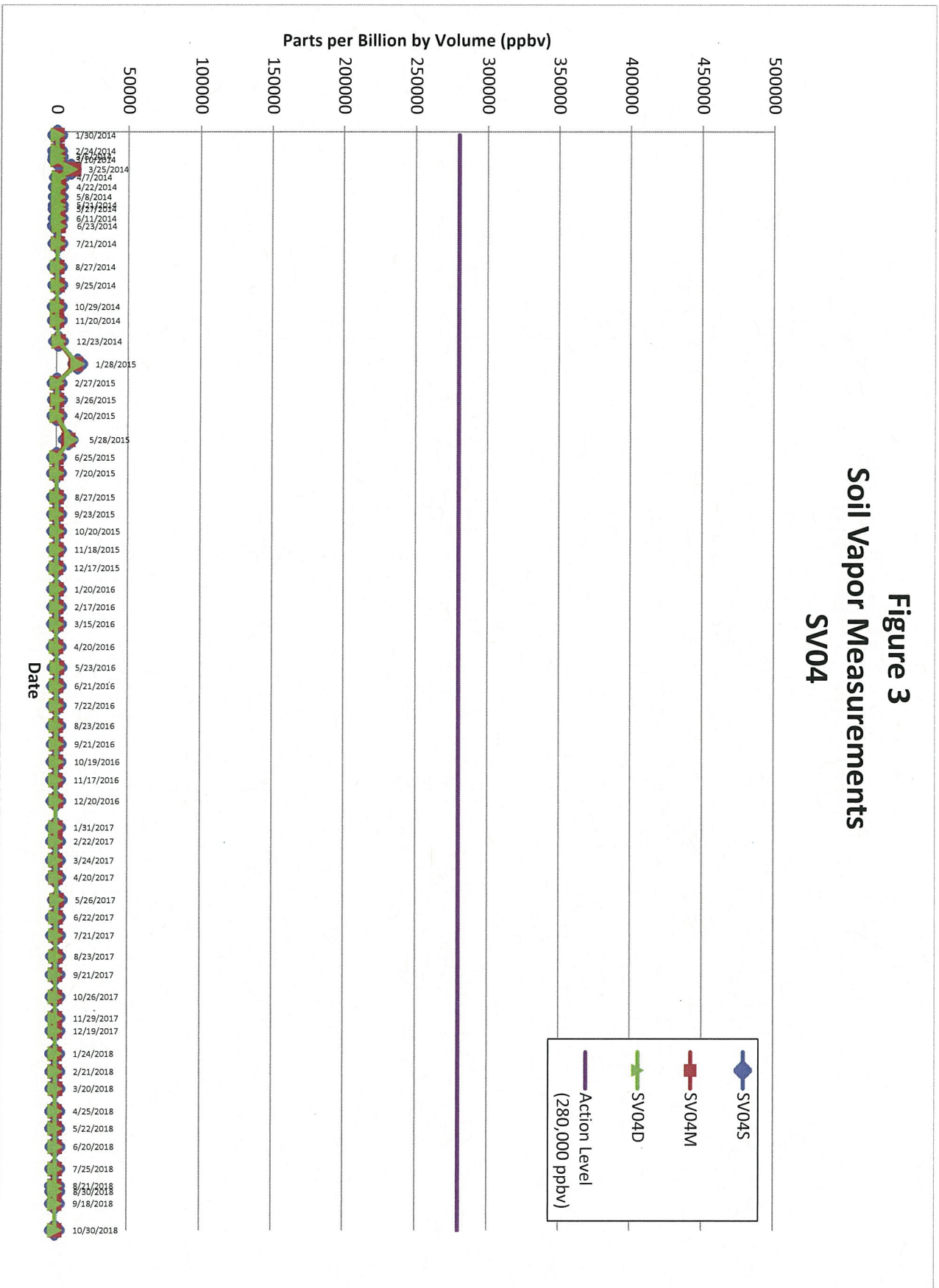
**Figure 1**  
**Soil Vapor Measurements**  
**SV02**

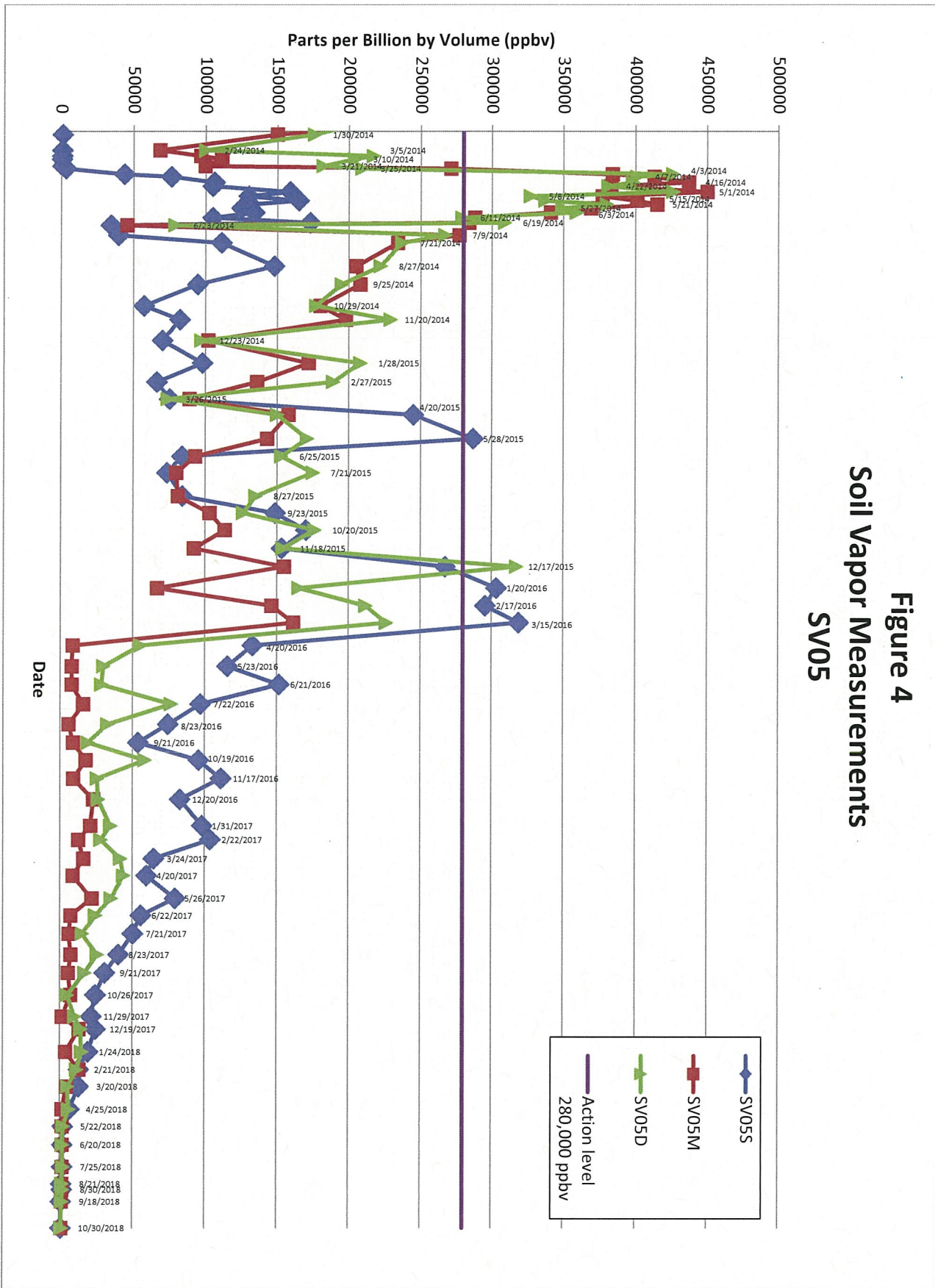


**Figure 2**  
**Soil Vapor Measurements**  
**SV03**

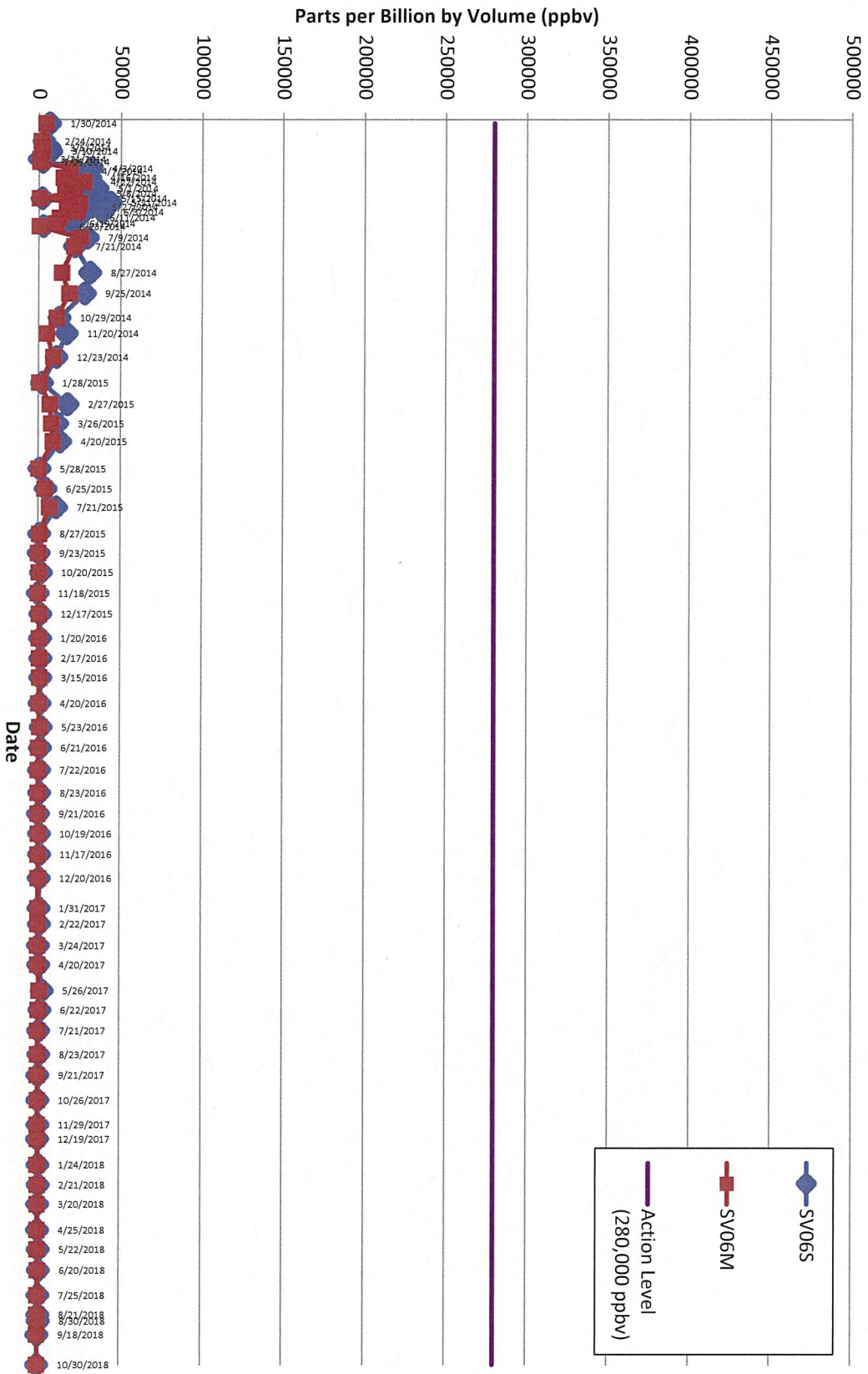


**Figure 3**  
**Soil Vapor Measurements**  
**SV04**

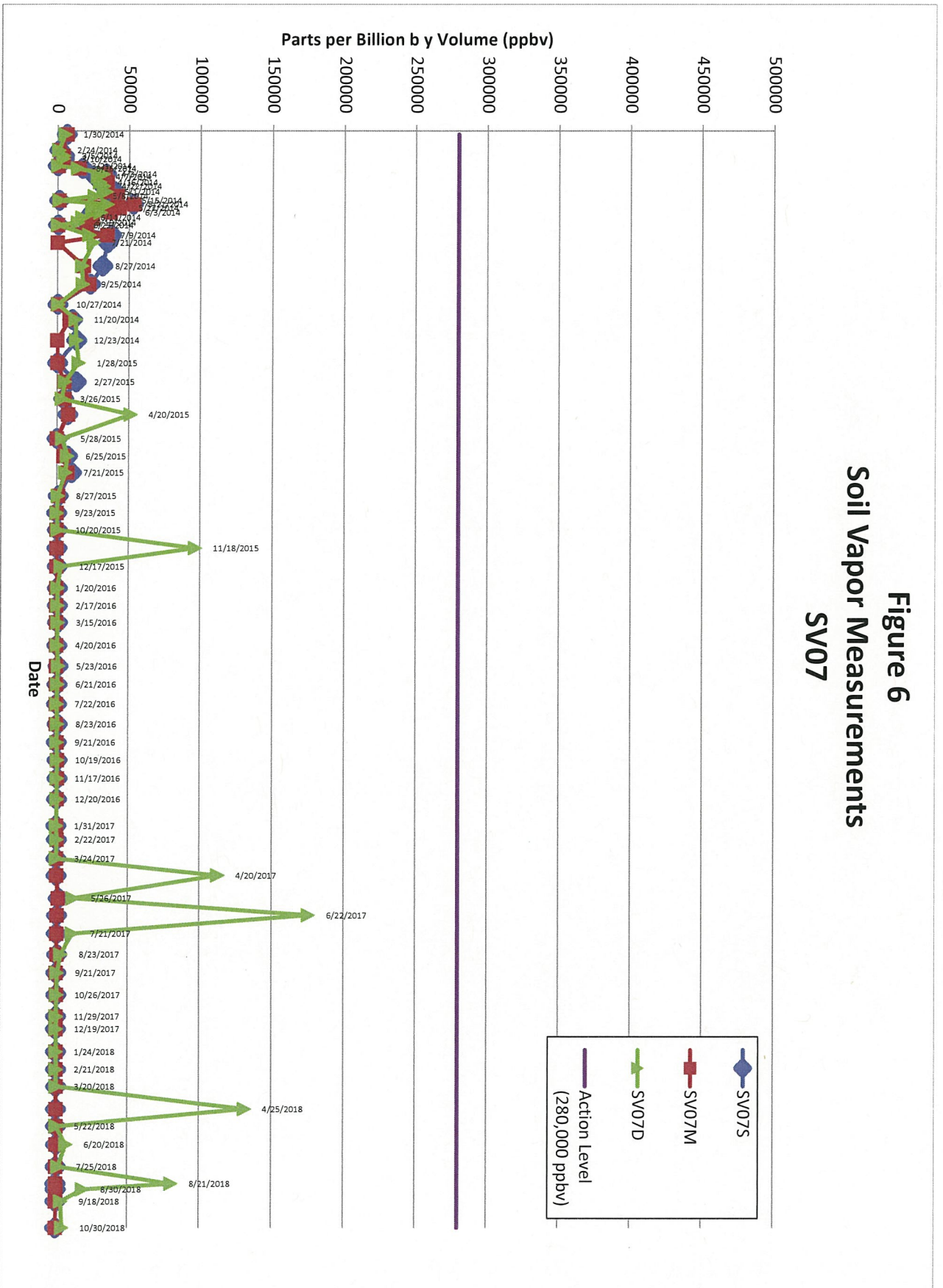




**Figure 5**  
**Soil Vapor Measurements**  
**SV06**

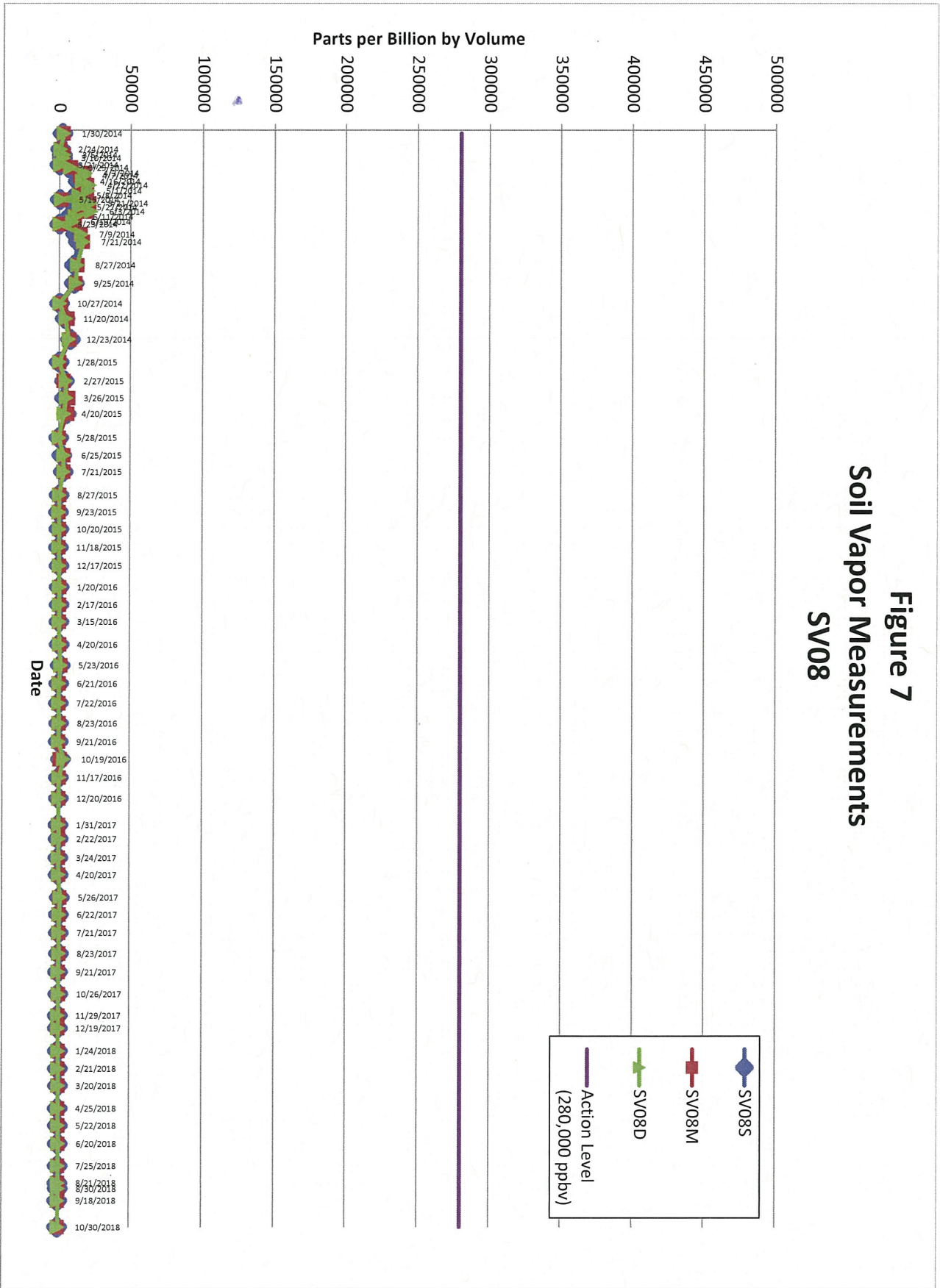


**Figure 6**  
**Soil Vapor Measurements**  
**SV07**

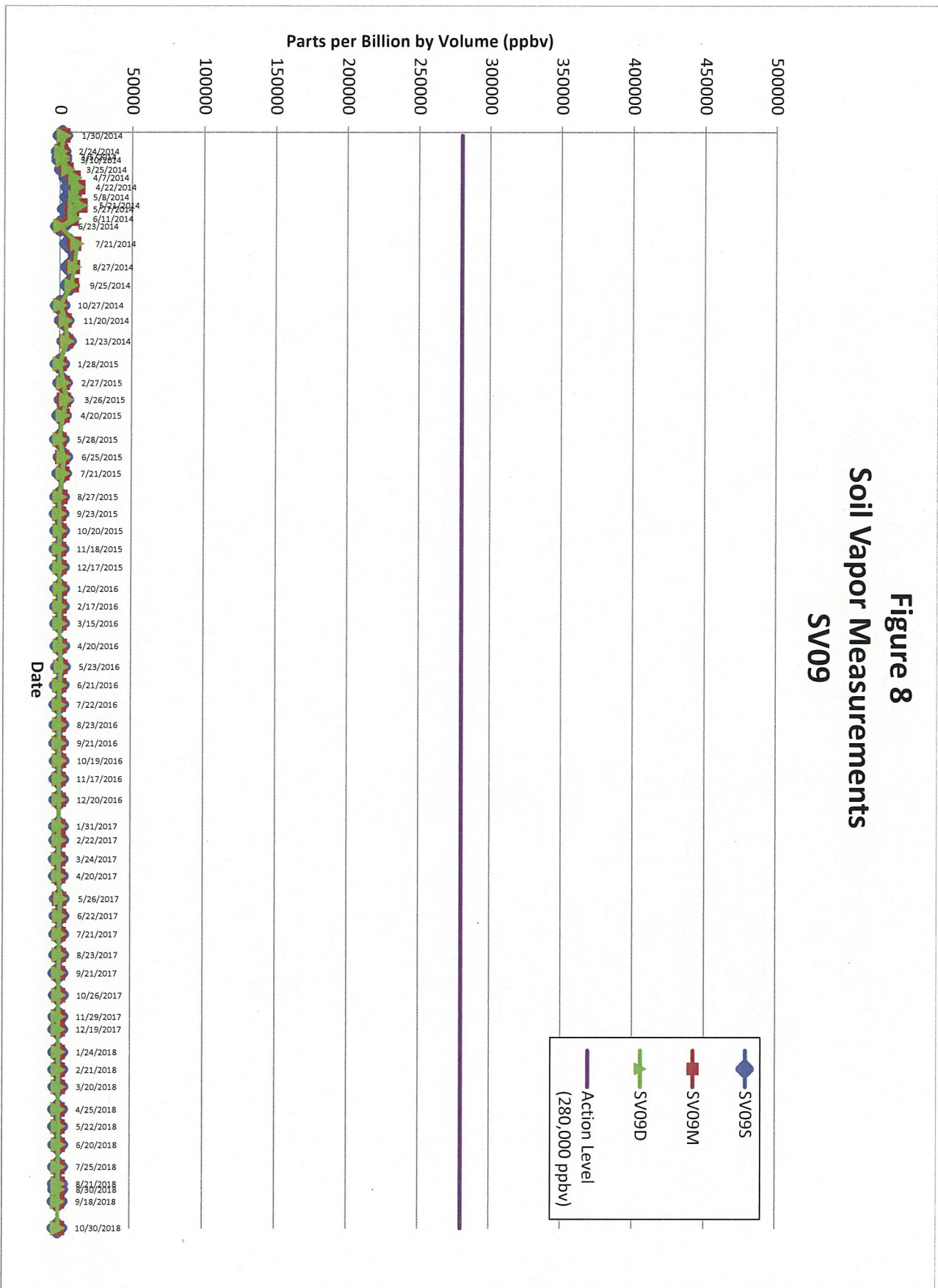




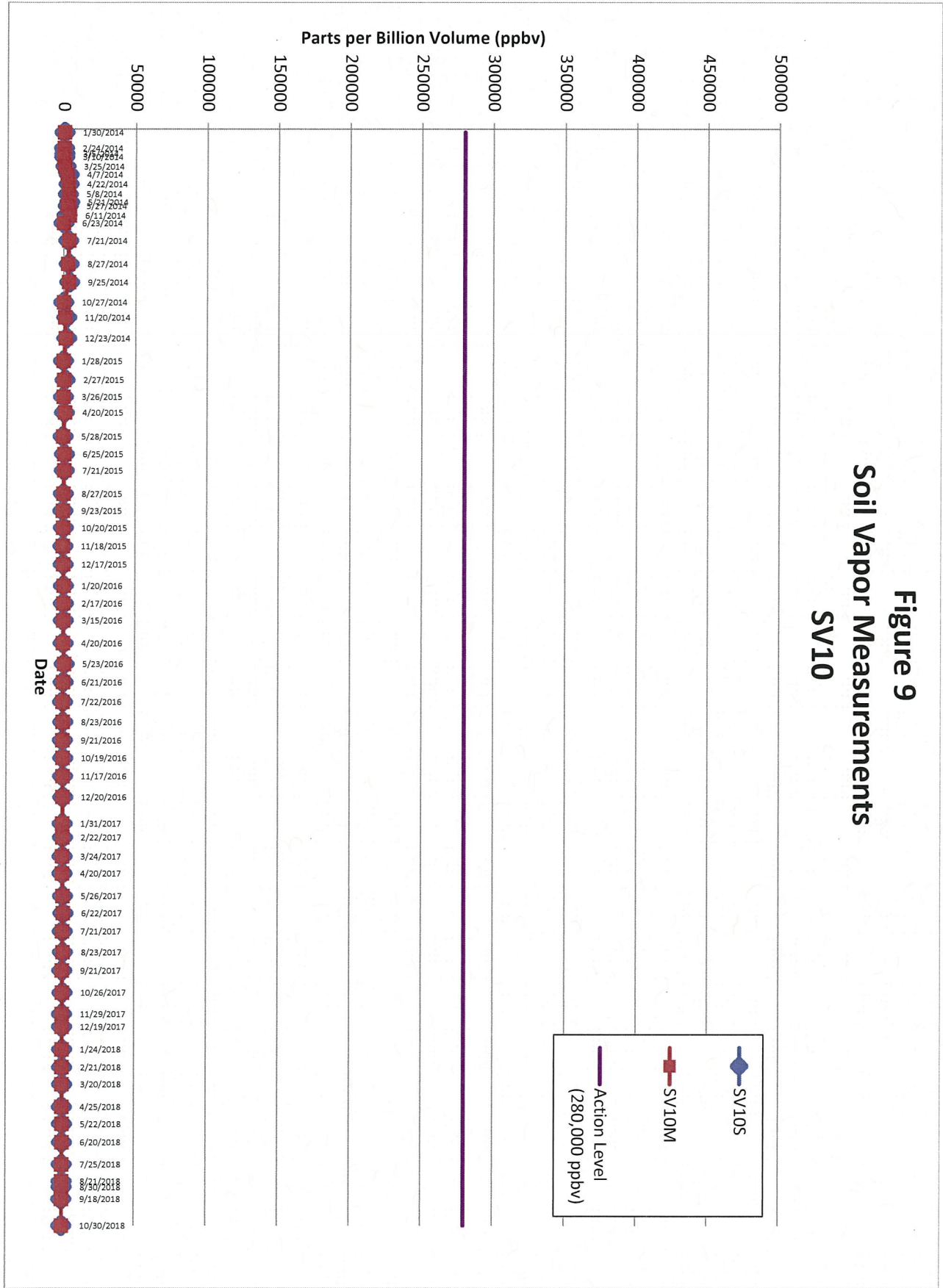
**Figure 7**  
**Soil Vapor Measurements**  
**SV08**



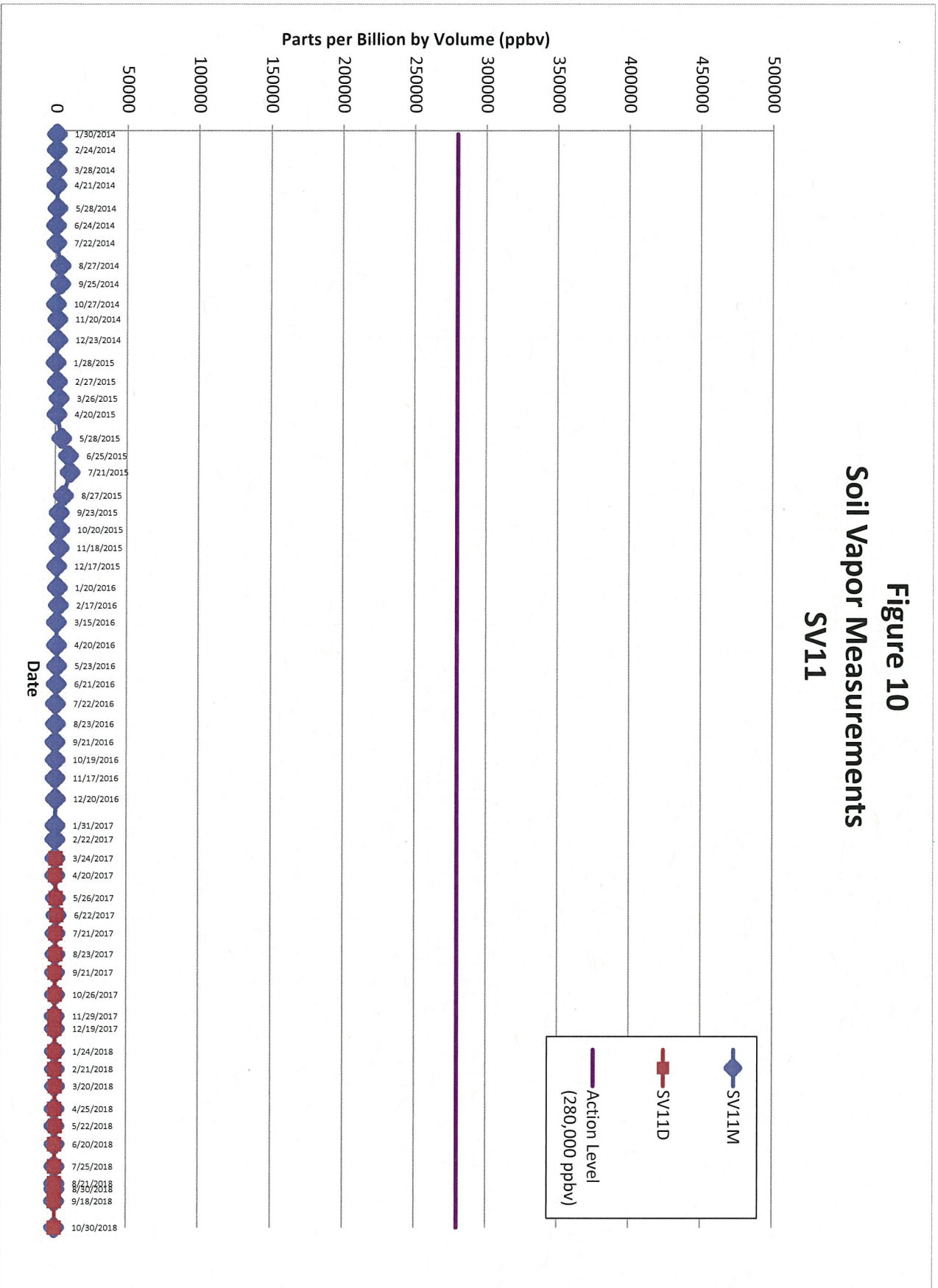
**Figure 8**  
**Soil Vapor Measurements**  
**SV09**



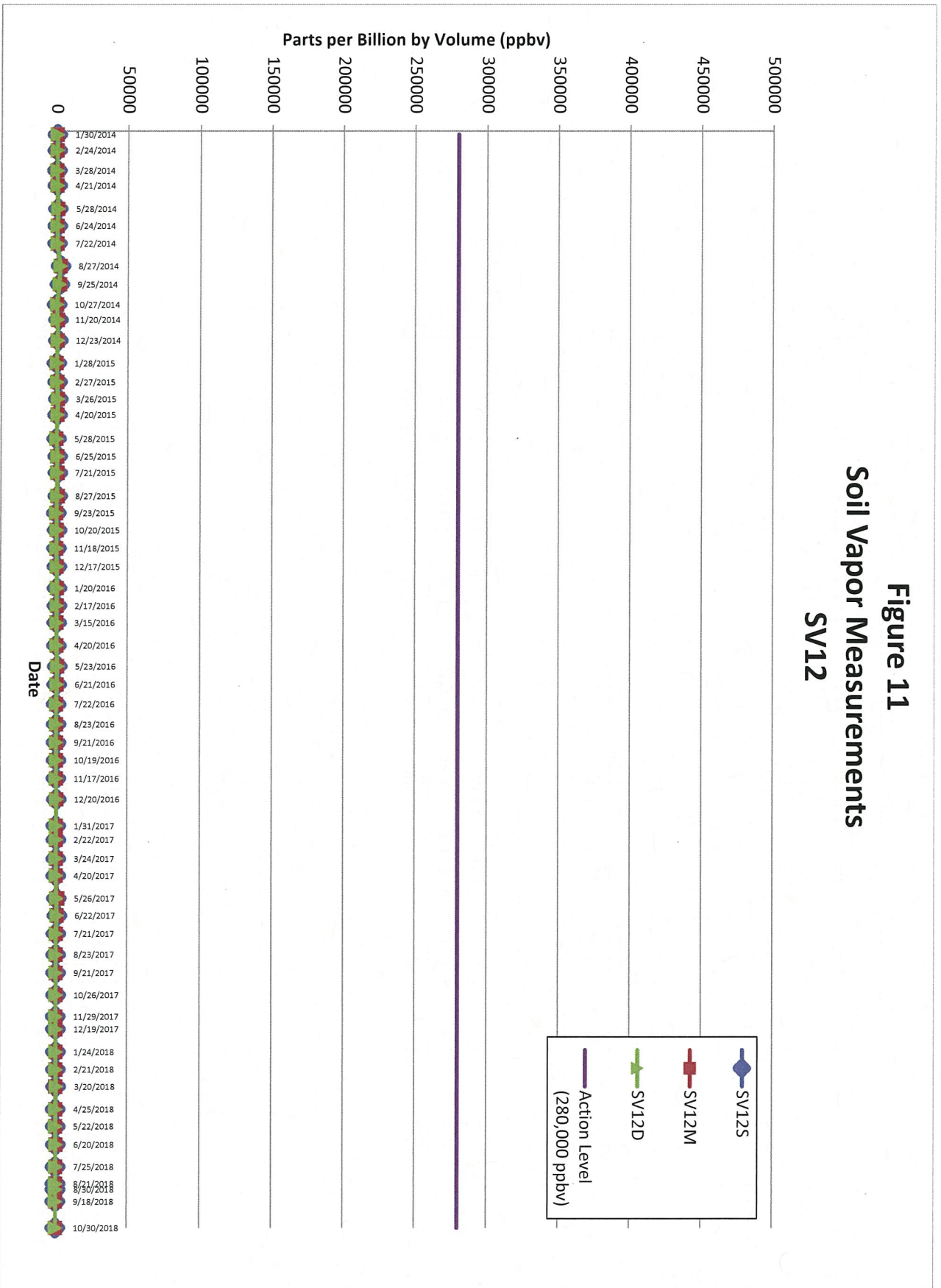
**Figure 9**  
**Soil Vapor Measurements**  
**SV10**



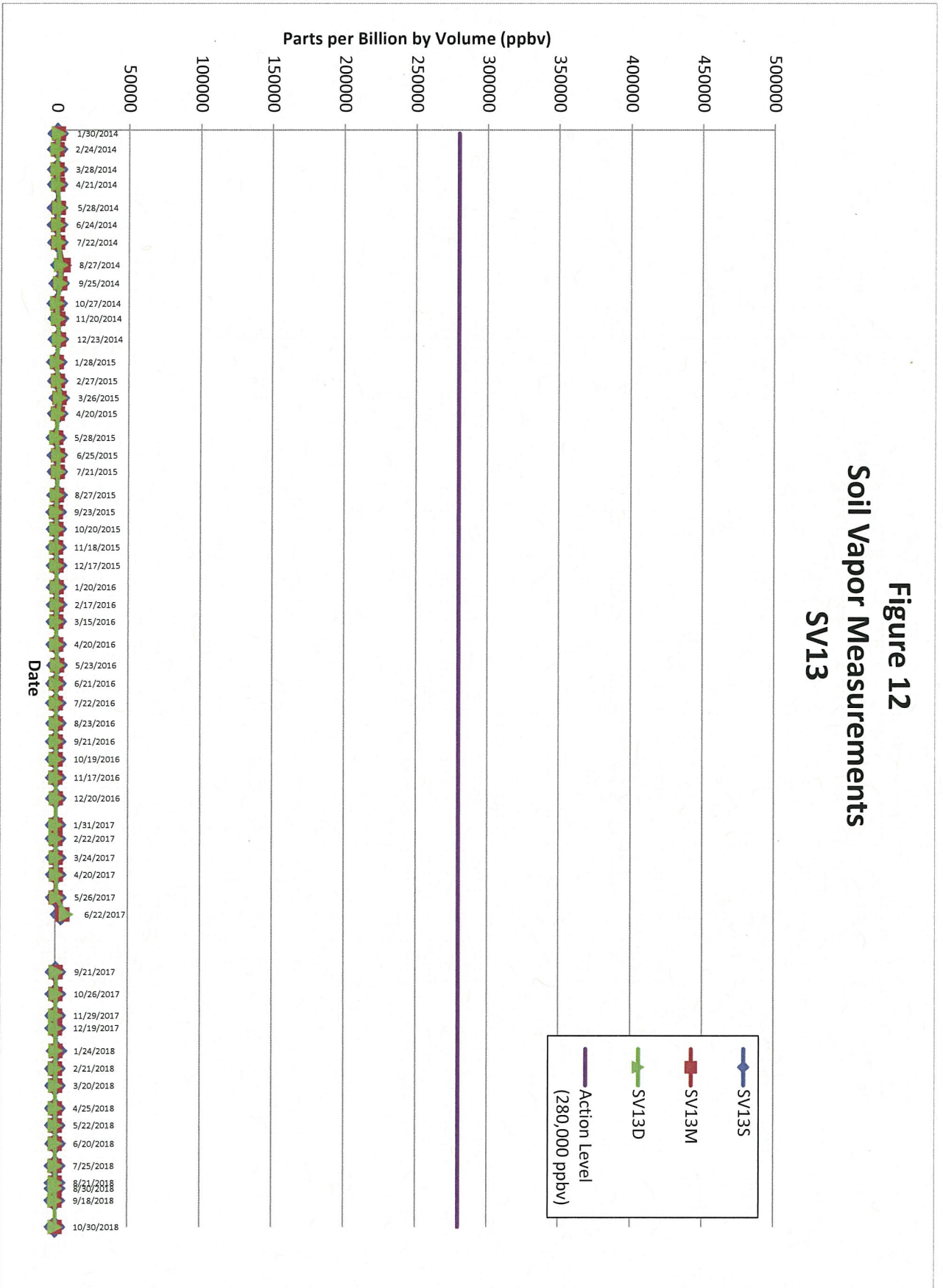
**Figure 10**  
**Soil Vapor Measurements**  
**SV11**



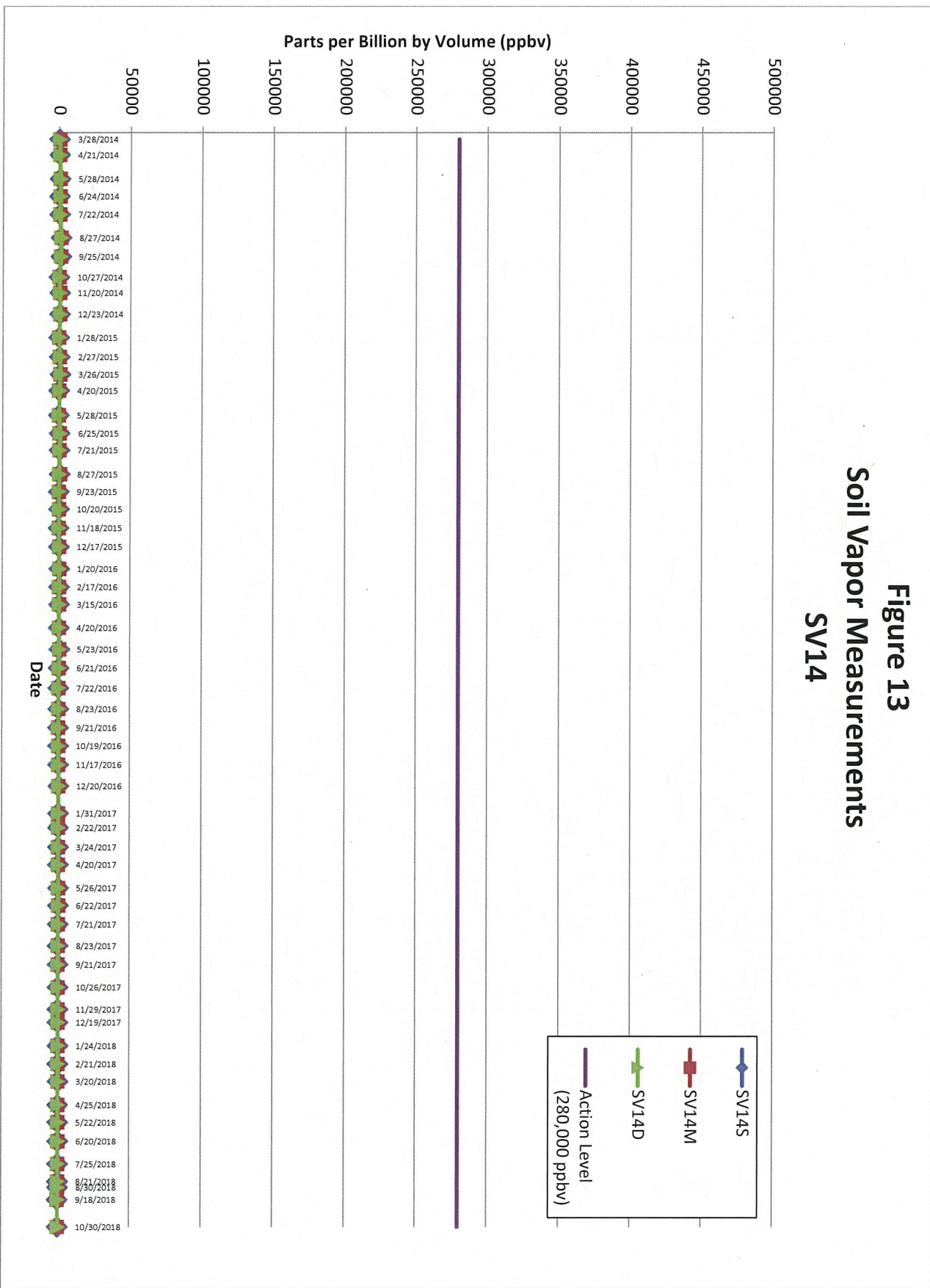
**Figure 11**  
**Soil Vapor Measurements**  
**SV12**



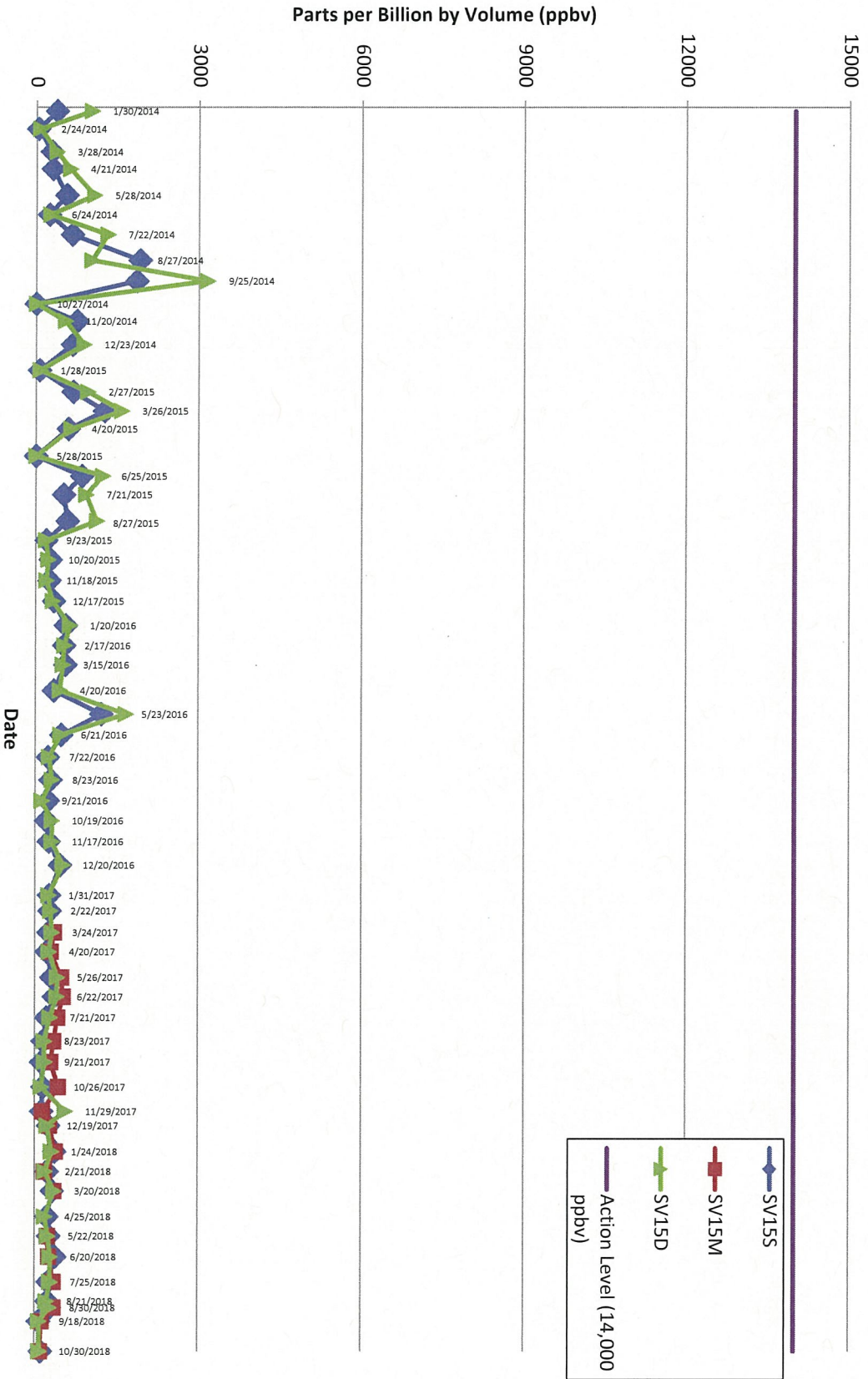
**Figure 12**  
**Soil Vapor Measurements**  
**SV13**



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

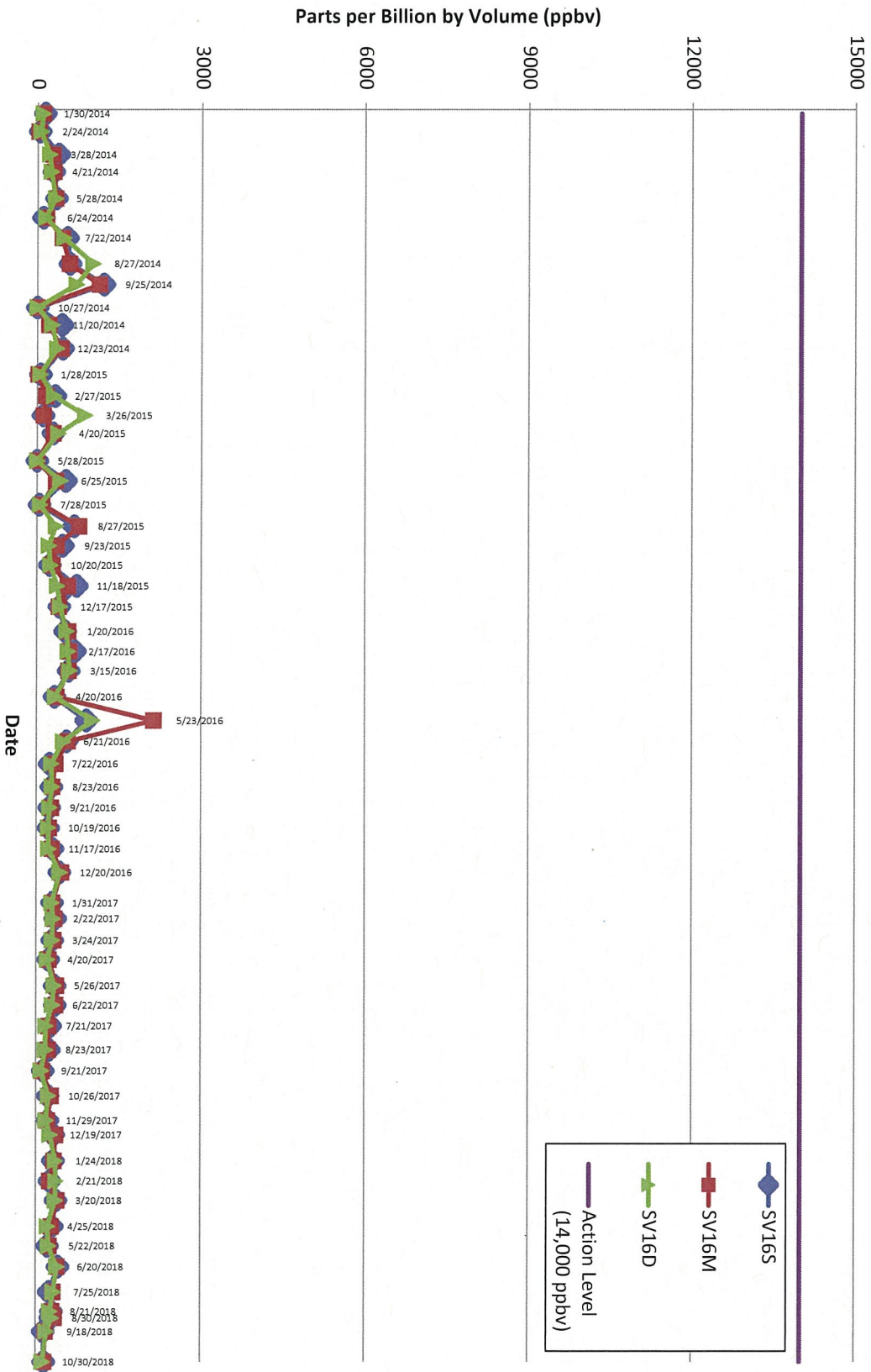


**Figure 14**  
**Soil Vapor Measurements**  
**SV15**

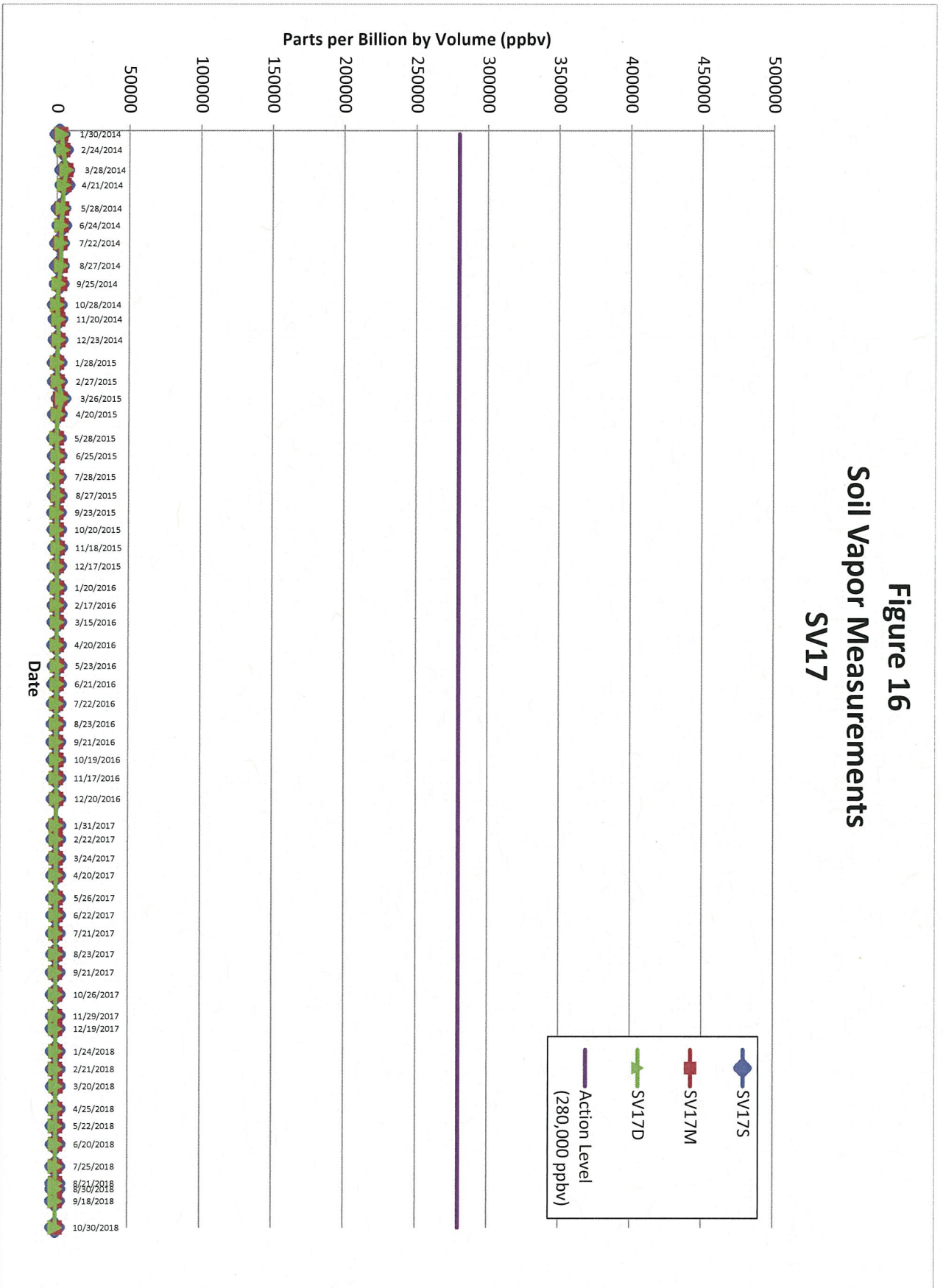




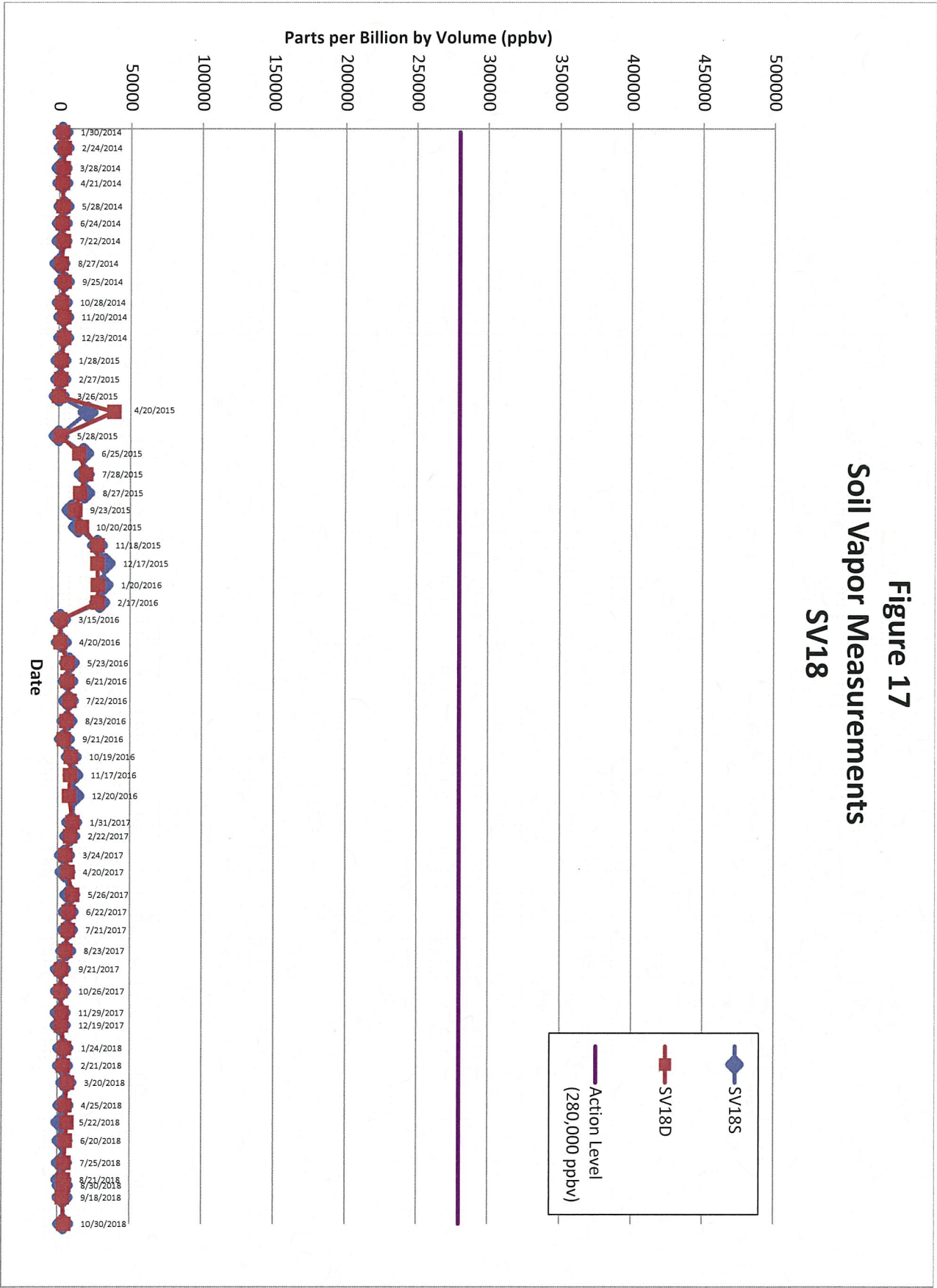
**Figure 15**  
**Soil Vapor Measurements**  
**SV16**



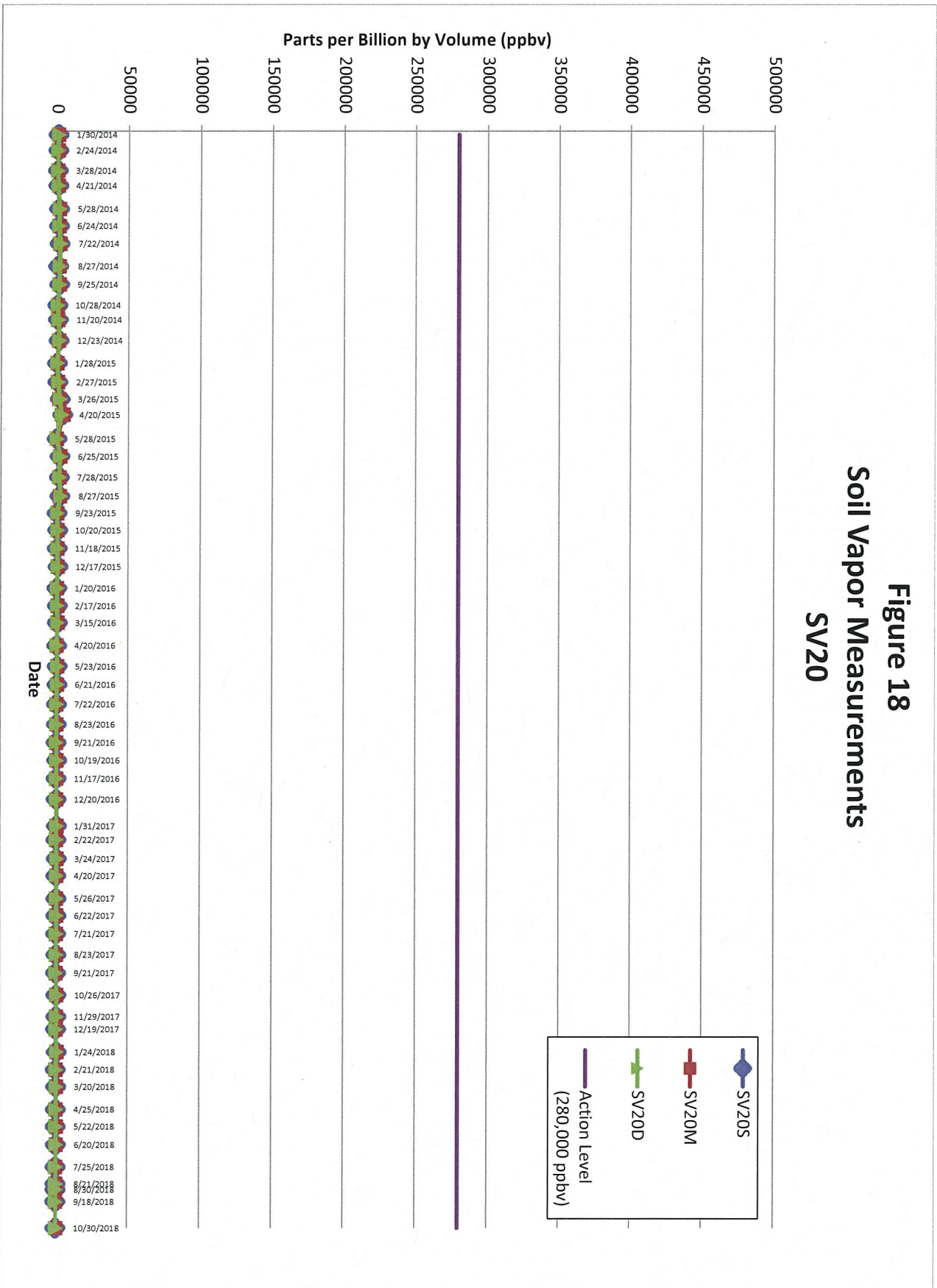
**Figure 16**  
**Soil Vapor Measurements**  
**SV17**



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



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



11 Dec 2018

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 OCTOBER 2018

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan  
(b) Red Hill Soil Vapor Monitoring Report for Round 127, dtd 06 Nov 2018

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 indicated at tank 18

2. FLCPH causative research and findings:

a. Reviewed all AFHE Unscheduled Fuel Movement (UFM) Alarm Summaries and UFM Reports. There were 4 UFM alarms recorded during the month of October 2018; however, no alarms could be attributed to a fuel leak or an unscheduled movement of fuel. Summary:

02 Oct: RH 02 - Caused by a probe drift.

11 Oct: RH 16 - Caused by operator error when creating an evolution.

15 Oct: RH 02 - Alarm occurred without any evolution. UFM cleared once alarm was acknowledged. No release of fuel from the tank occurred.

31 Oct: RH 11 - Occurred after completing an evolution to the truck loading rack. System error.

b. Reviewed Red Hill Inventory Trend Analysis Reports for October 2018; 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.

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  
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JOHN FLOYD

ENCLOSURE(2)