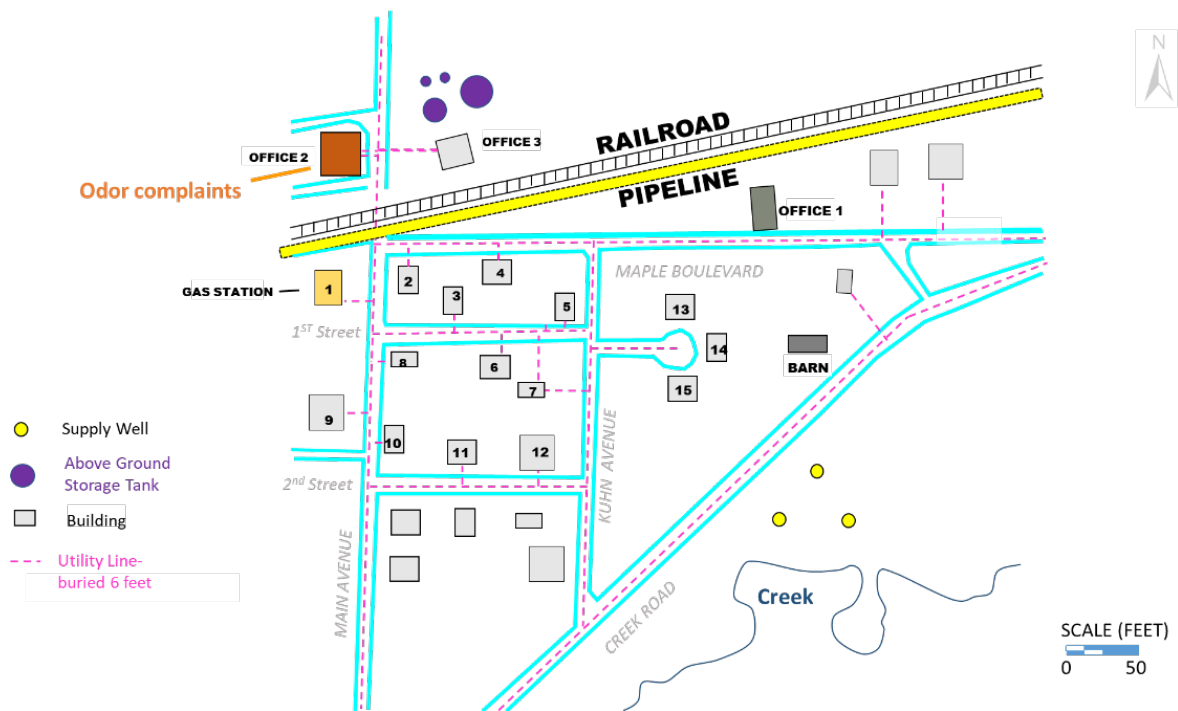














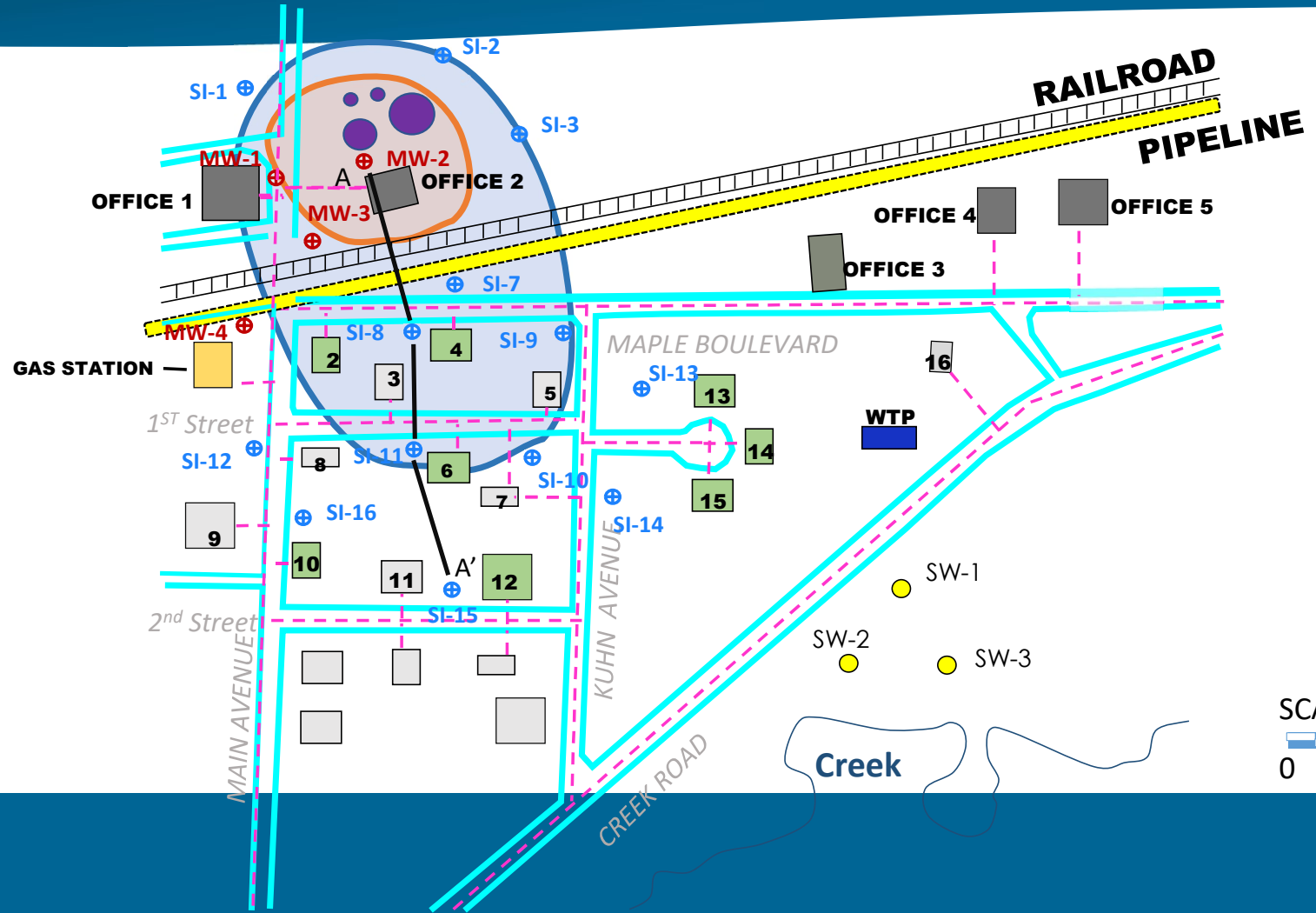
Glacial Fluvial Gasoline Scenario

Small town with mixed residential and commercial properties. Area is bounded by wet, low-lying areas and a creek to the south that runs from east to southwest. A railroad and a refined diesel pipeline run parallel through the site east-west. The town's municipal well field is in the south. Geology is a meandering stream within a terraced floodplain that contains fluvial-glacial sediments deposited over glacial till. Groundwater is unconfined 6 to 10 feet bgs with seasonal fluctuation and with general south-southeast flow towards the stream. An office has odor complaints with indoor air sampling indicating petroleum vapor intrusion problems. Potential sources in the area are a bulk fuel facility with above ground storage tanks, a diesel pipeline, and a gas station. Potential impacts include vapor intrusion, soil, and groundwater contamination.



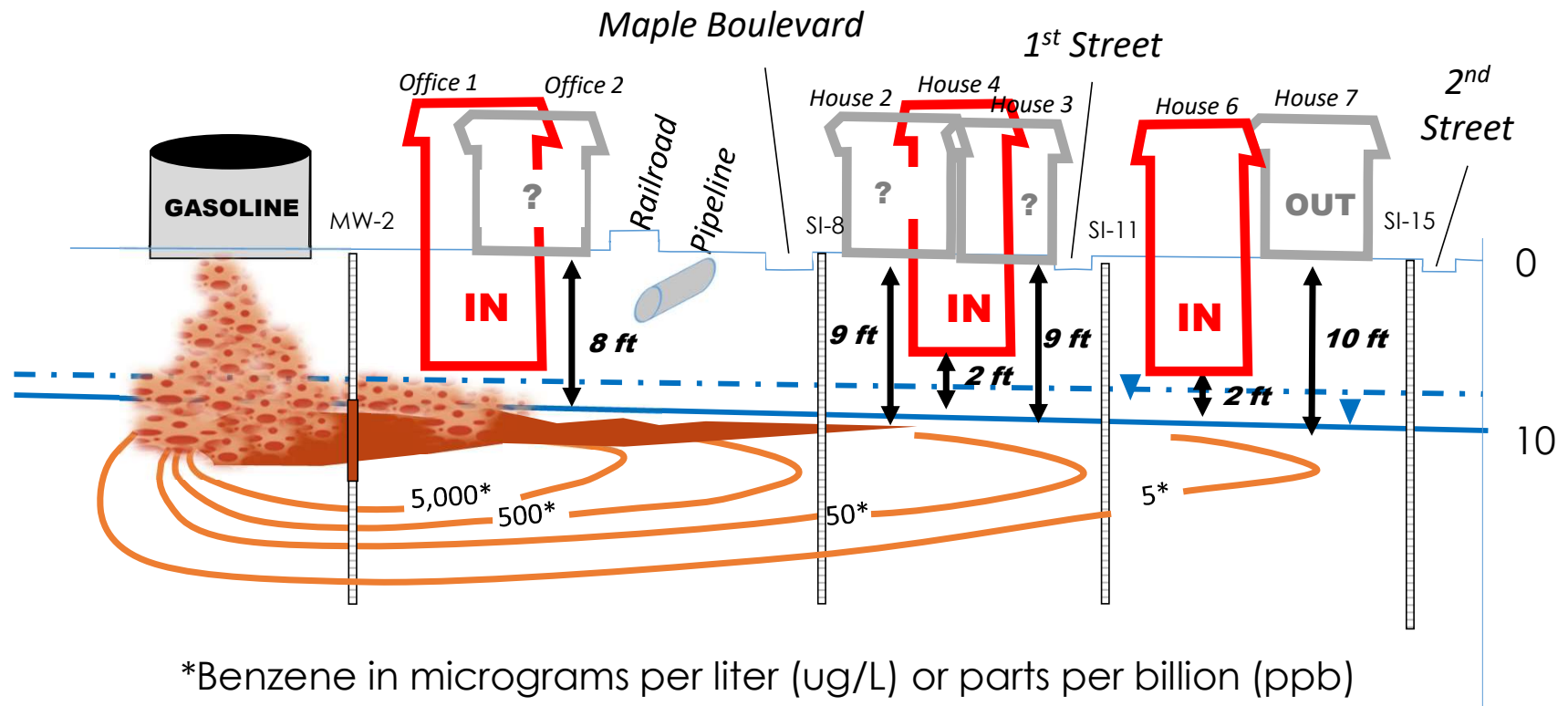


-  2012 Site Investigation
-  2012 LNAPL Delineation
-  2016 Site Investigation
-  2016 LNAPL Extent
-  Cross Section A-A'
-  House with basement
-  Water Treatment Plant
-  Supply Well
-  Above Ground Storage Tank
-  Utility Line - buried 4 feet

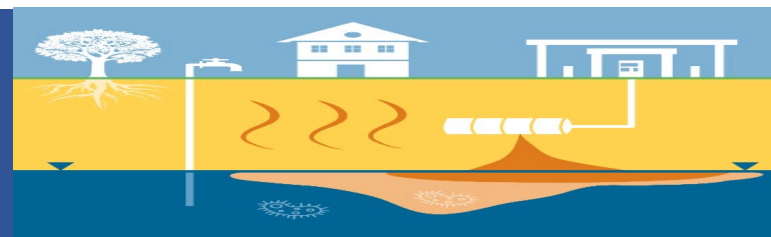


SCALE (FEET)
0 50

Cross-section A-A'



Scenario Screening Levels (for exercise purposes only)



Contaminant	Resident Soil (mg/kg)	Industrial Soil (mg/kg)	Resident Air (ug/m ³)	Resident Soil Vapor (ug/m ³)	Industrial Soil Vapor (ug/m ³)	Groundwater (ug/L)	C _{sat} (mg/kg)
Volatile Organic Compounds:							
Benzene	1.2	5.1	0.36	12	1.8	5	1,820
Toluene	4,900	47,000	5,200	173,000	2,200	1,000	818
Ethylbenzene	5.8	25	1.1	37	5.5	700	480
Xylenes	580	2,500	100	3,300	44	10,000	260
Lead scavengers:							
Dibromoethane, 1,2- (EDB)	0.04	0.16	0.005	0.16	0.022	0.05	1,340
Dichloroethane, 1,2- (DCA)	0.46	2	0.11	3.7	0.520	5	2,980
Polynuclear Aromatic Hydrocarbons:							
Naphthalene	2	8.6	0.08	2.8	0.4	0.12	NA
Total Petroleum Hydrocarbons:							
TPH-GRO (C6-C12)	1,600	3,900	210	290	NA	100	7,000
TPH-DRO (>C12-C28)	2,399	12,000	210	290	NA	100	7,000
TPH-ORO (>C28-C35)	2,300	12,000	210	290	NA	100	7,000
Total Petroleum Hydrocarbons (Aliphatic Low)	520	2,200	630	21,000	2,600	1300	141
Total Petroleum Hydrocarbons (Aliphatic Medium)	96	440	100	3,300	440	100	6.86
Total Petroleum Hydrocarbons (Aliphatic High)	230,000	3,500,000	NA	NA	NA	60,000	0.34
Total Petroleum Hydrocarbons (Aromatic Low)	82	420	31	1,000	130	33	1,820
Total Petroleum Hydrocarbons (Aromatic Medium)	97	560	3.1	100	13	6	NA
Total Petroleum Hydrocarbons (Aromatic High)	2,400	30,000	NA	NA	NA	800	NA

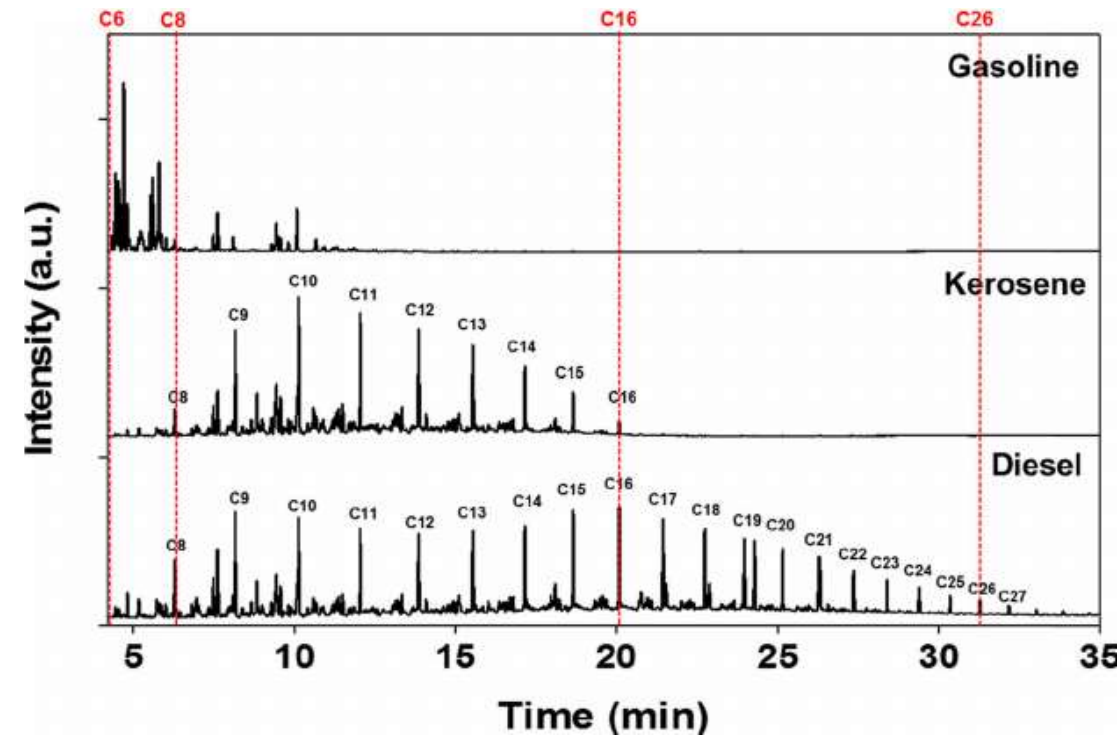
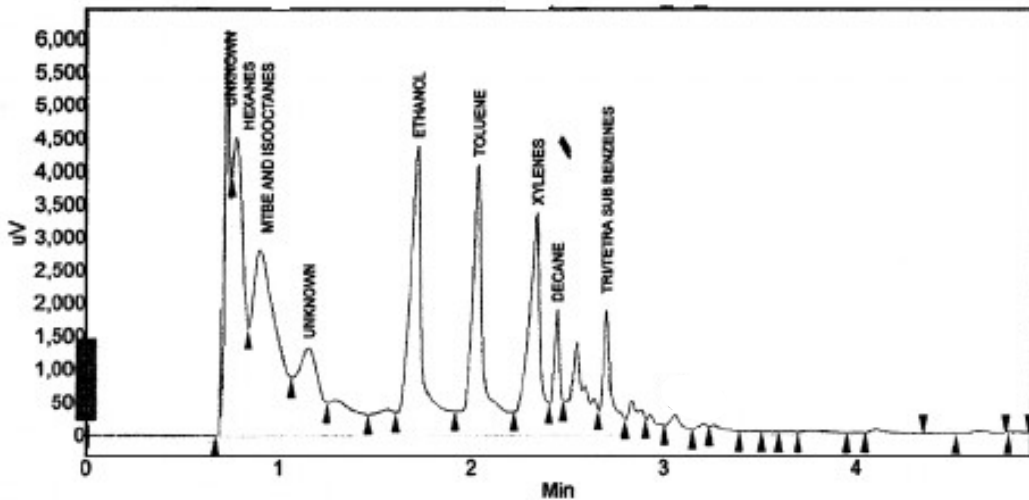
mg/kg = milligram per kilogram
 ug/L = microgram per liter

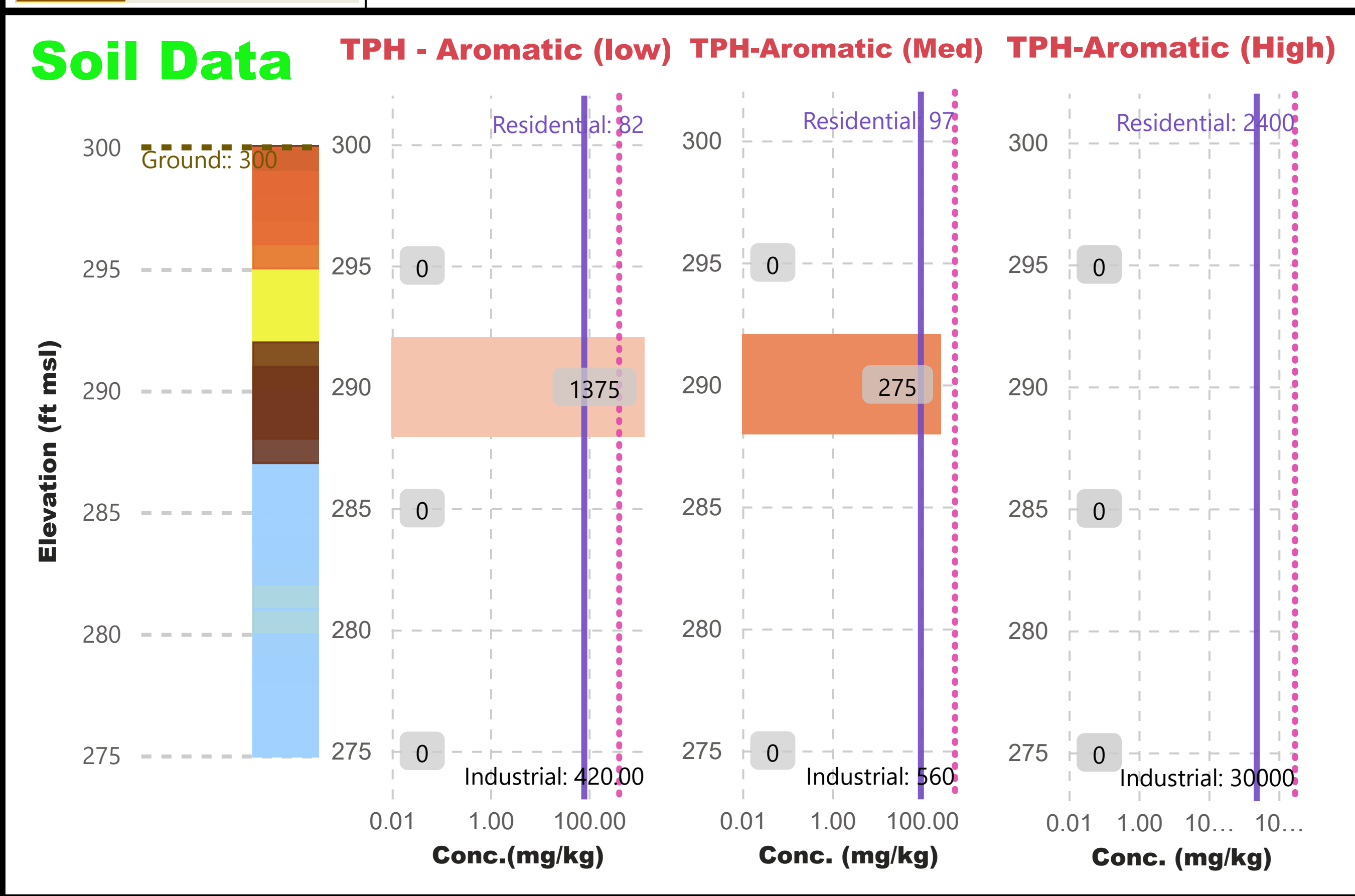
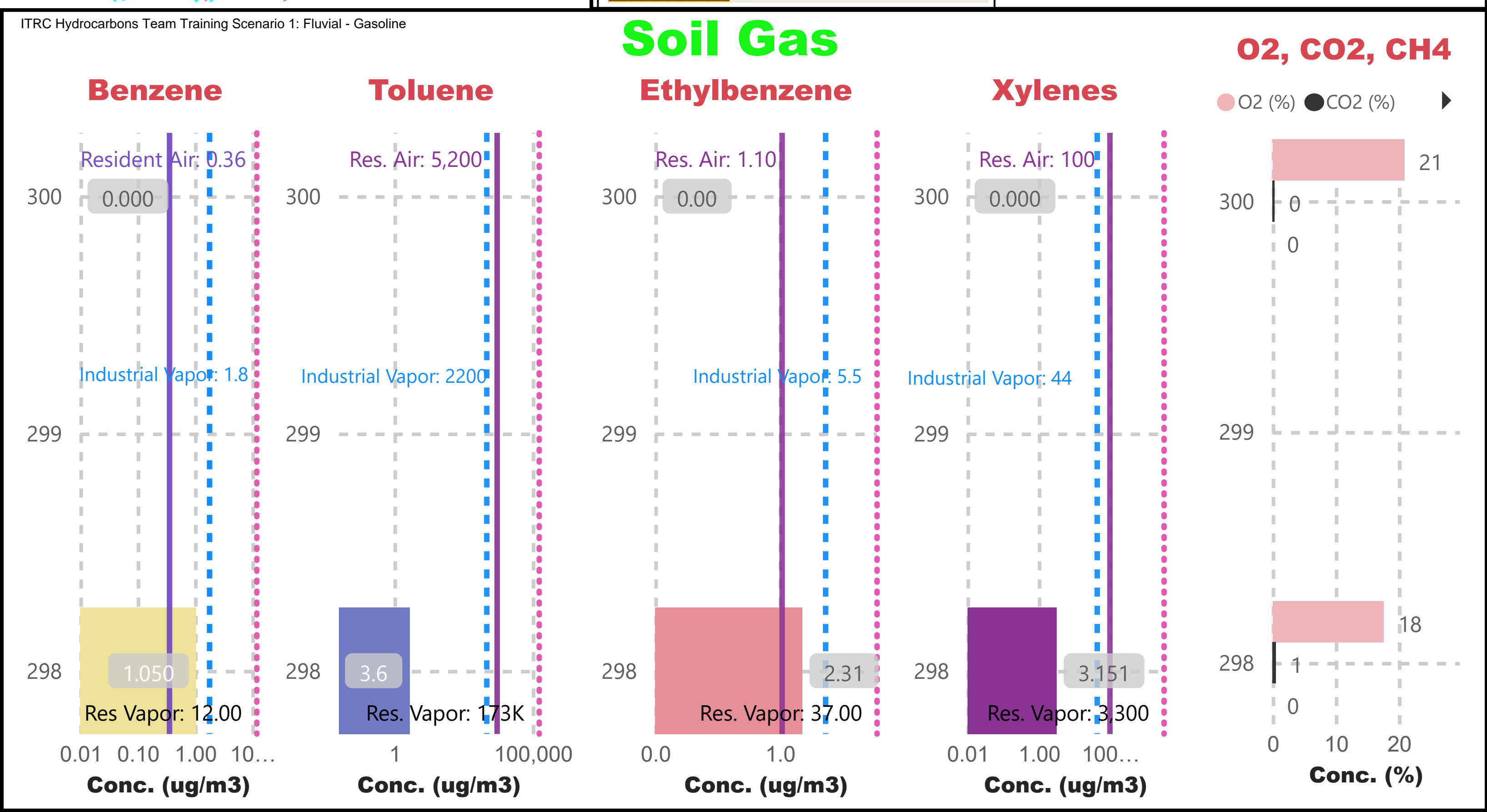
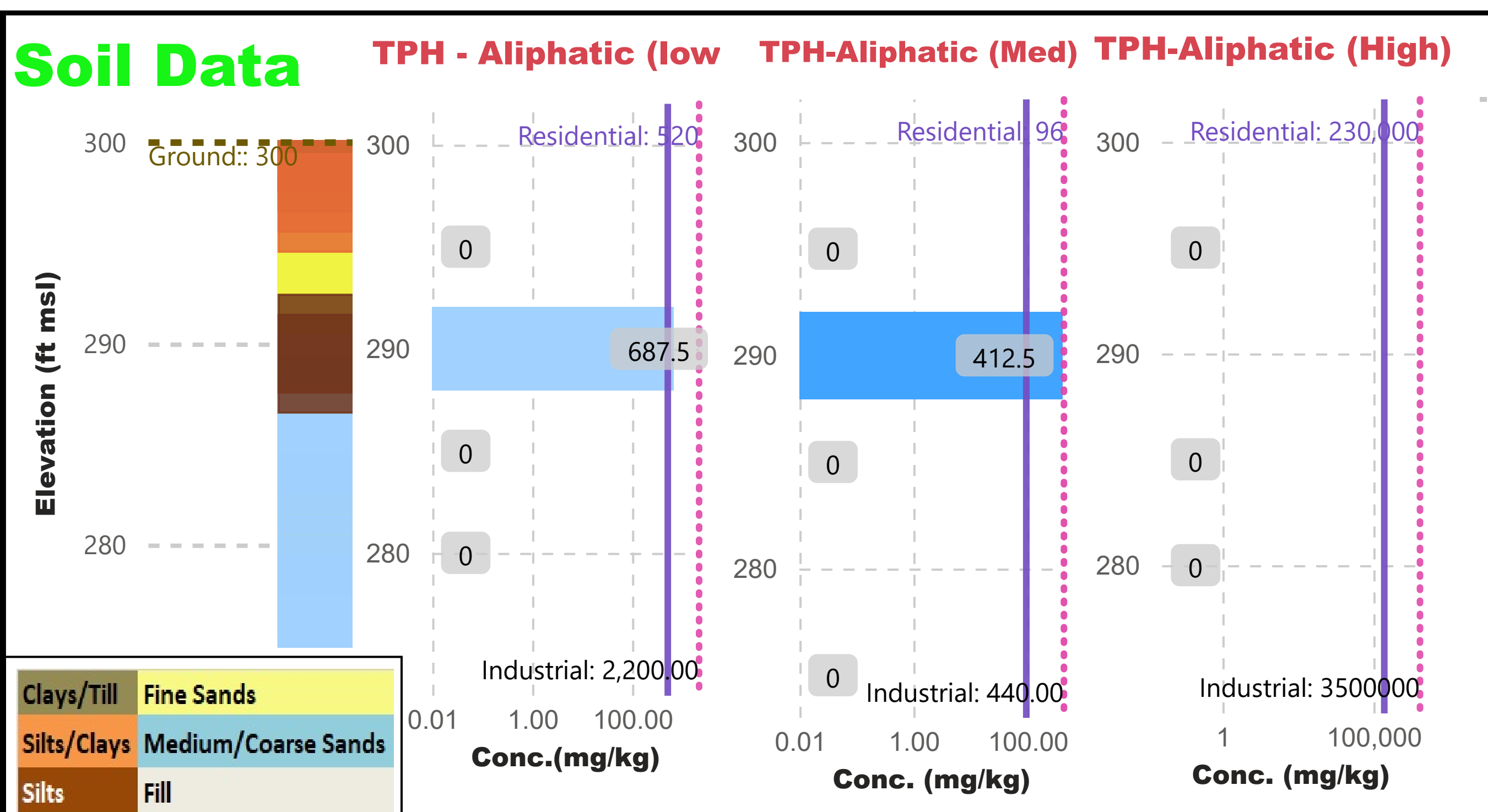
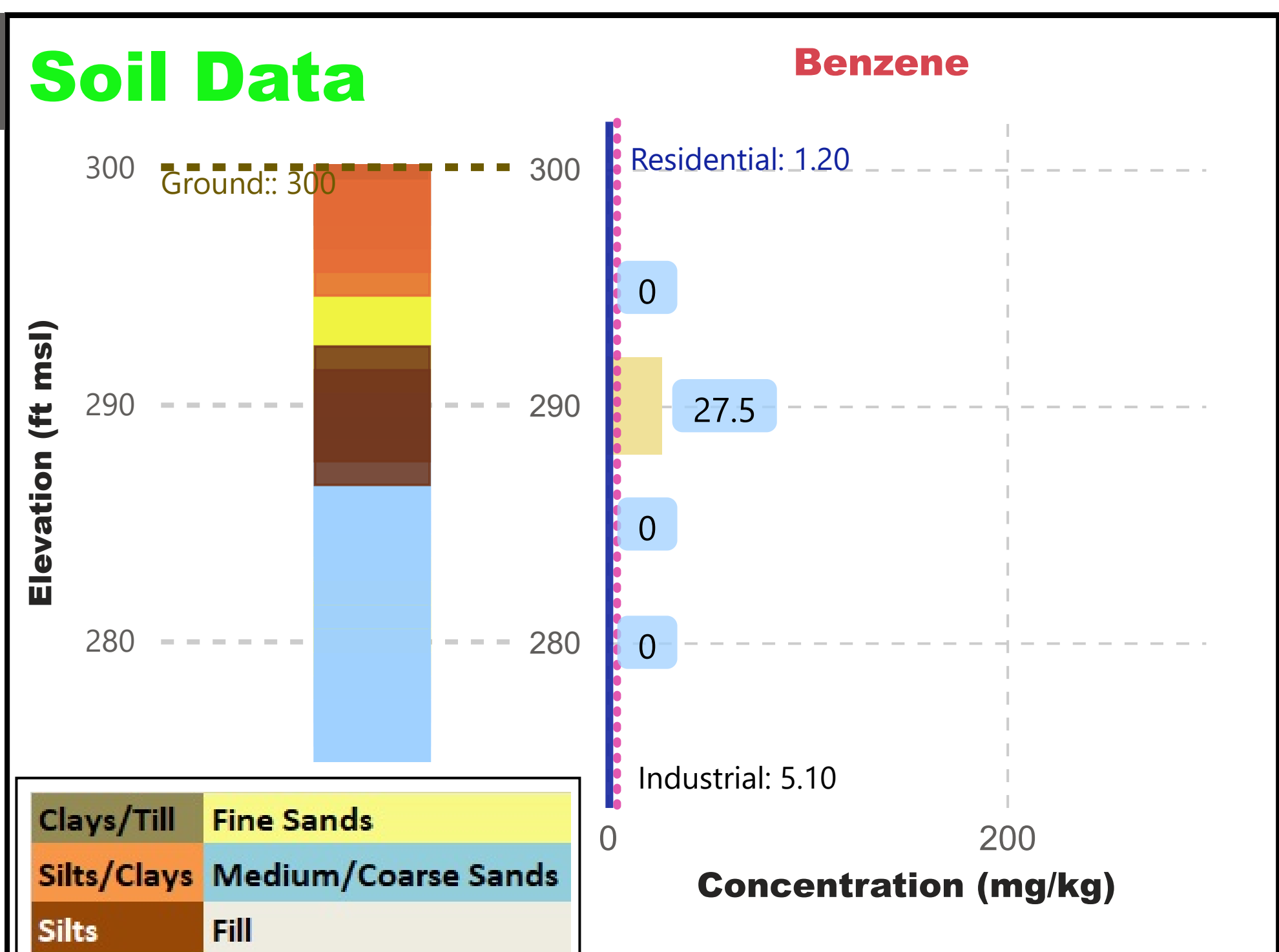
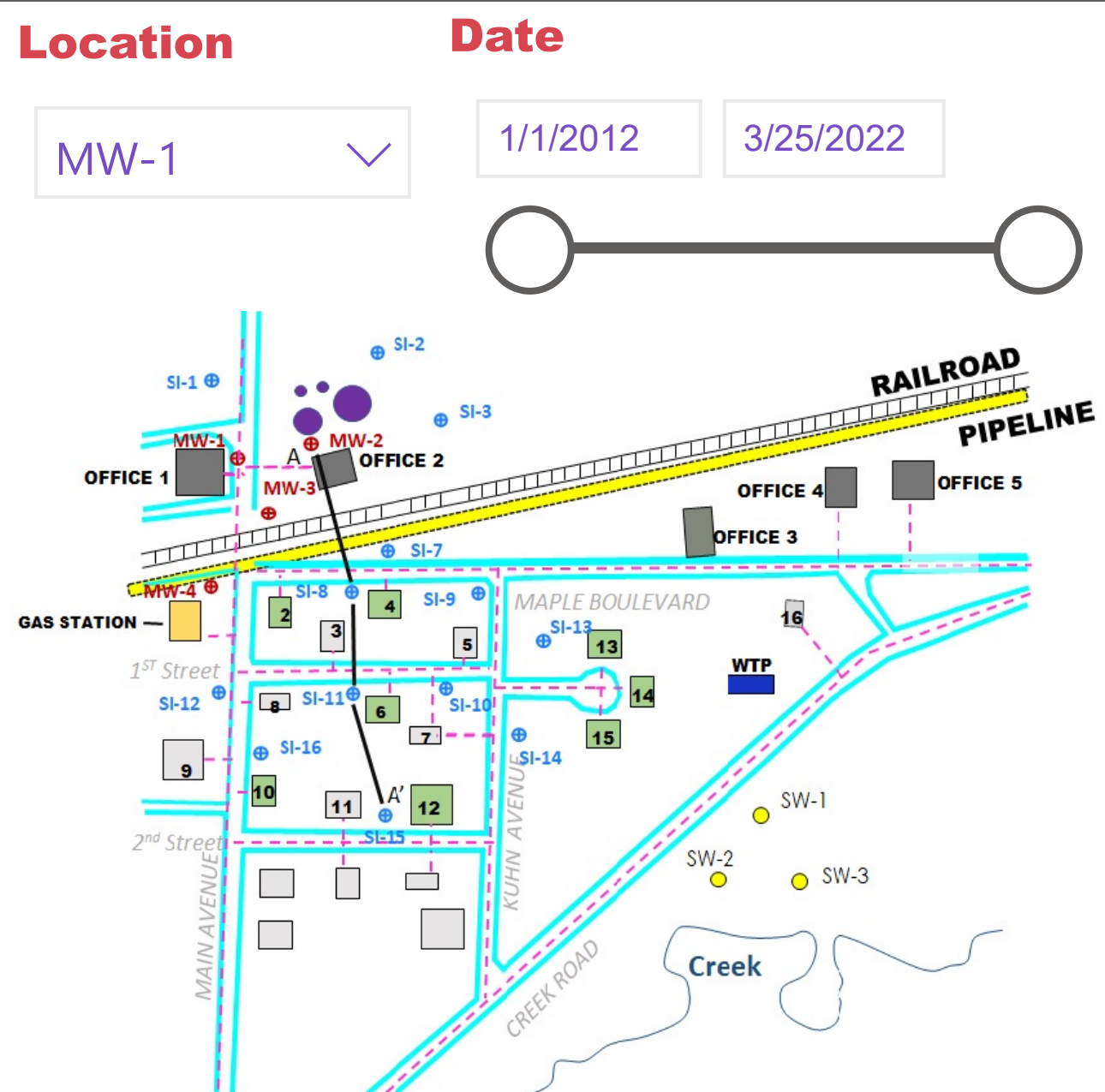
ug/m³ = microgram per cubic meter
 NA = value not available

C_{sat} = soil saturation limit

Gas Chromatography Mass Spec (GCMS) Soil Analysis from MW-2

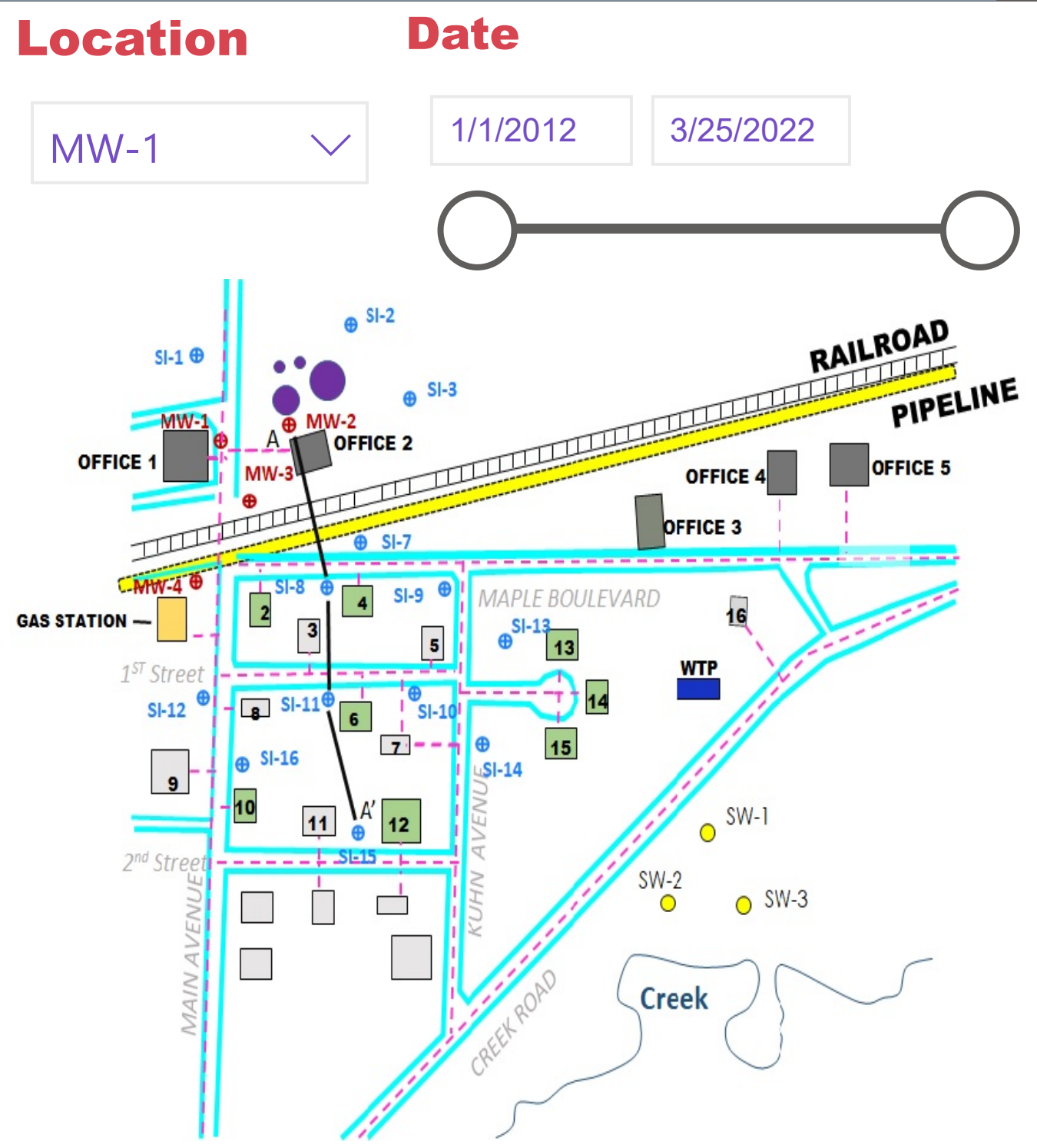
Example Ranges of Common Hydrocarbons





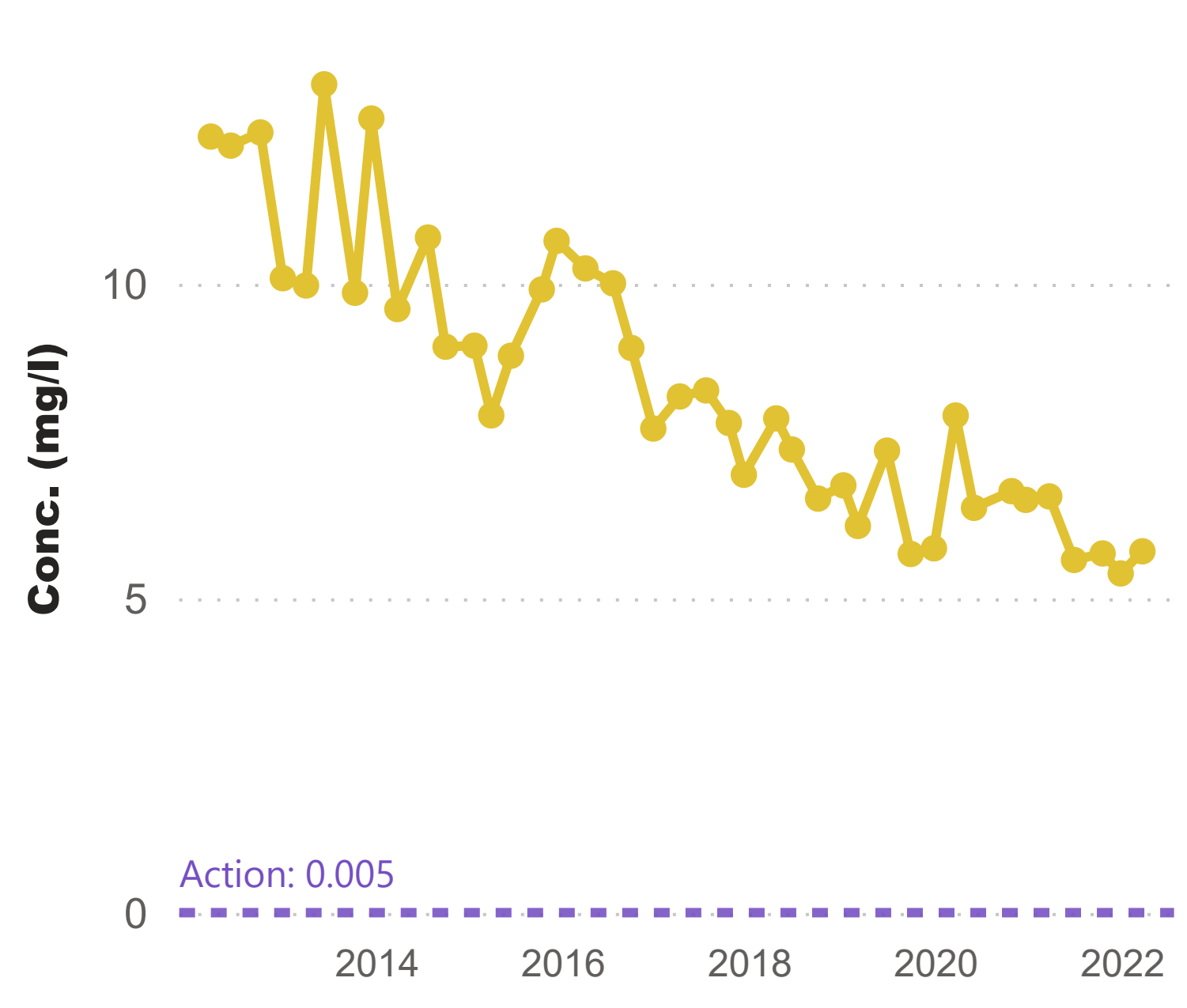
MW-1 Soil and Soil Gas Summary

Clays/Till	Fine Sands	<table border="1"> <tr><td>EC5-6</td><td>EC8-16</td><td>EC16-35</td></tr> <tr><td>EC7-11</td><td>EC9-22</td><td>EC21-35</td></tr> <tr><td>EC12-16</td><td>EC12-16</td><td>EC21-35</td></tr> </table> <p>TPH Criteria Working Group 13 Transport Fractions</p> <p>EPA 6 Toxicity Fractions</p>	EC5-6	EC8-16	EC16-35	EC7-11	EC9-22	EC21-35	EC12-16	EC12-16	EC21-35
EC5-6	EC8-16		EC16-35								
EC7-11	EC9-22		EC21-35								
EC12-16	EC12-16	EC21-35									
Silts/Clays	Medium/Coarse Sands										
Silts	Fill										

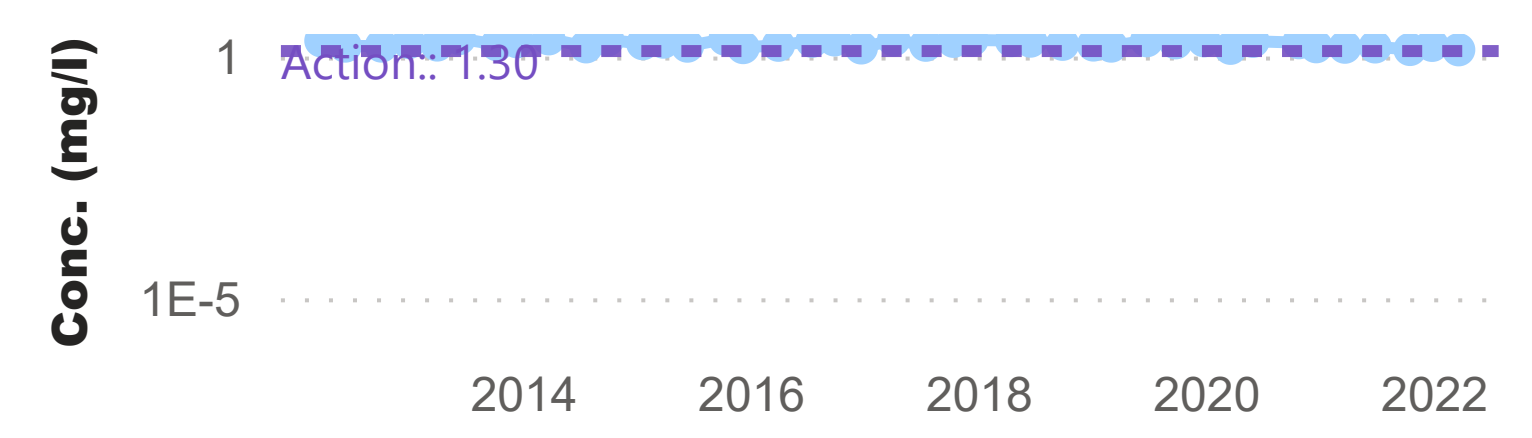


Dissolved Phase

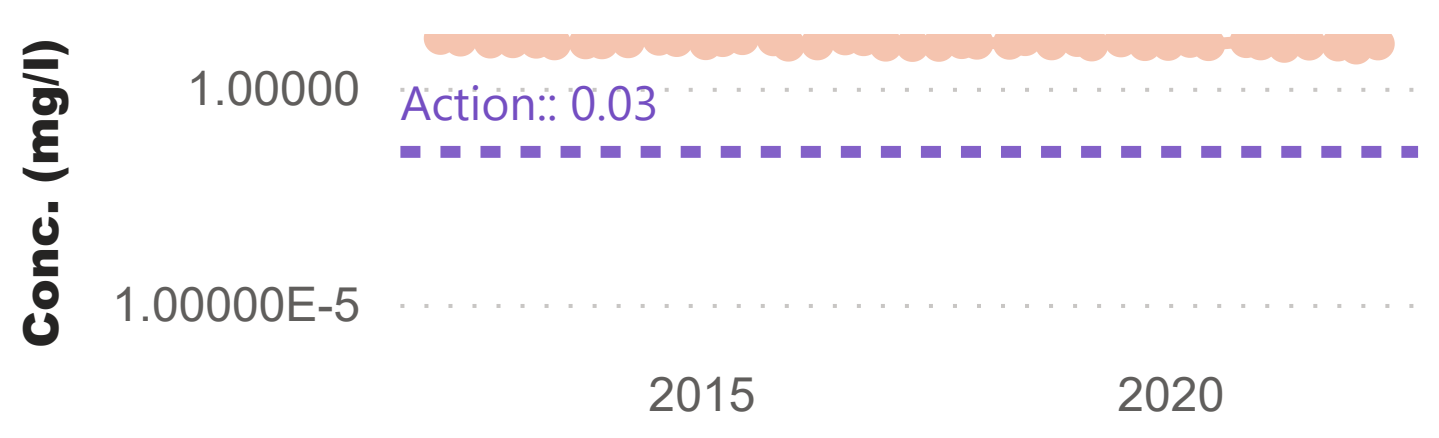
Benzene



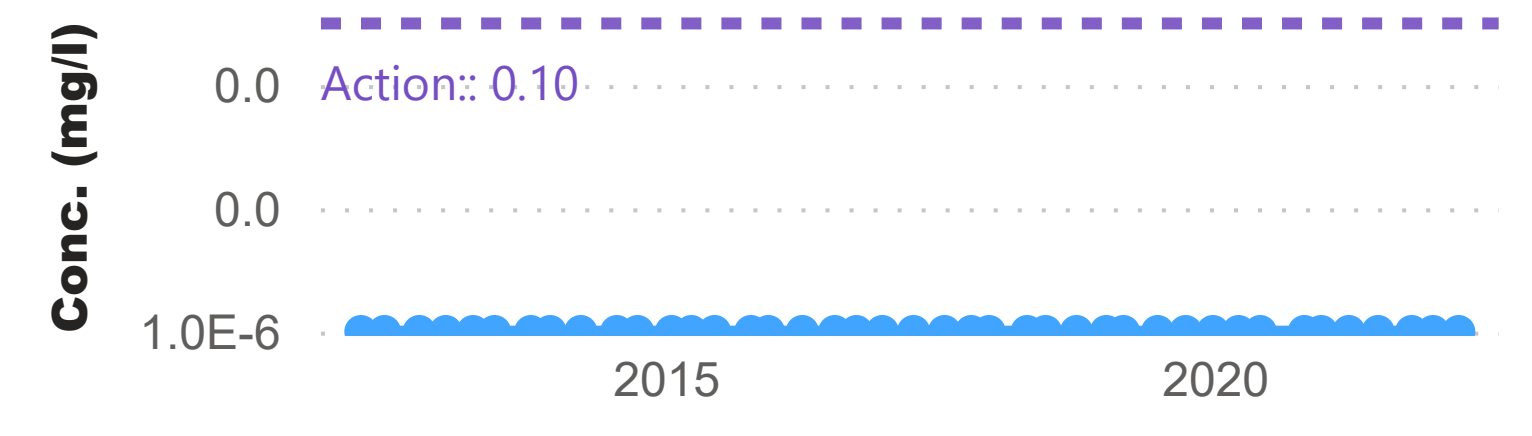
TPH-Aliphatic (Low)



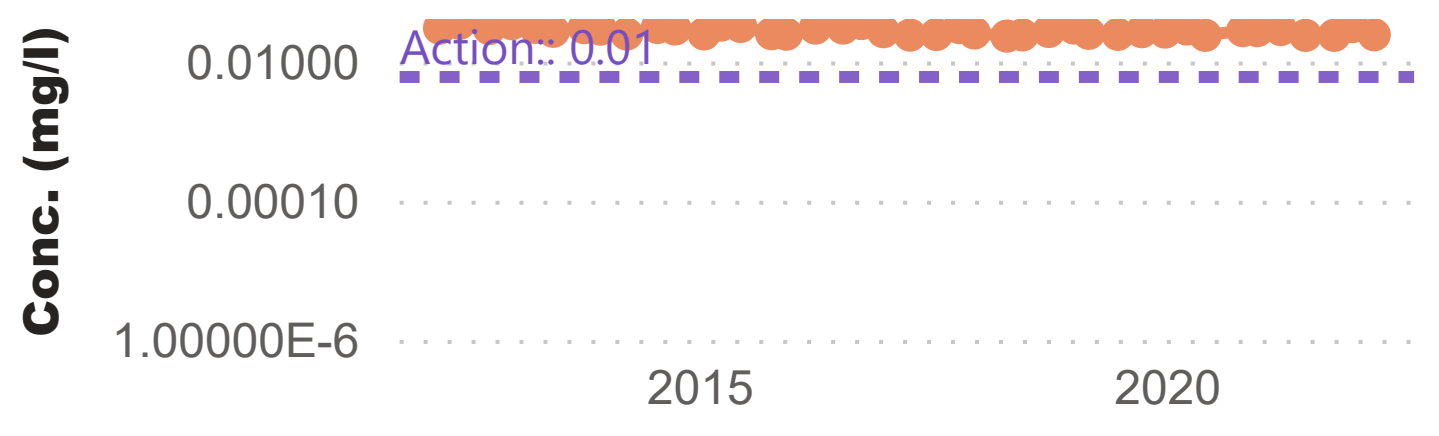
TPH-Aromatic (Low)



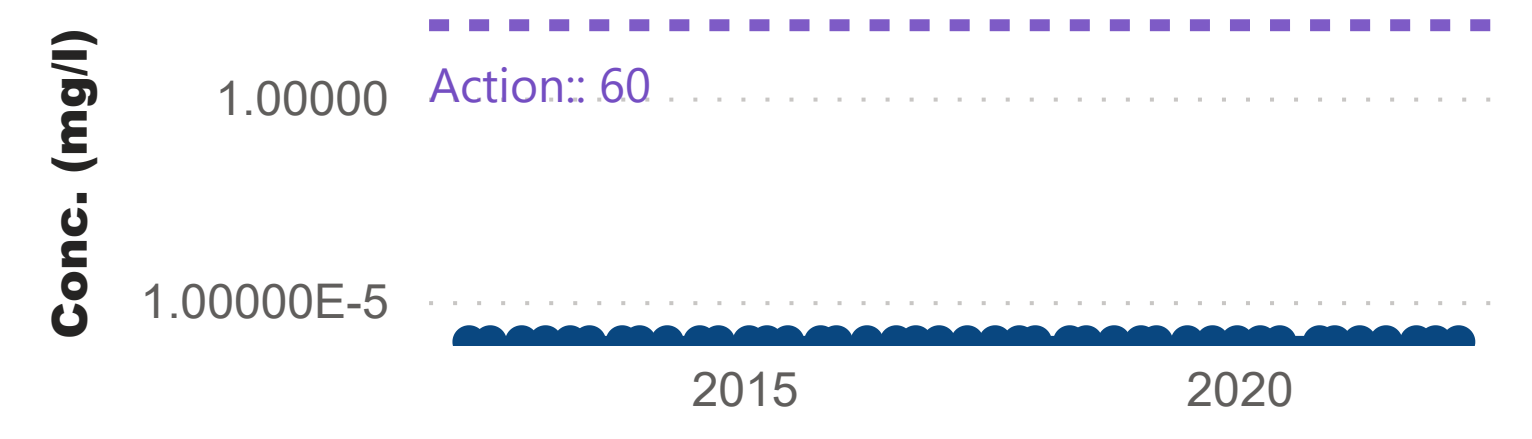
TPH-Aliphatic (Medium)



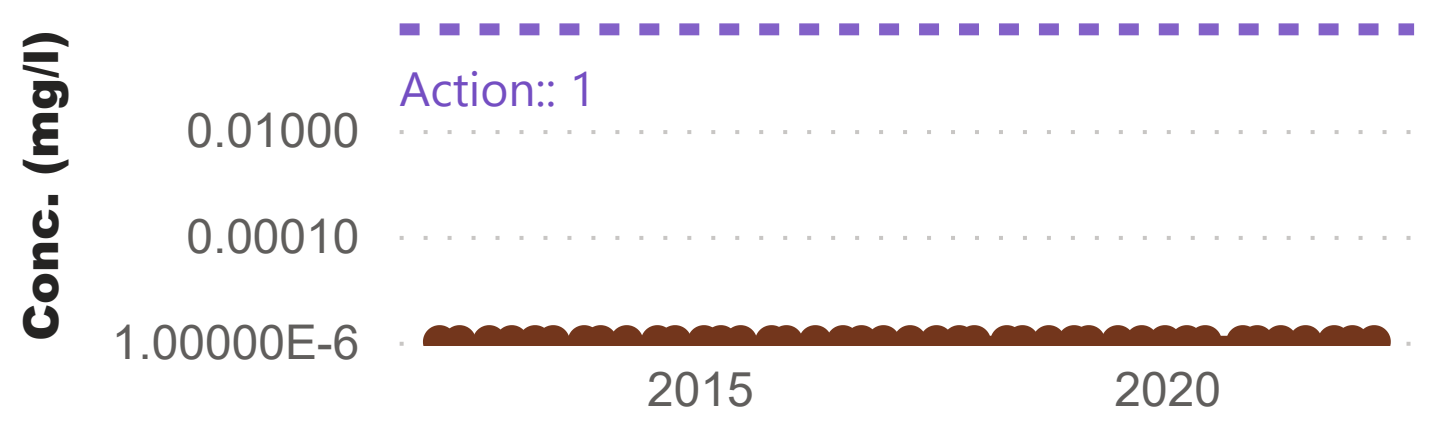
TPH-Aromatic (Medium)



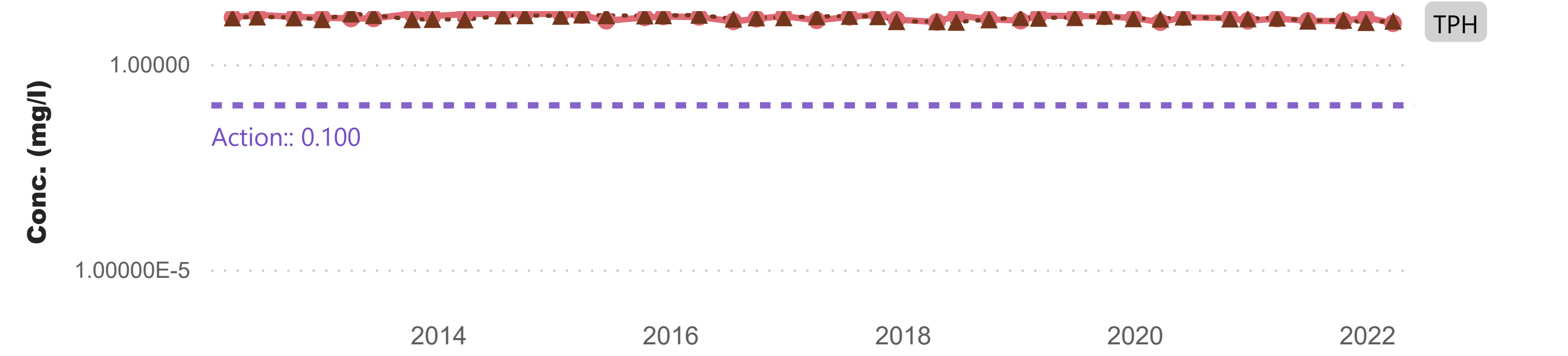
TPH-Aliphatic (High)



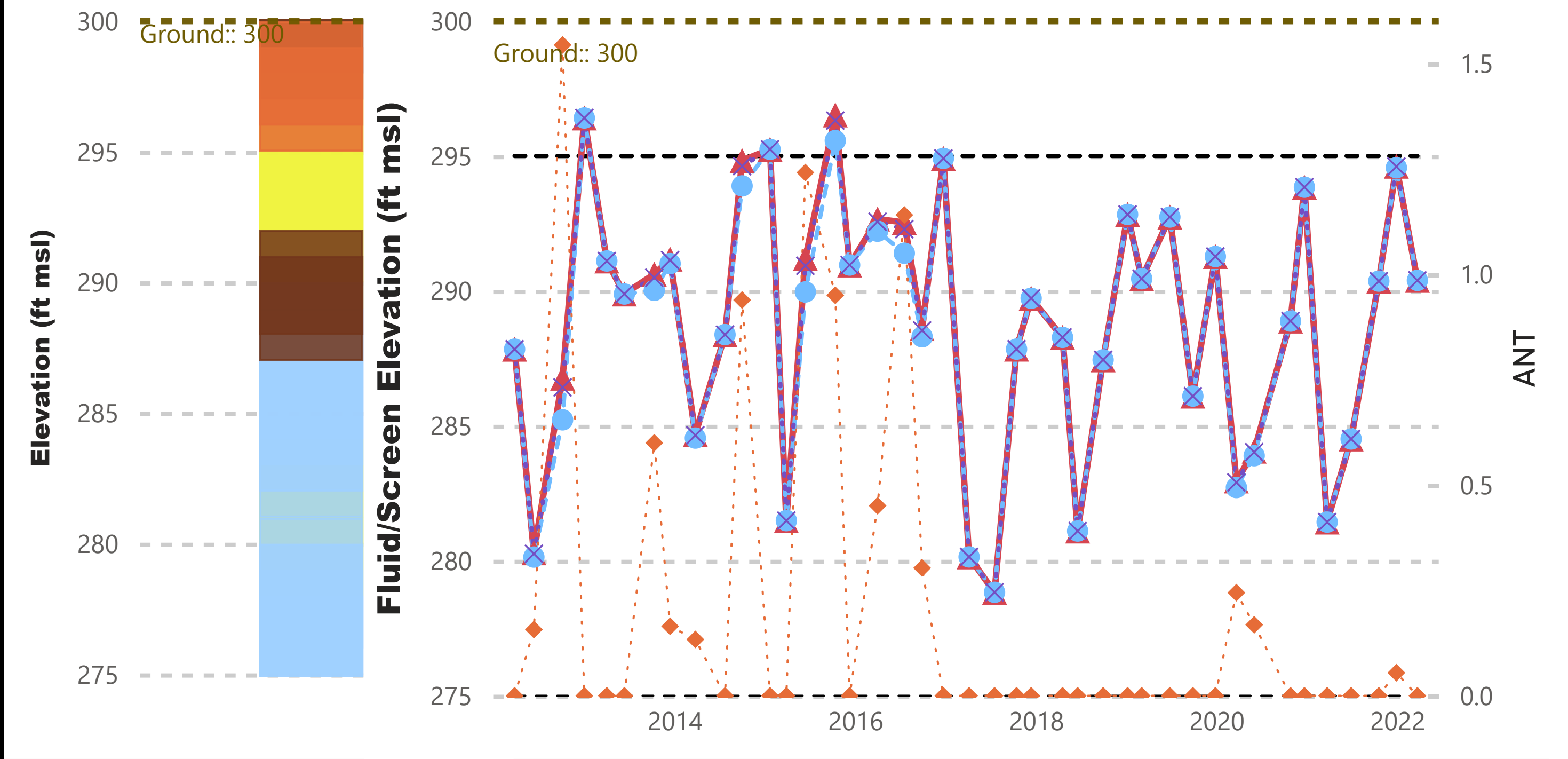
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph

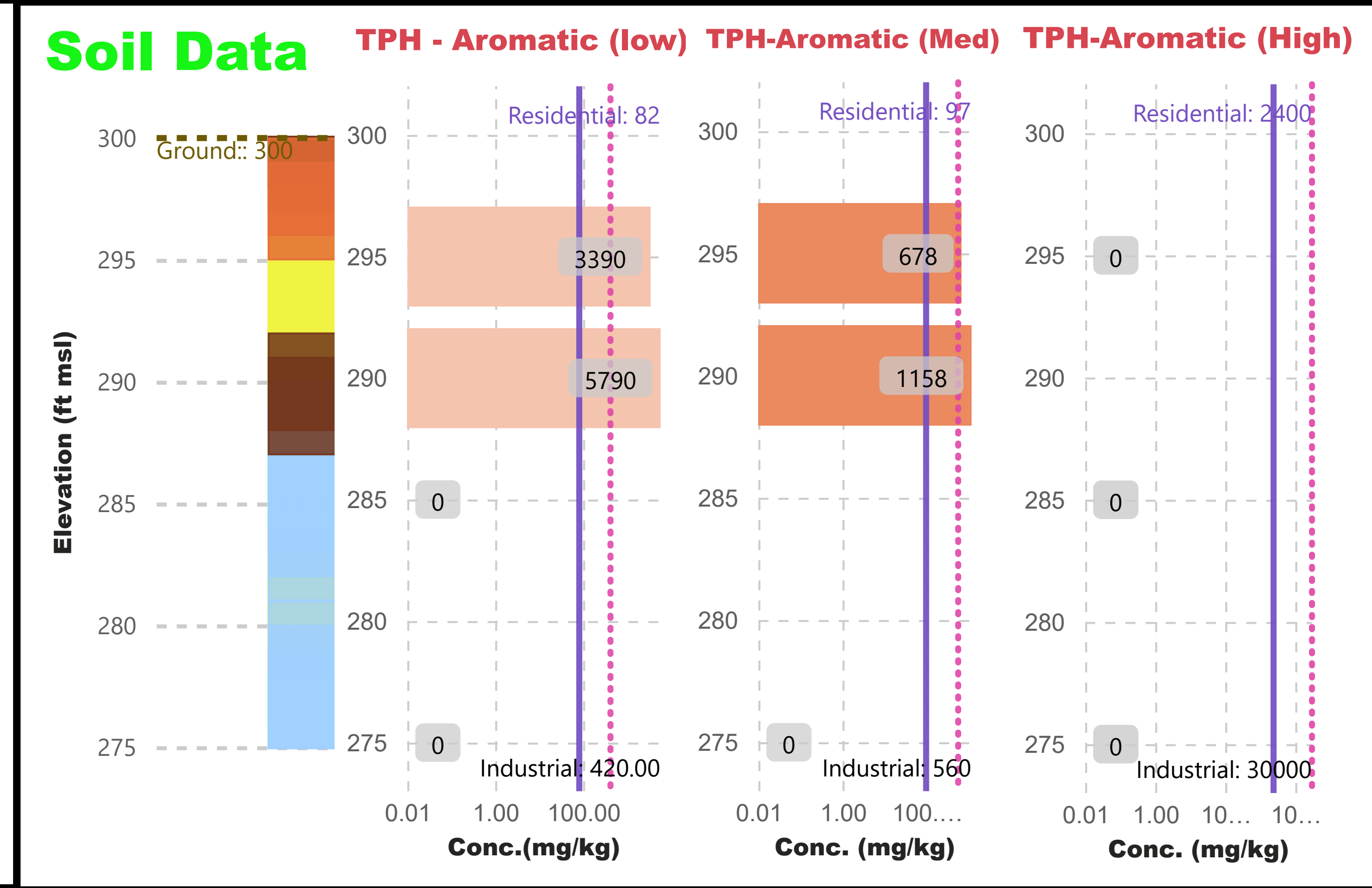
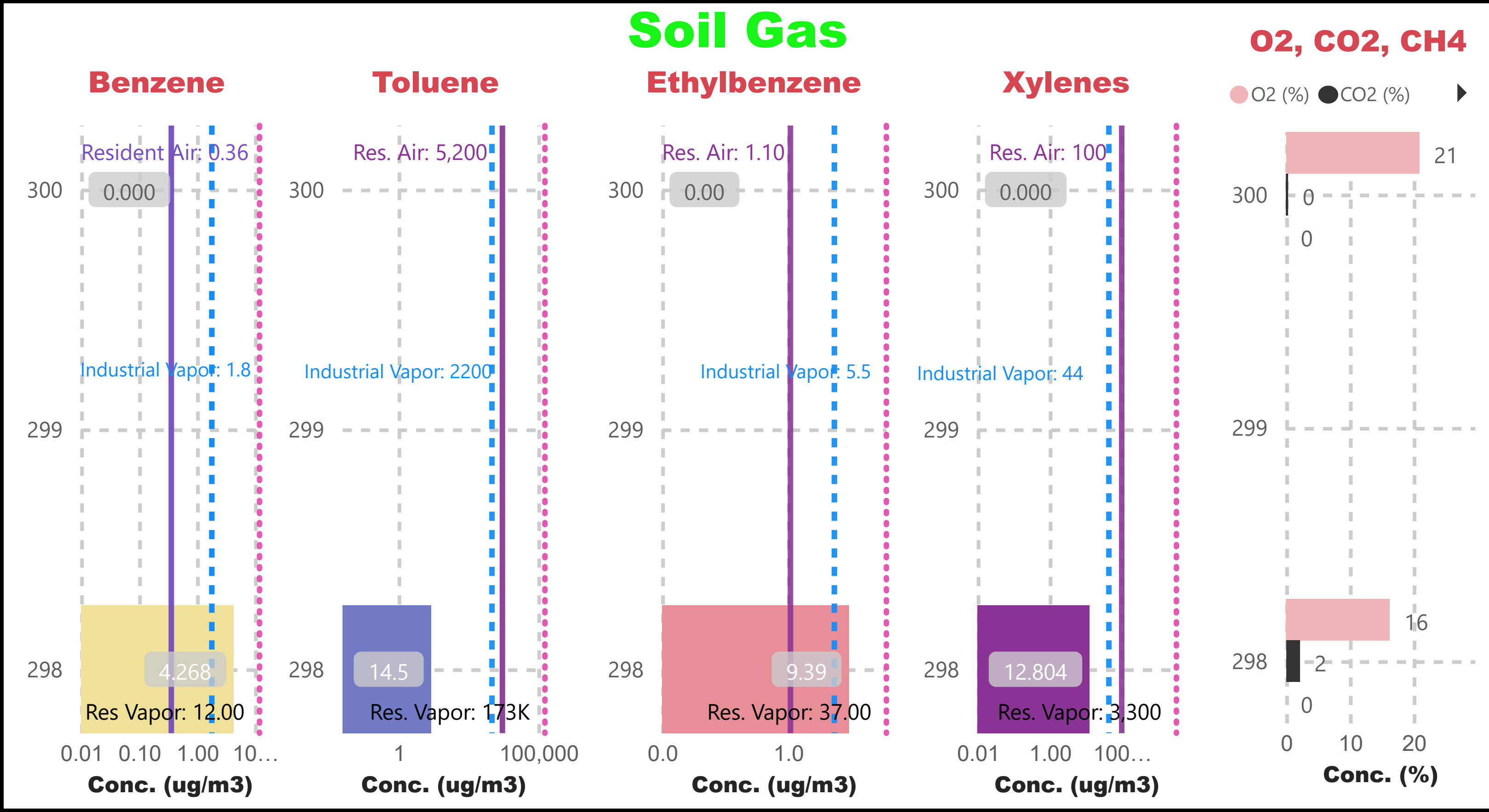
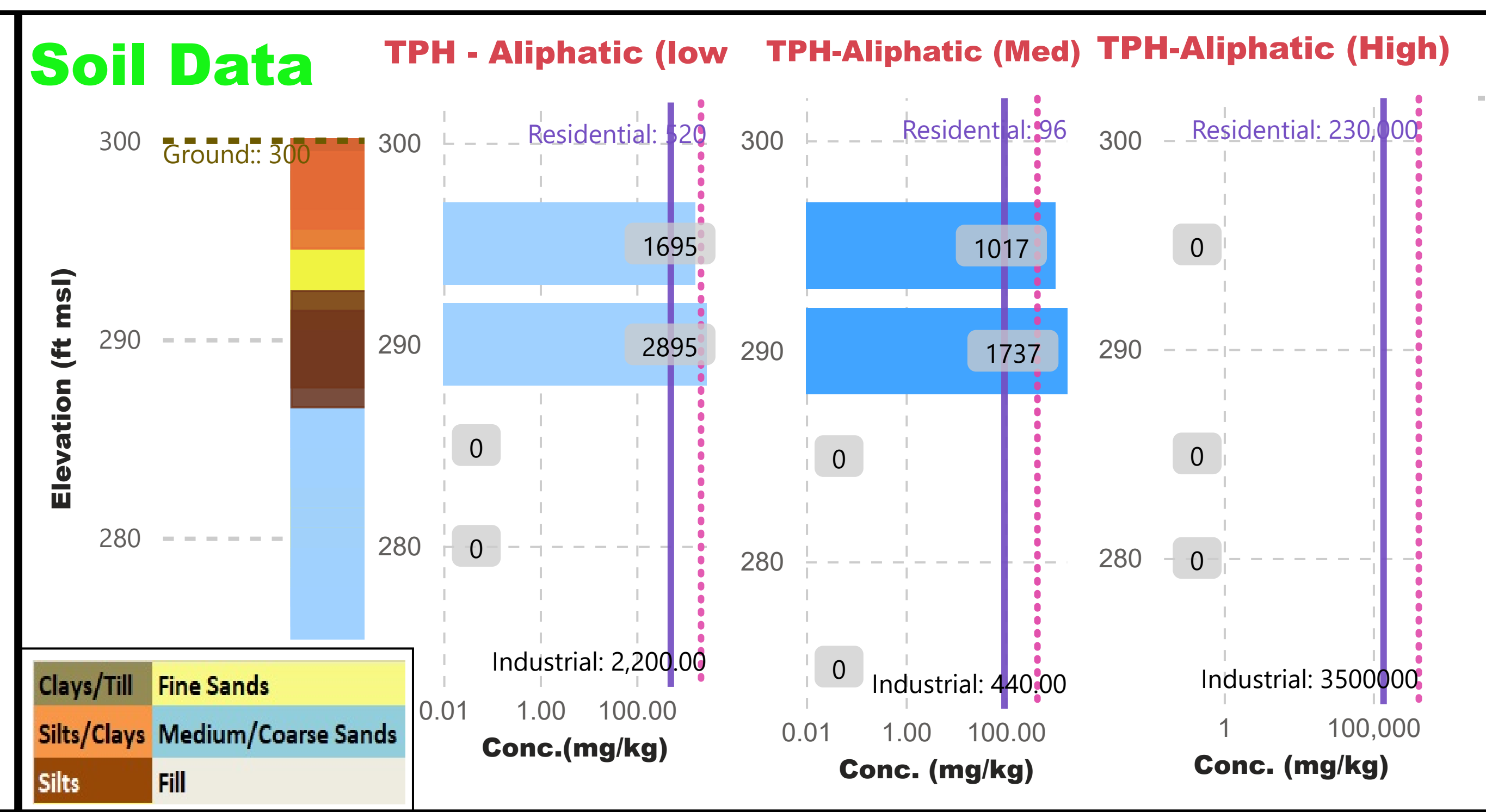
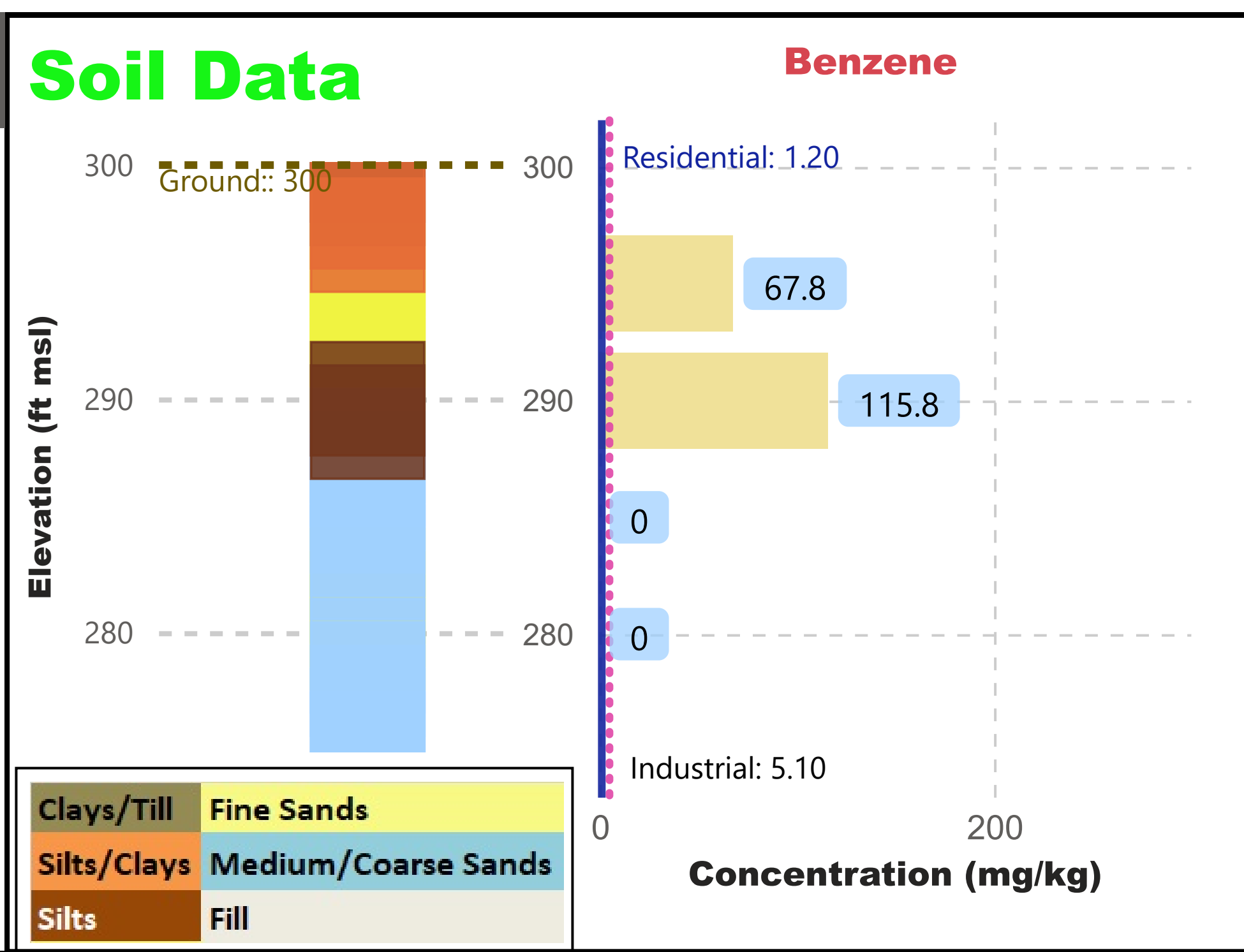
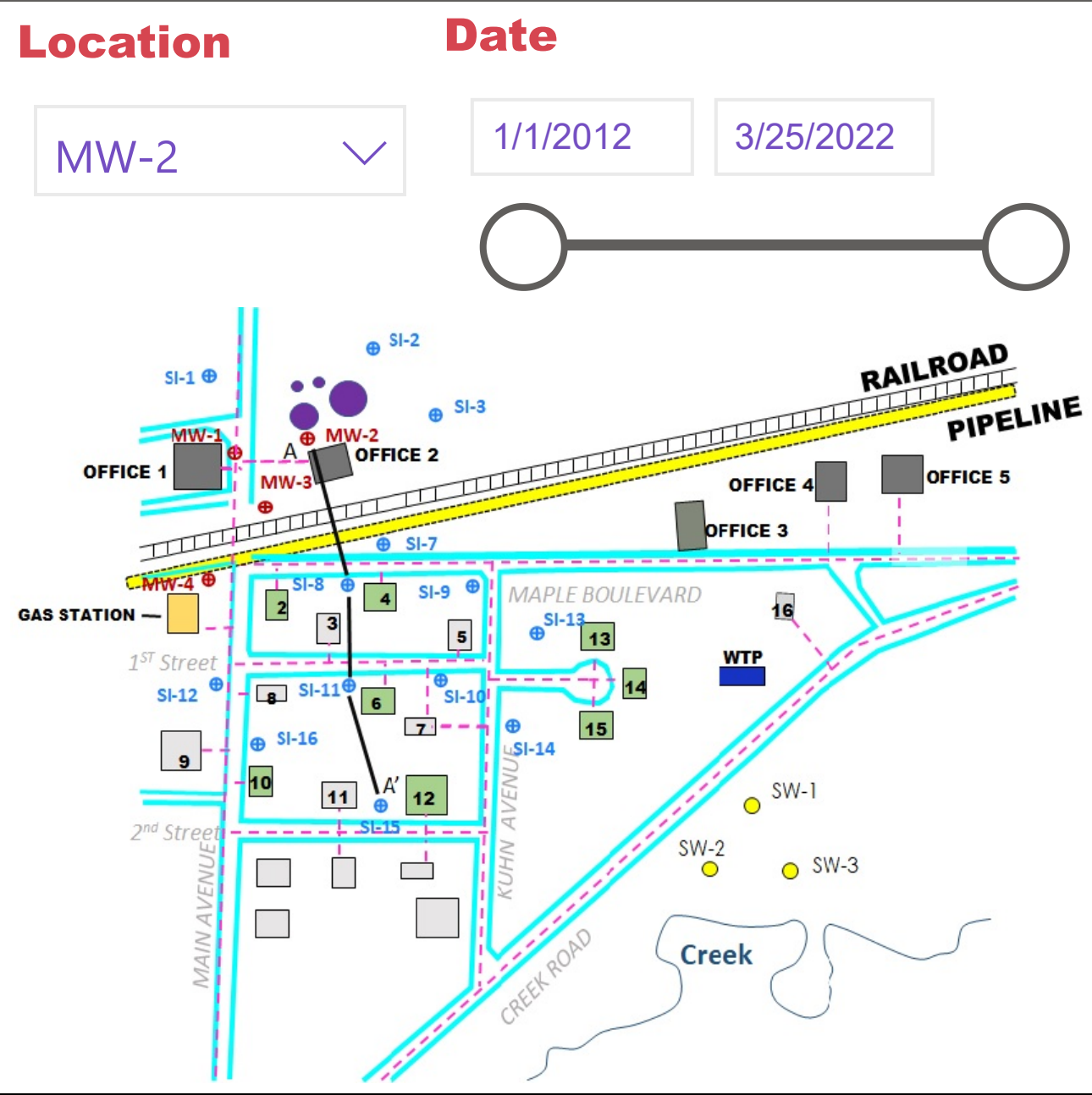


The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	EC5-6	EC8-10	Low	EC5-6	Low
Aliphatic	EC8-10	EC10-12	Medium	EC8-16	Medium
Aliphatic	EC12-16	EC16-21	High	EC16-35	High
Aromatic	EC7	EC9-11	Low	EC9-22	Low
Aromatic	EC12-16	EC16-21	Medium	EC22-35	Medium
Aromatic	EC21-35	(same properties as EC16-21) -- not considered a transport fraction--	High	EC21-35	High

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

MW-1 Hydrograph & Dissolved Summary

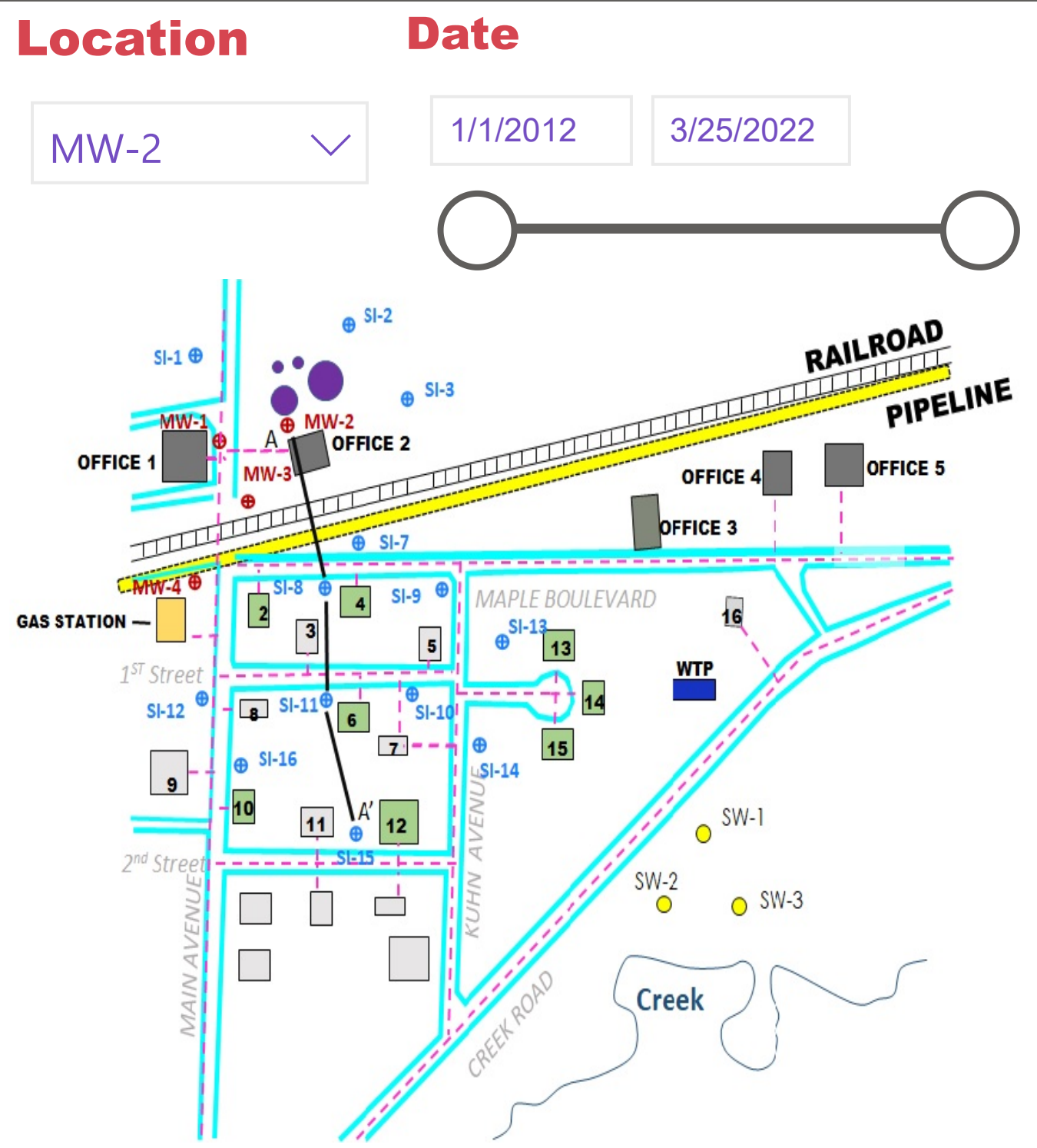


MW-2 Soil and Soil Gas Summary

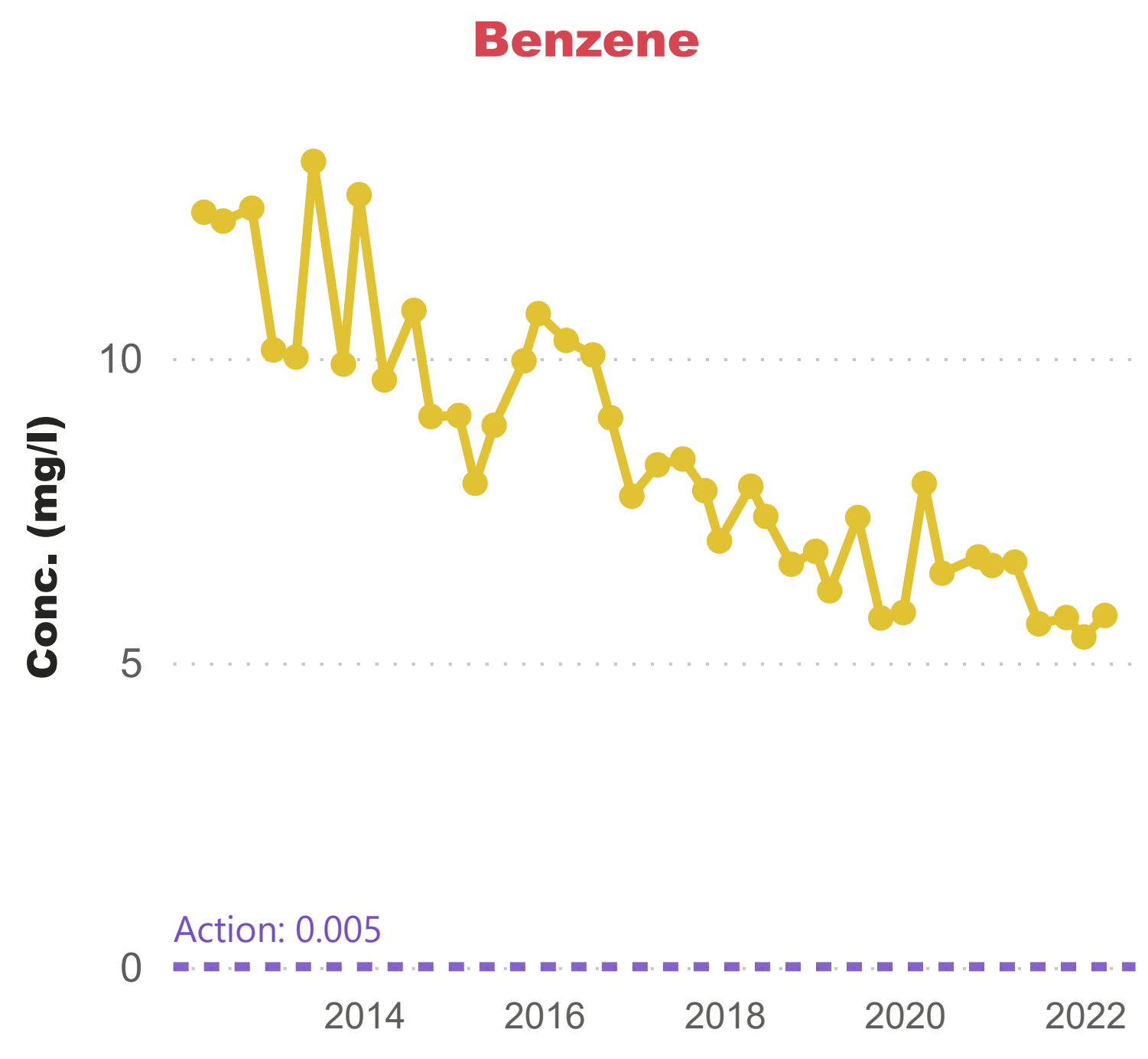
Clays/Till	Fine Sands
Silts/Clays	Medium/Coarse Sands
Silts	Fill

Molecular Structure	Aliphatic	Aromatic	EC Number	TPH Criteria Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	EC5-6, EC6-8, EC7, EC9-10, EC11-12	EC12-16, EC16-21, EC21-35	EC21-35 (same properties as EC16-21) - not considered a transport fraction	Low	Low	Low
Aromatic	EC8-9	EC12-16, EC16-21, EC21-35	EC21-35	Medium	Medium	Medium
Aromatic	EC16-21, EC21-35	EC16-21, EC21-35	EC21-35	High	High	High

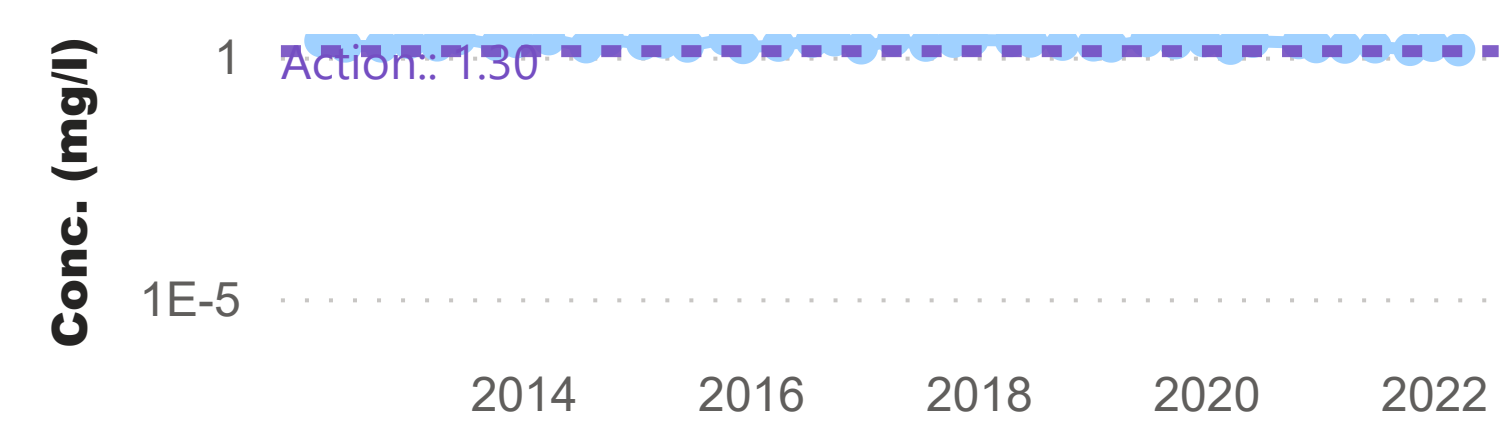
Increasing Equivalent Carbon (EC) Number →



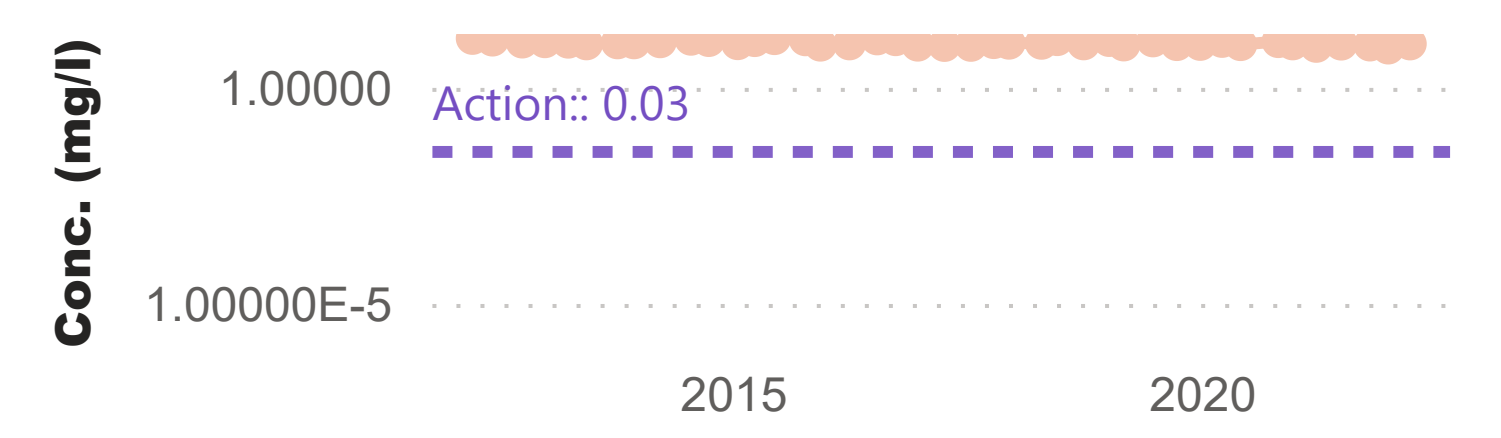
Dissolved Phase



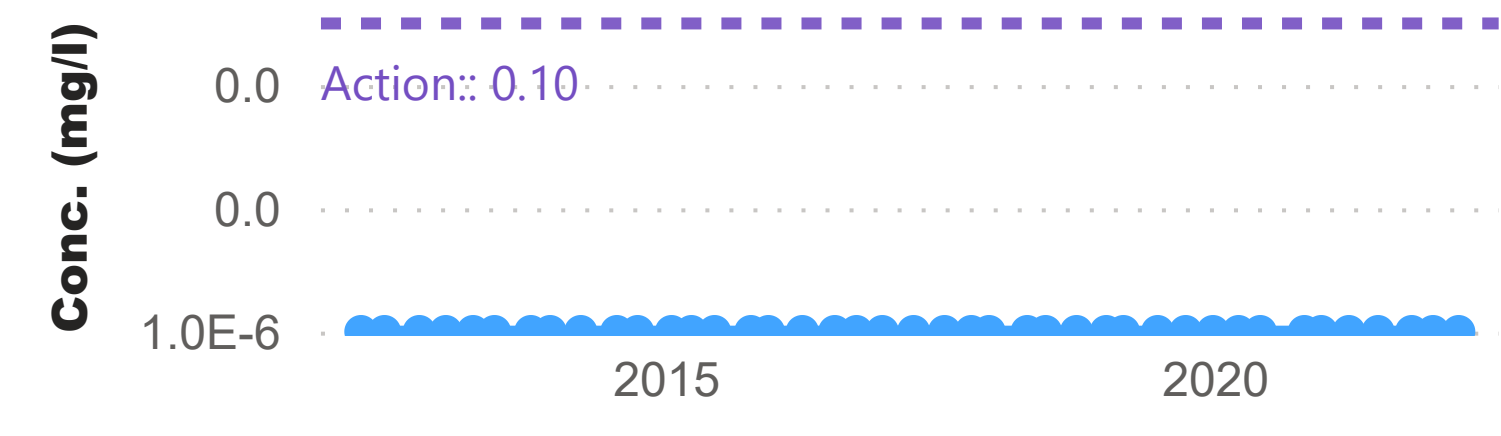
TPH-Aliphatic (Low)



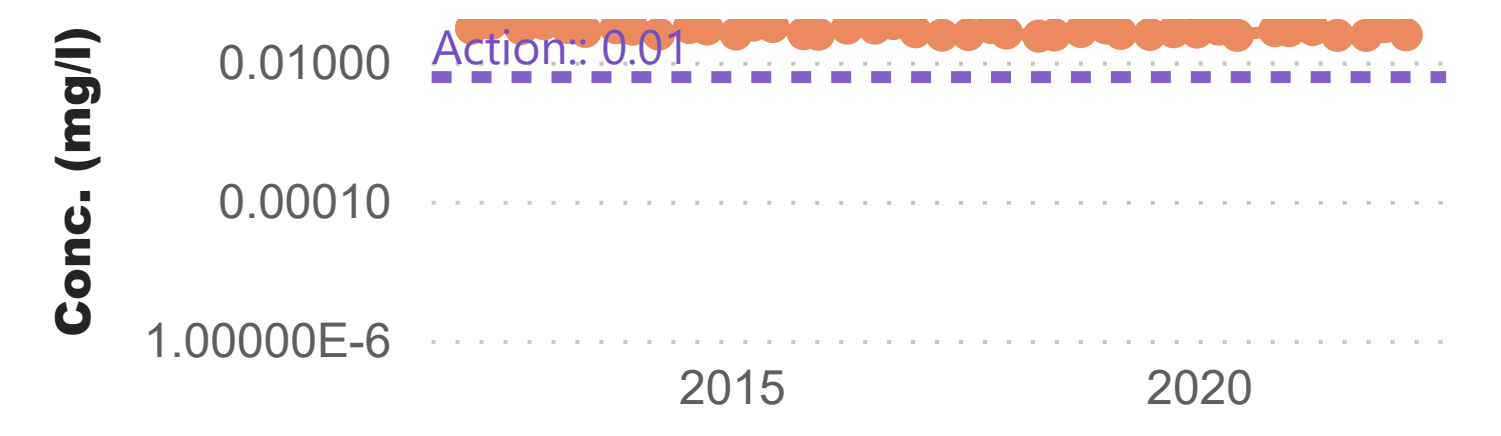
TPH-Aromatic (Low)



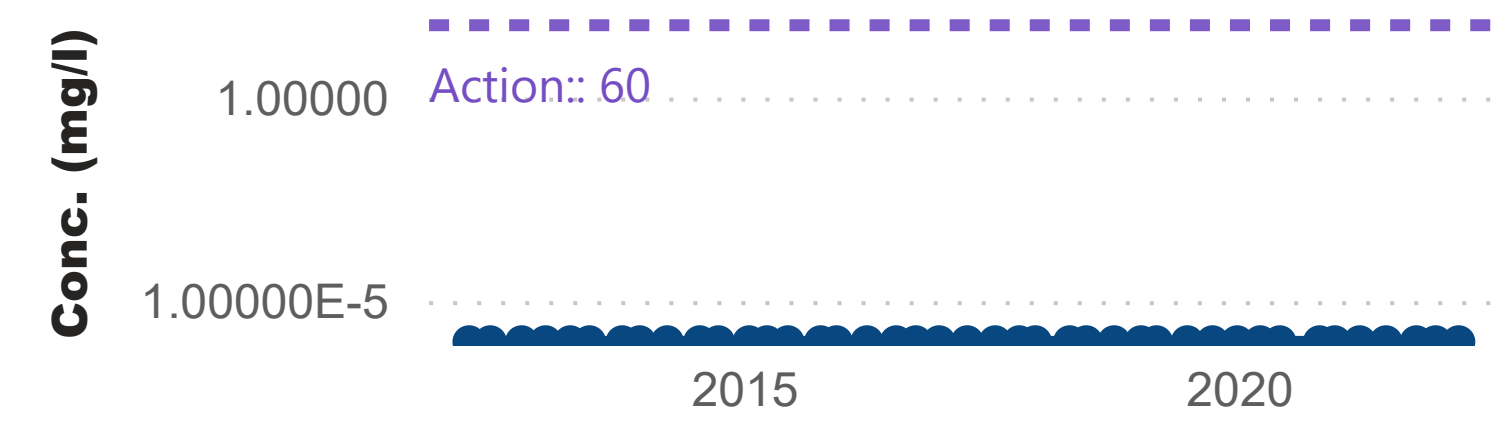
TPH-Aliphatic (Medium)



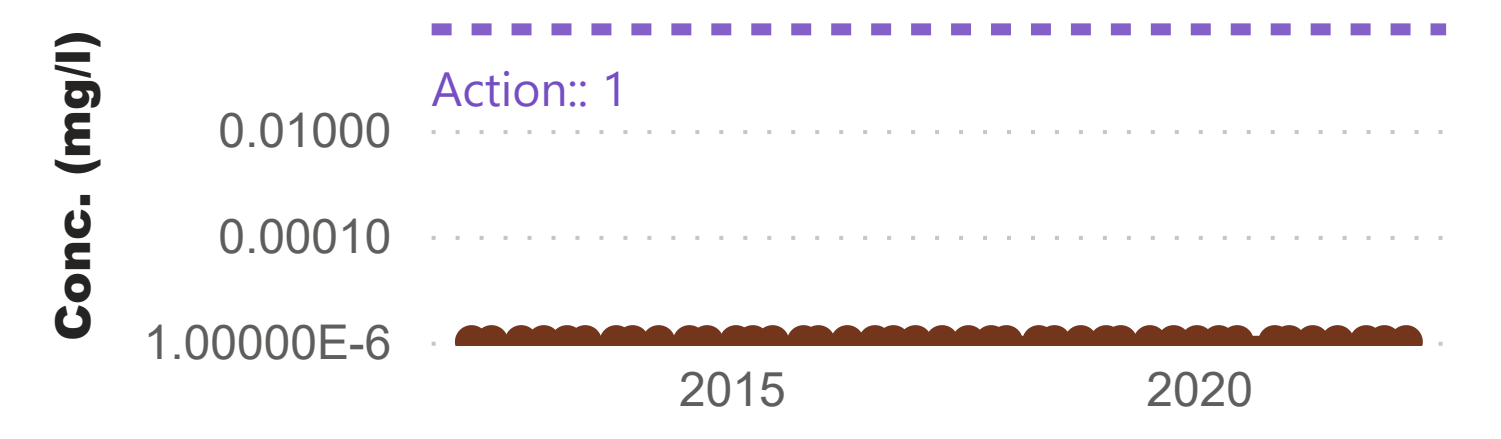
TPH-Aromatic (Medium)



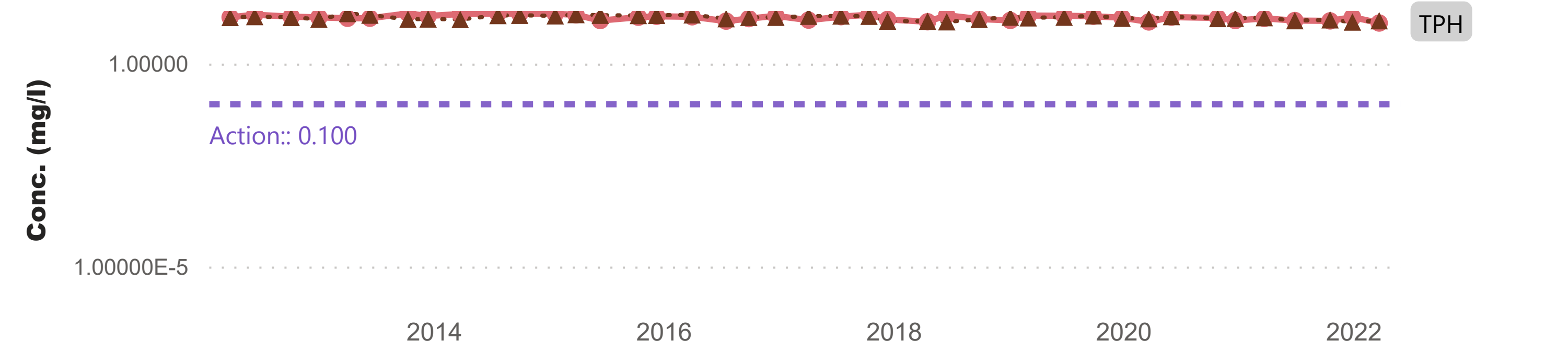
TPH-Aliphatic (High)



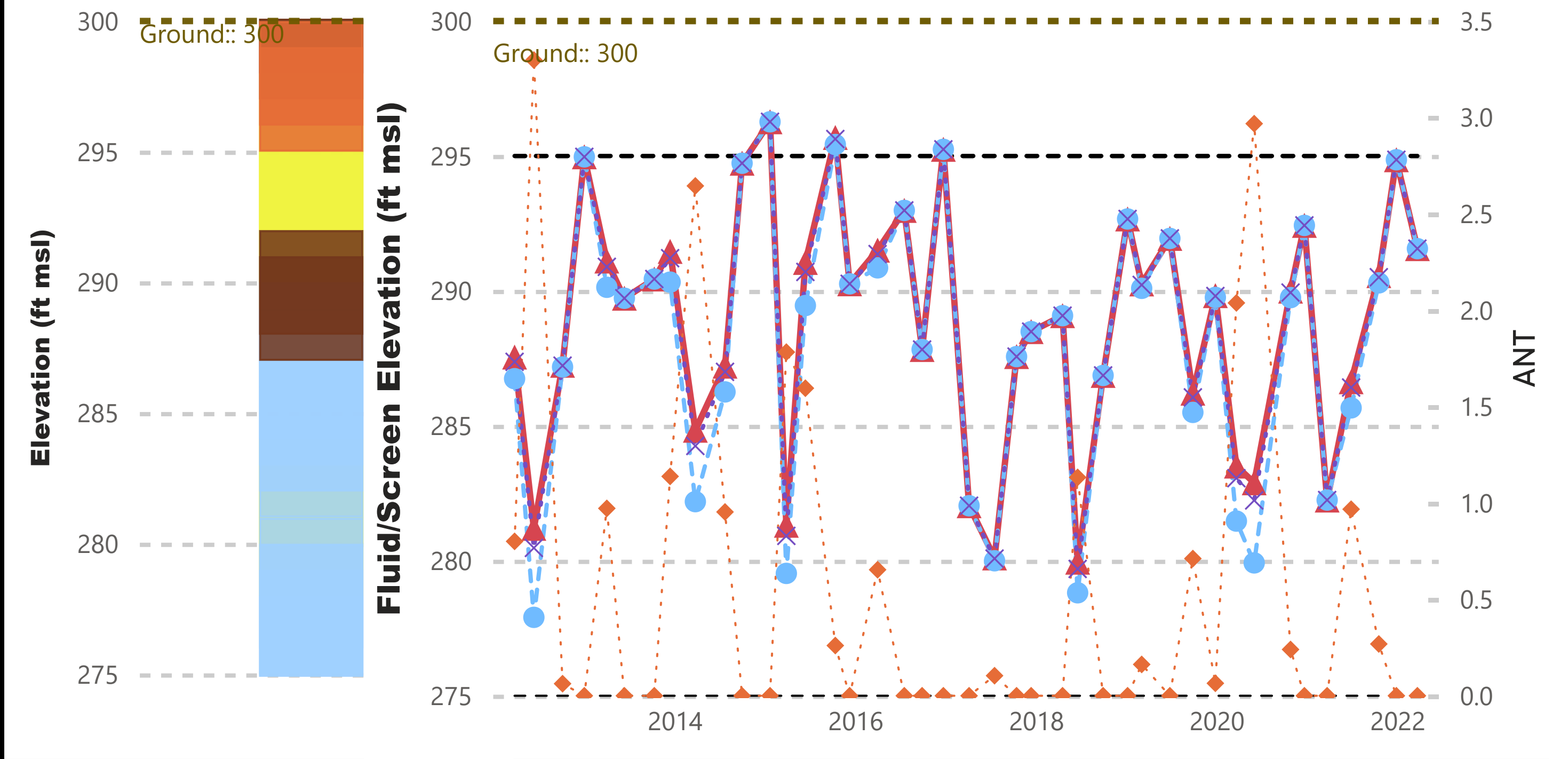
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

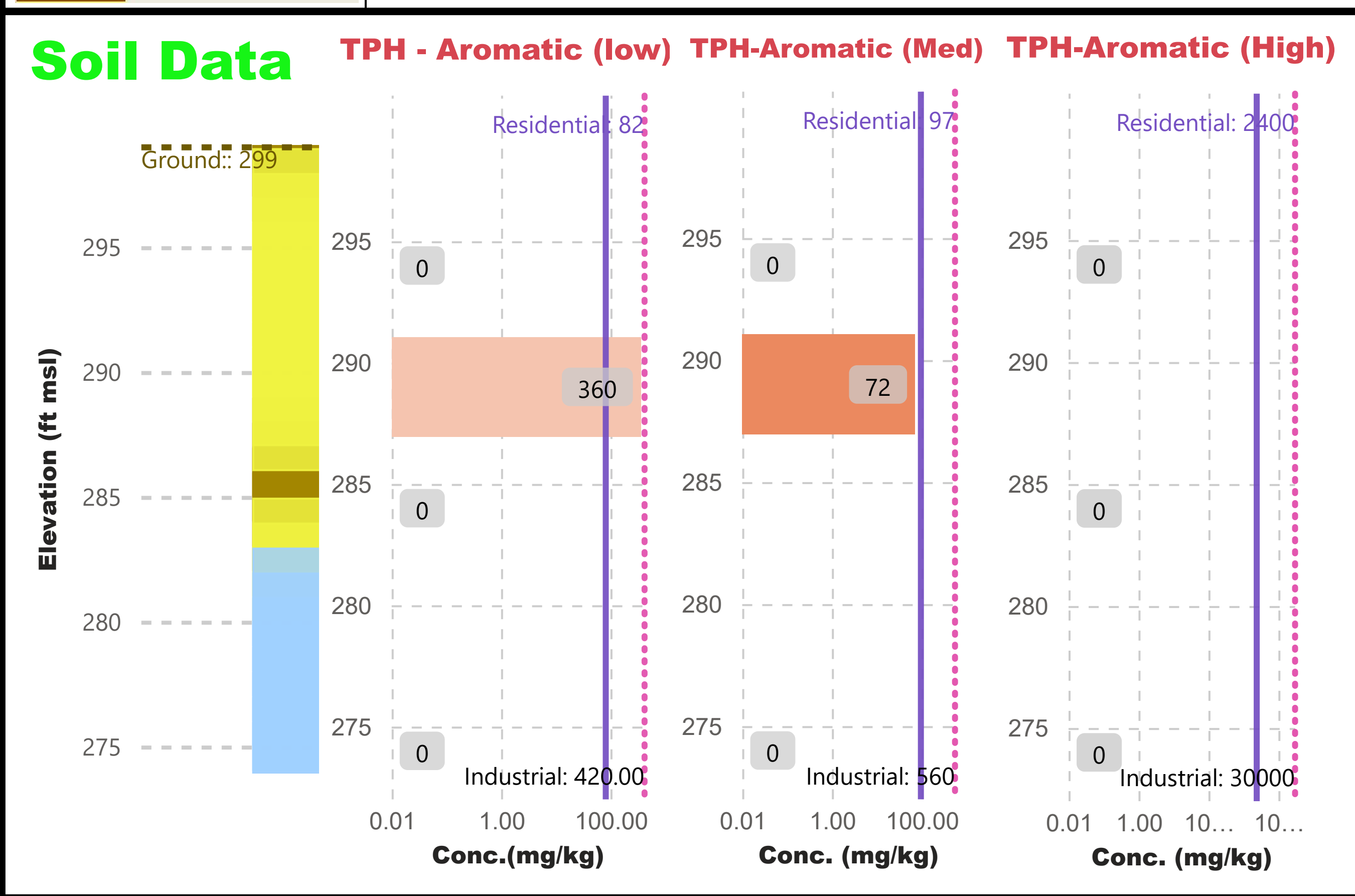
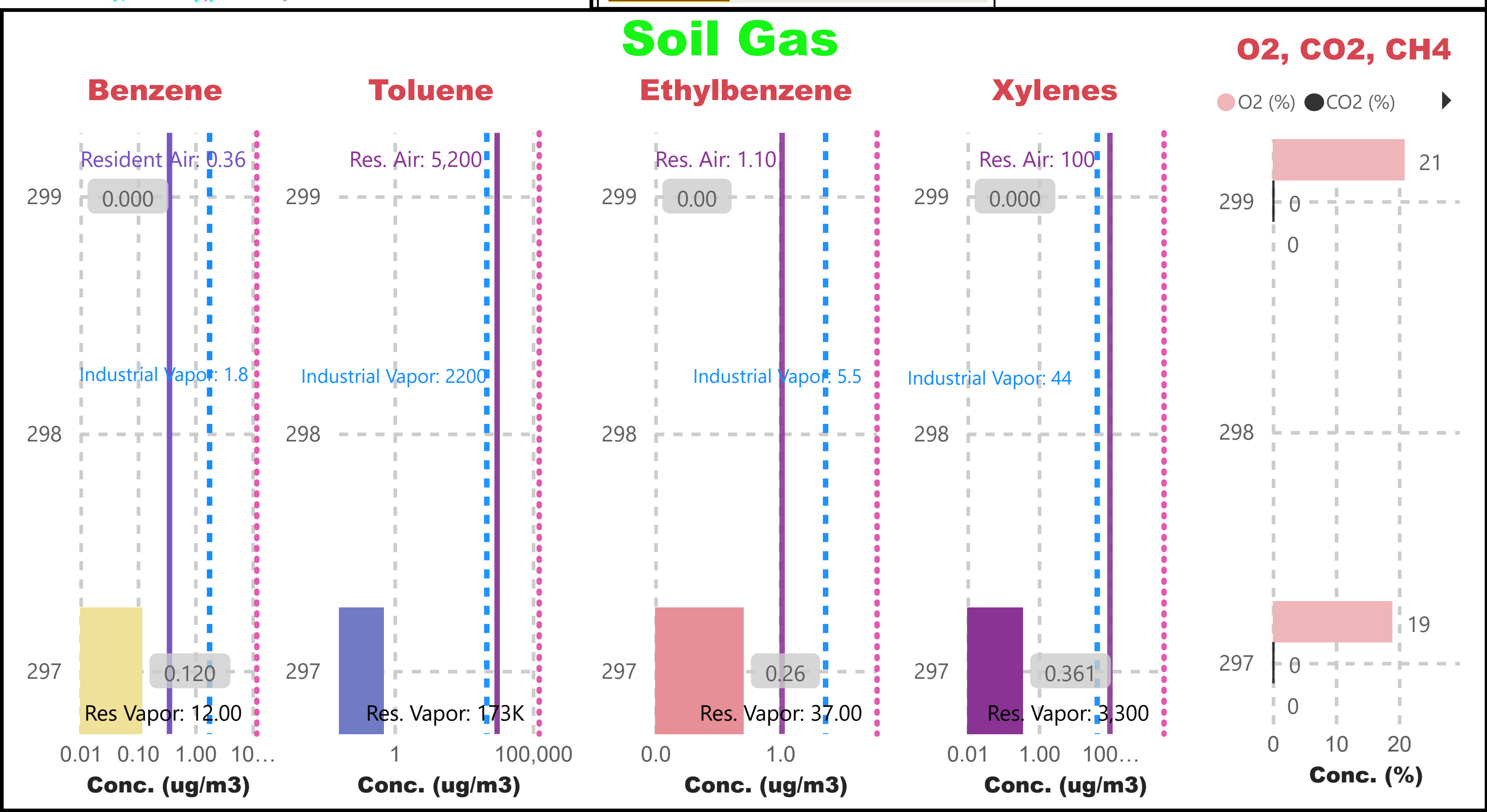
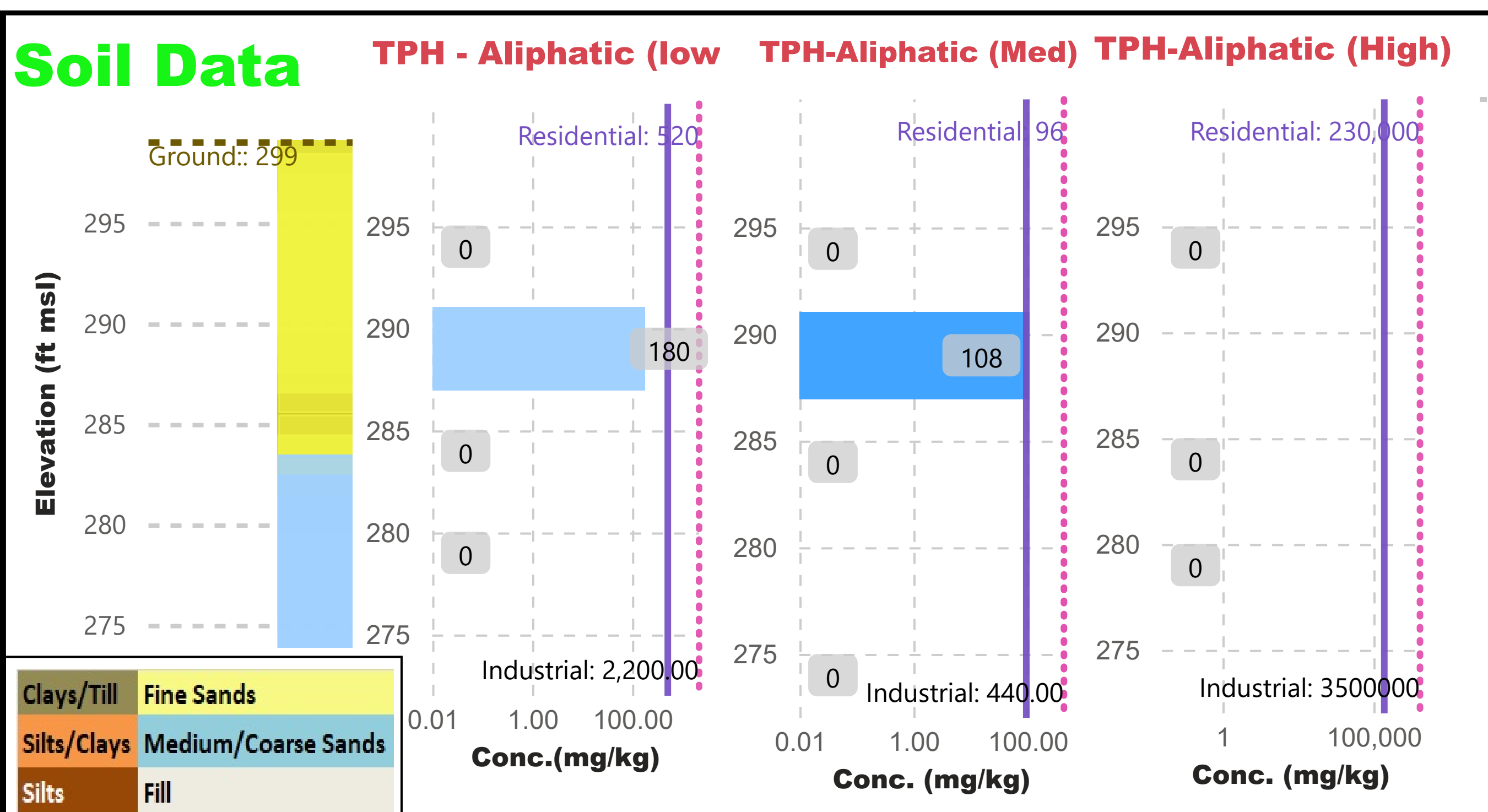
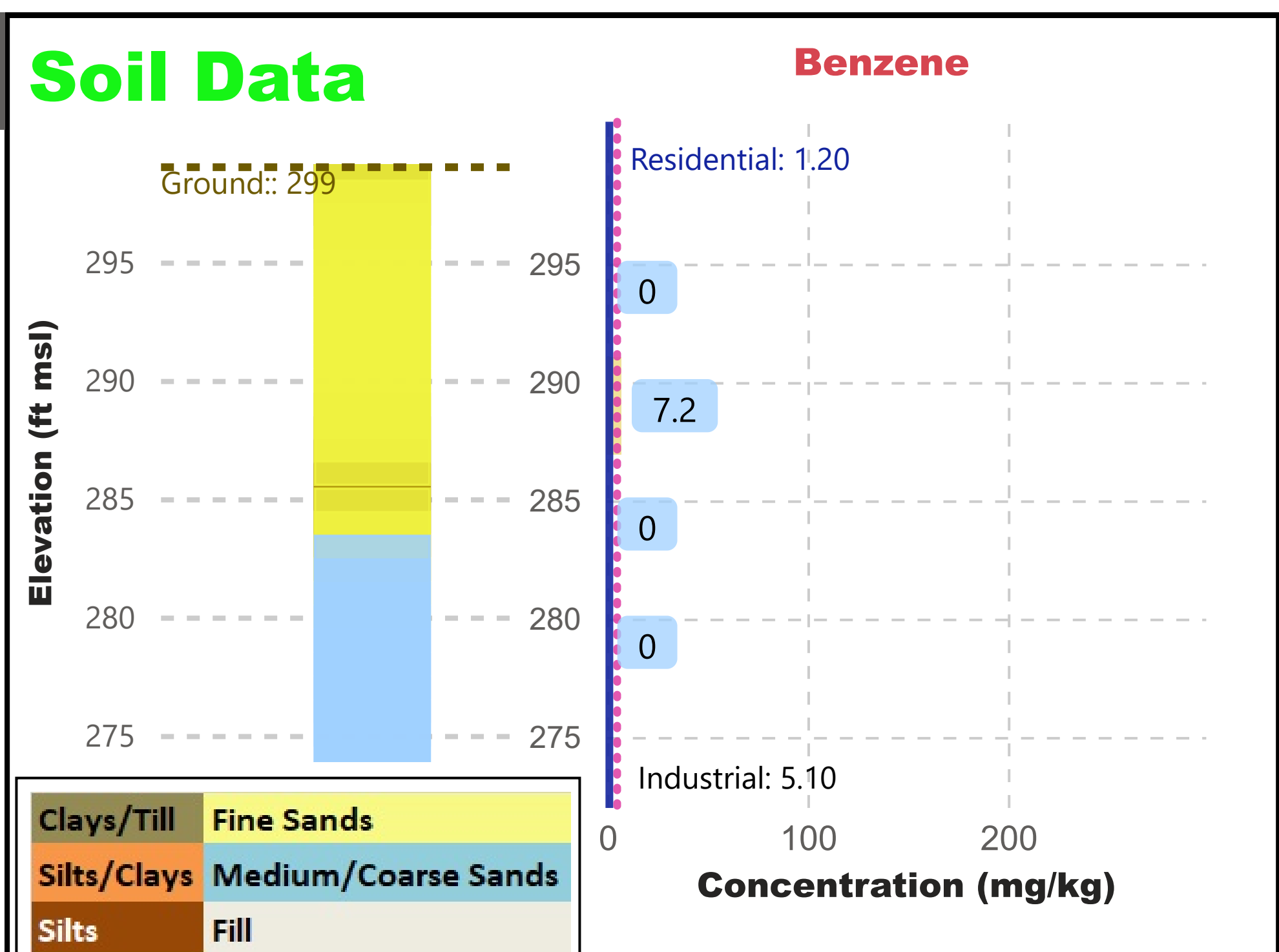
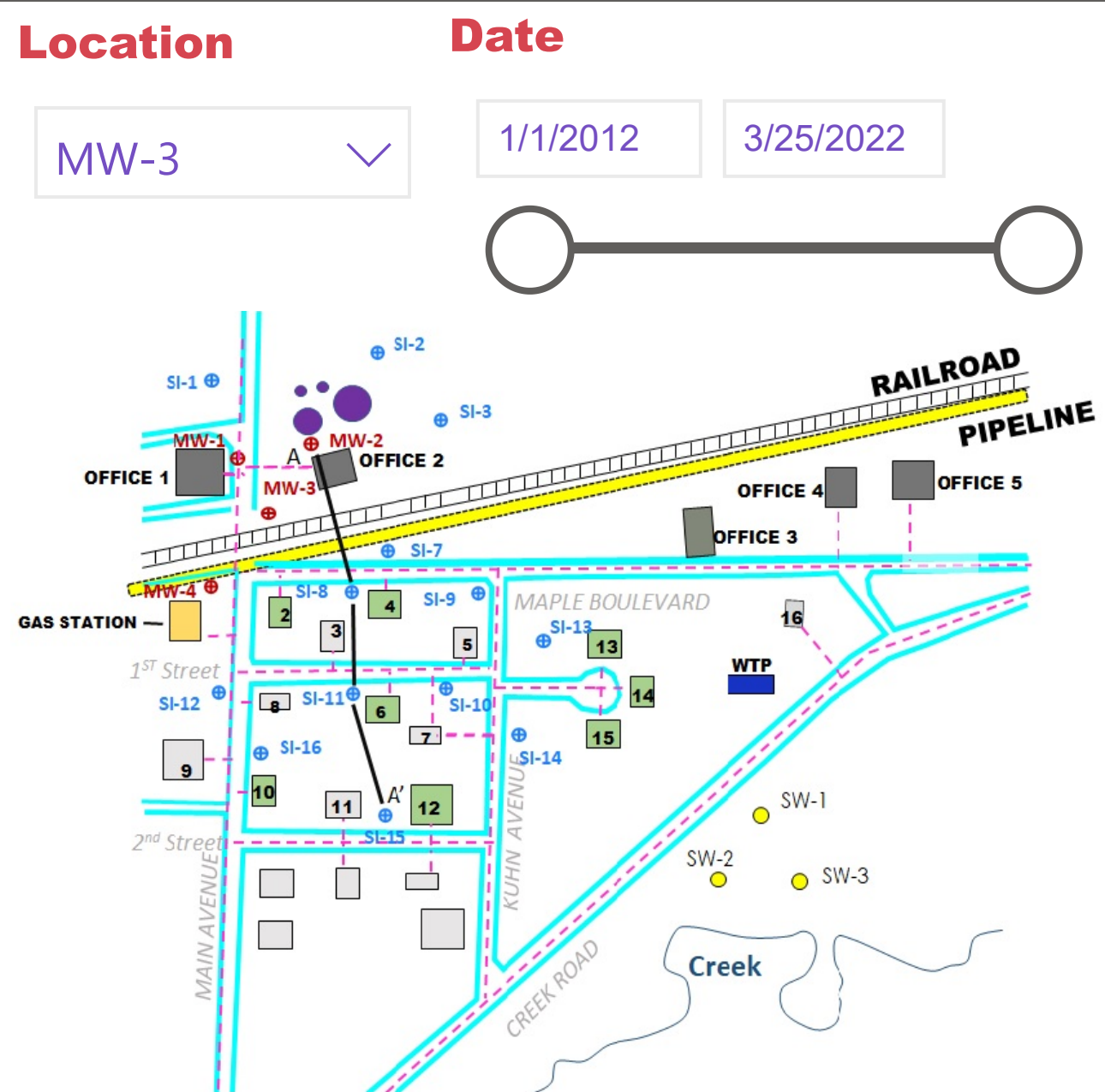
Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group 13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	EC5-6	EC8-16	EC8-16	EC8-16
Aromatic	EC7-10	EC9-12	EC9-22	EC9-22
	EC12-16	EC16-21	EC16-35	EC16-35
	EC12-16	EC16-21	EC21-35	EC21-35
			EC22-35	EC22-35

Increasing Equivalent Carbon (EC) Number →

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

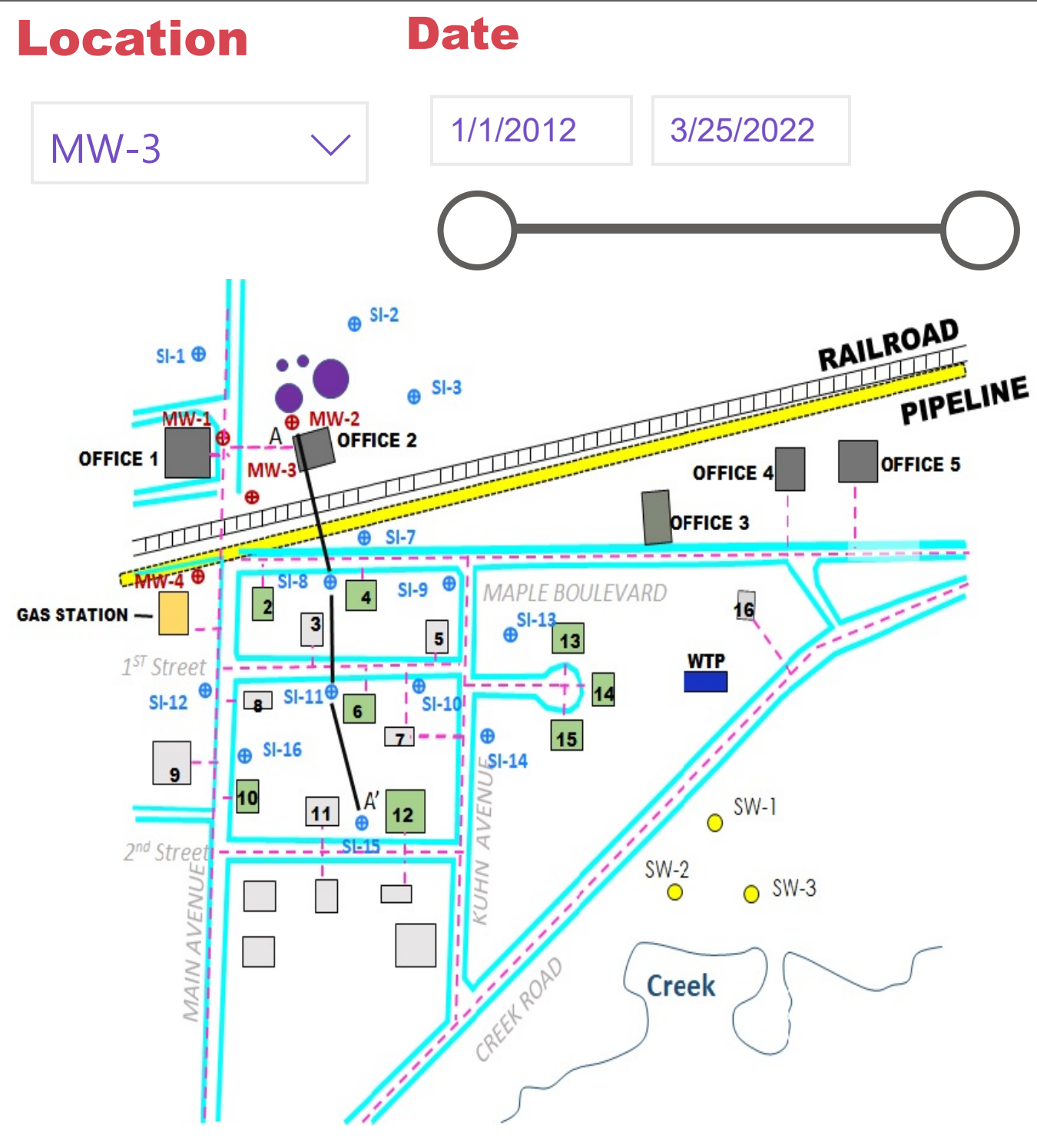
MW-2

Hydrograph & Dissolved Summary



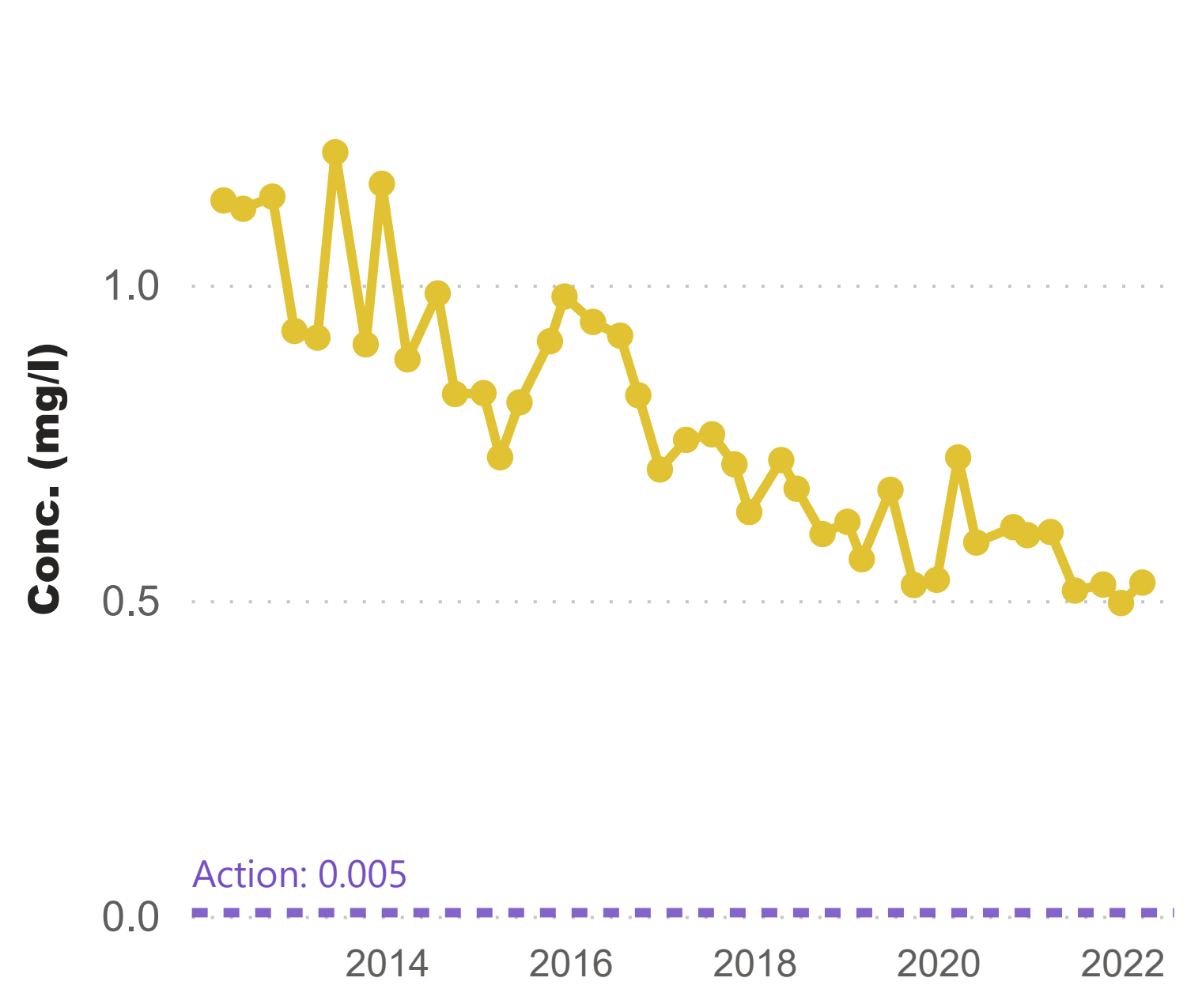
MW-3 Soil and Soil Gas Summary

Clays/Till	Fine Sands	<p>TPH Criteria Working Group 13 Transport Fractions</p>
Silts/Clays	Medium/Coarse Sands	
Silts	Fill	

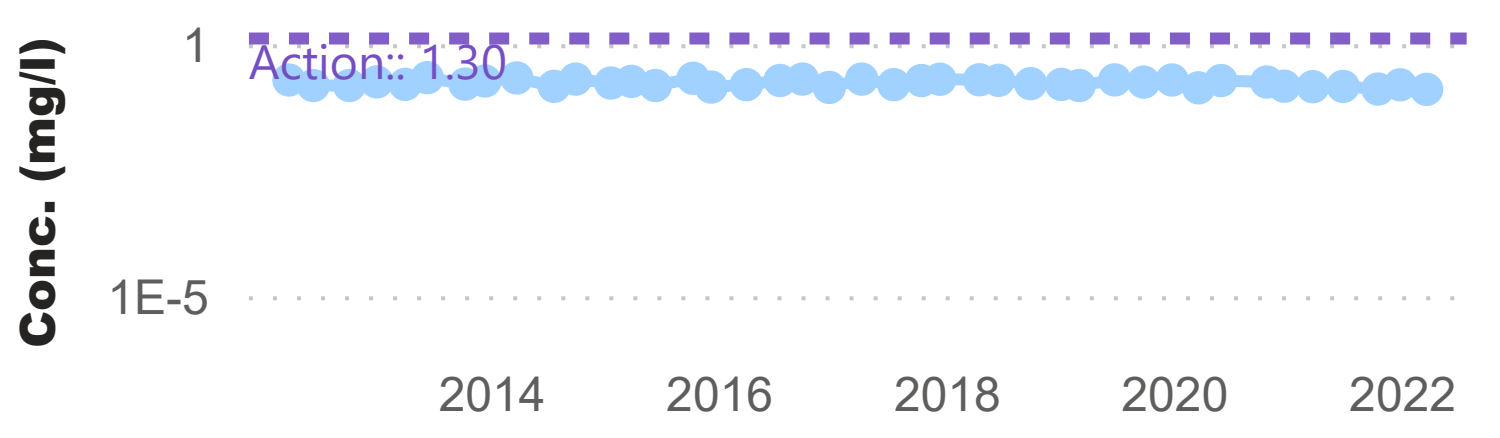


Dissolved Phase

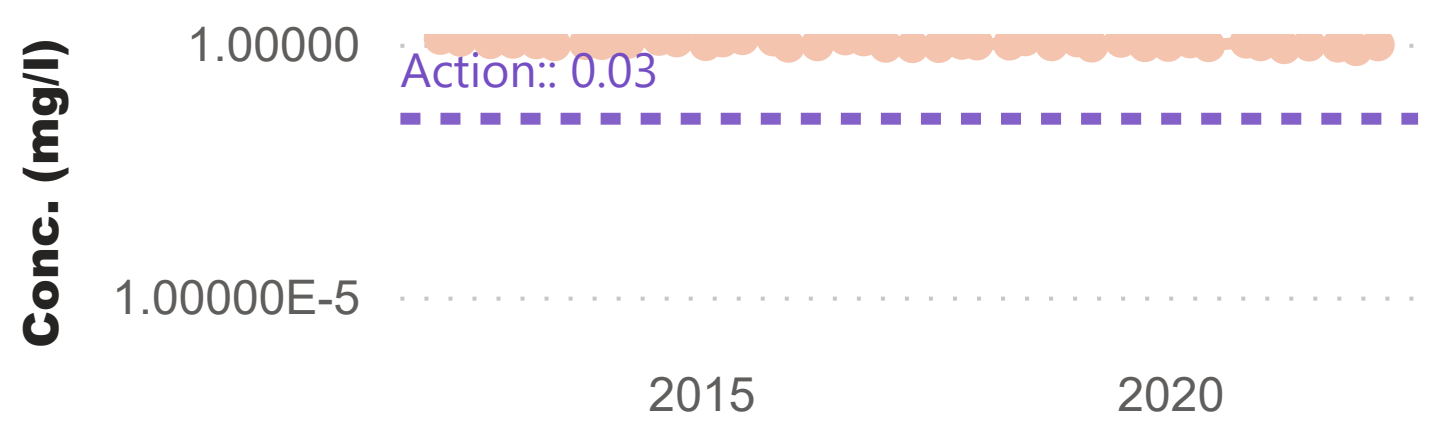
Benzene



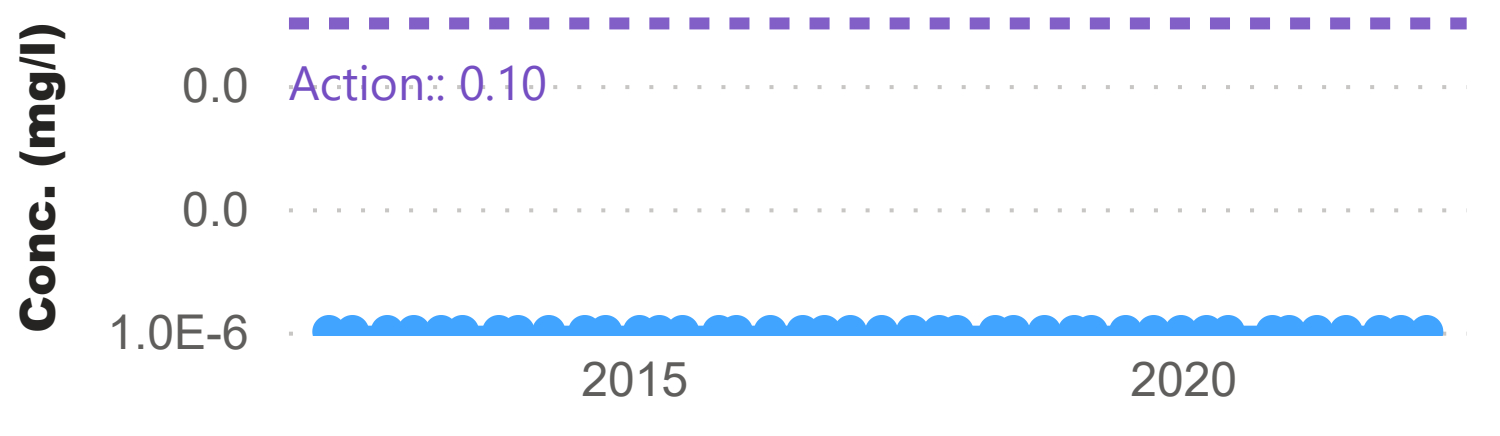
TPH-Aliphatic (Low)



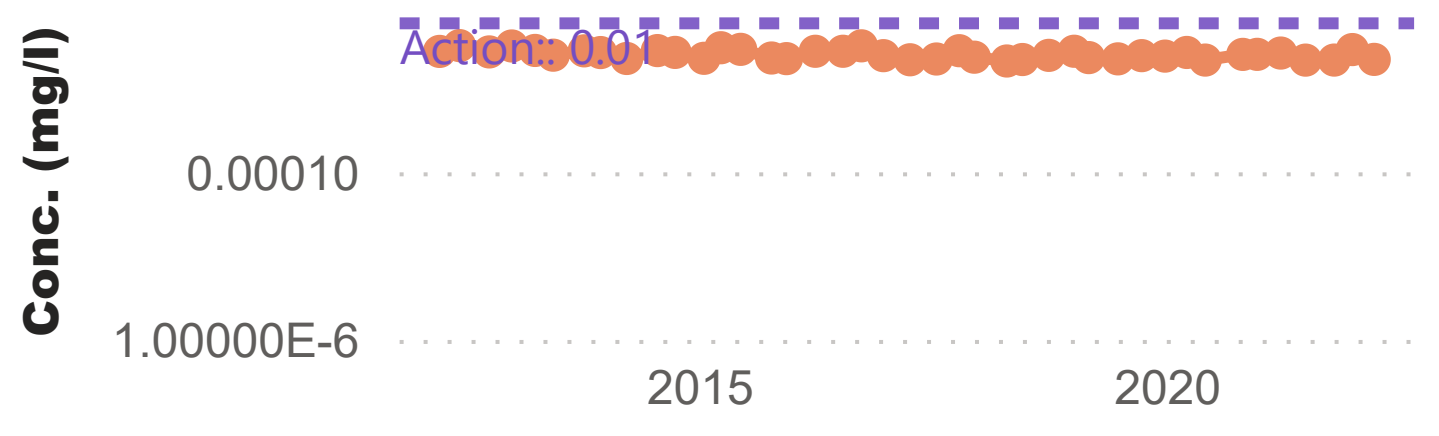
TPH-Aromatic (Low)



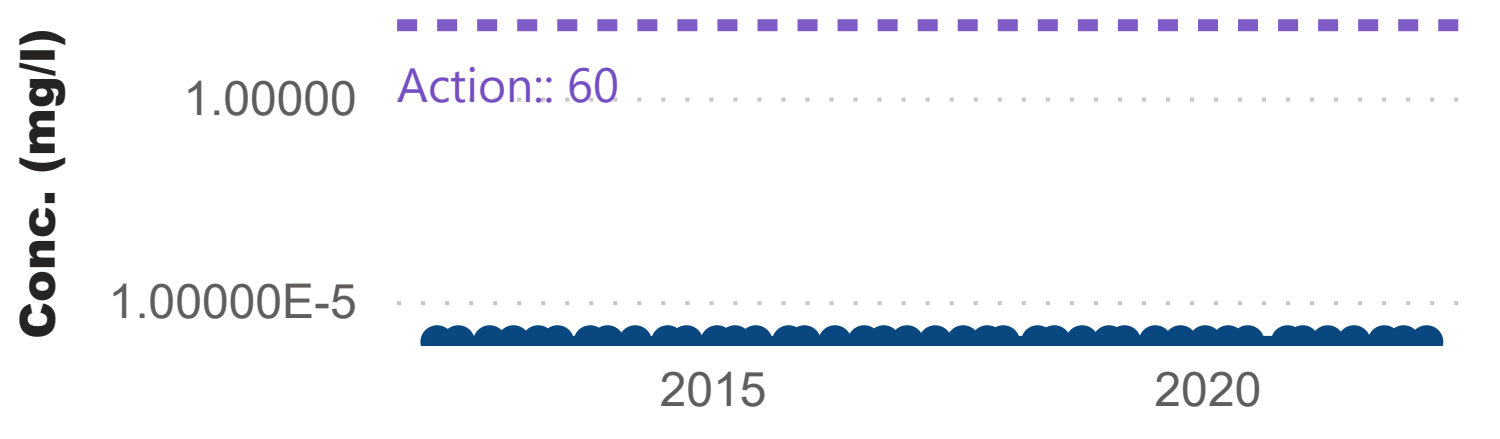
TPH-Aliphatic (Medium)



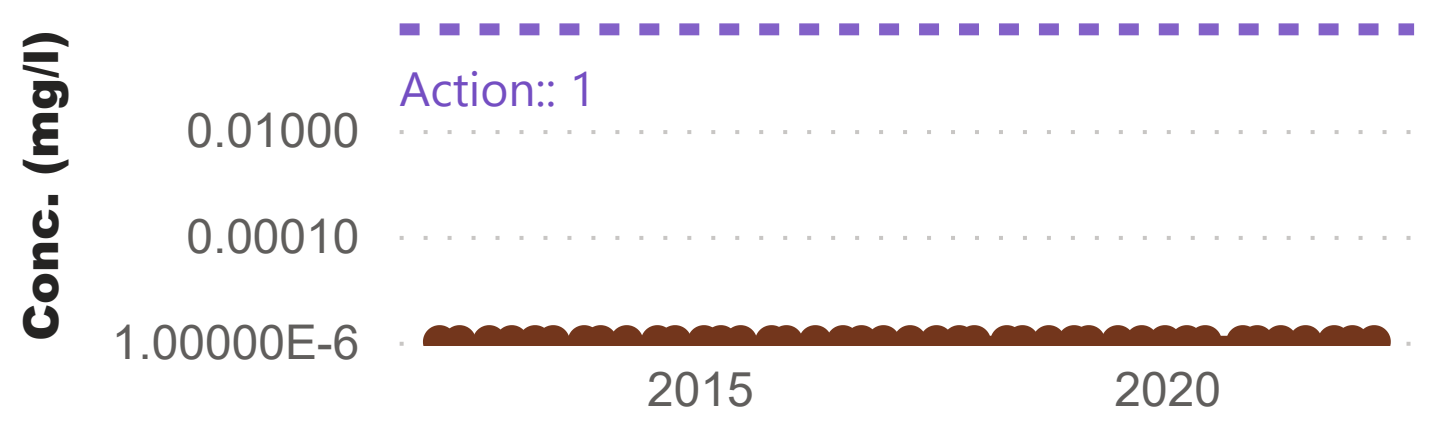
TPH-Aromatic (Medium)



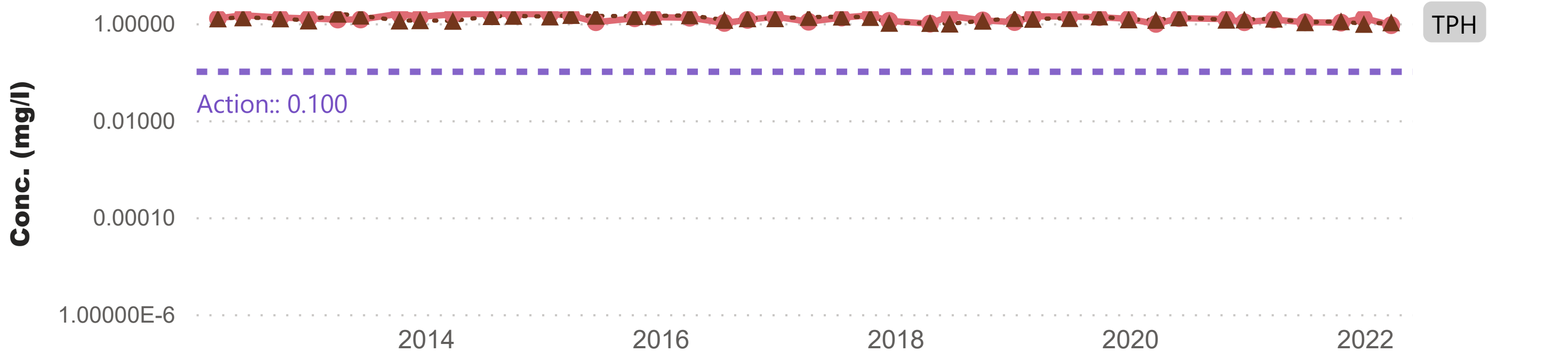
TPH-Aliphatic (High)



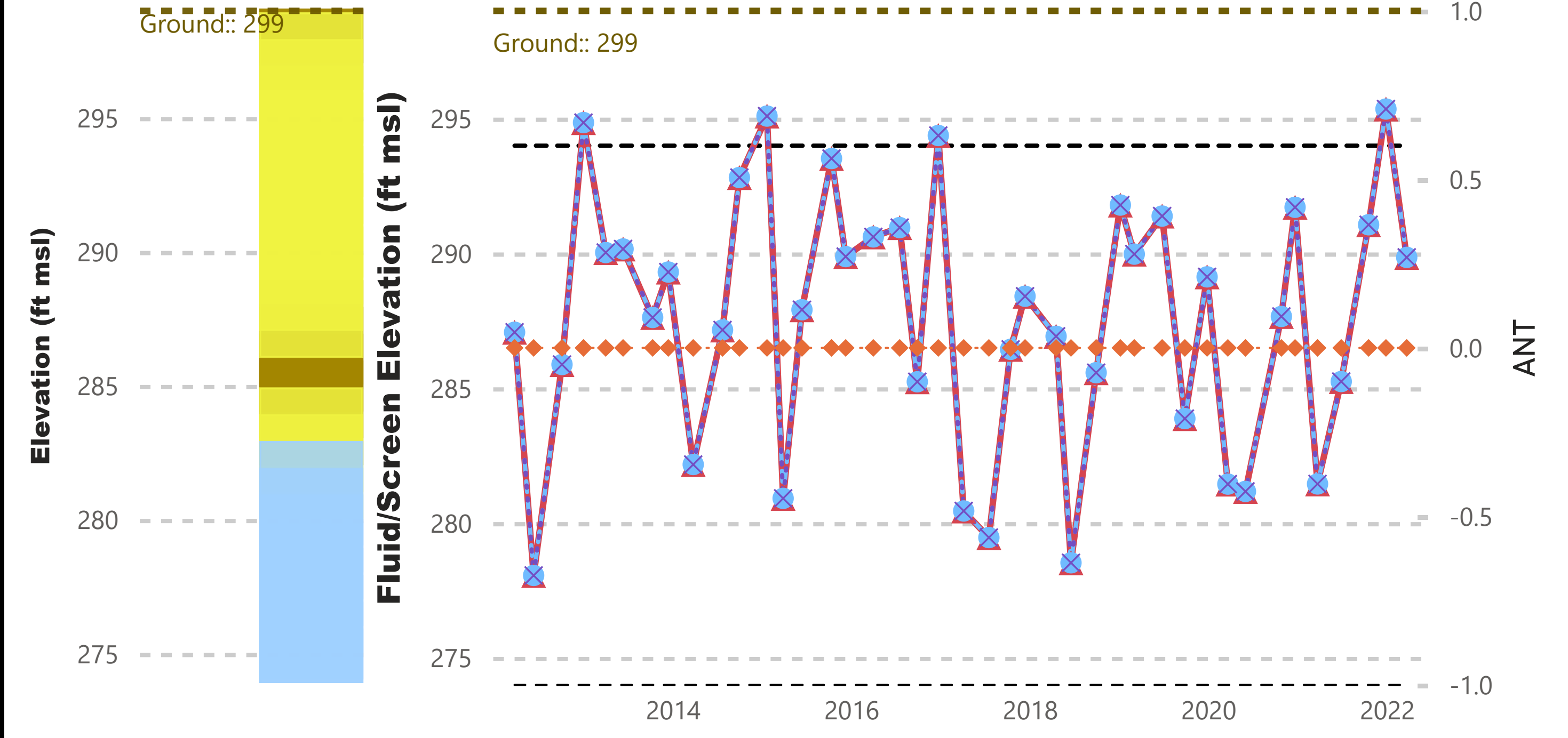
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

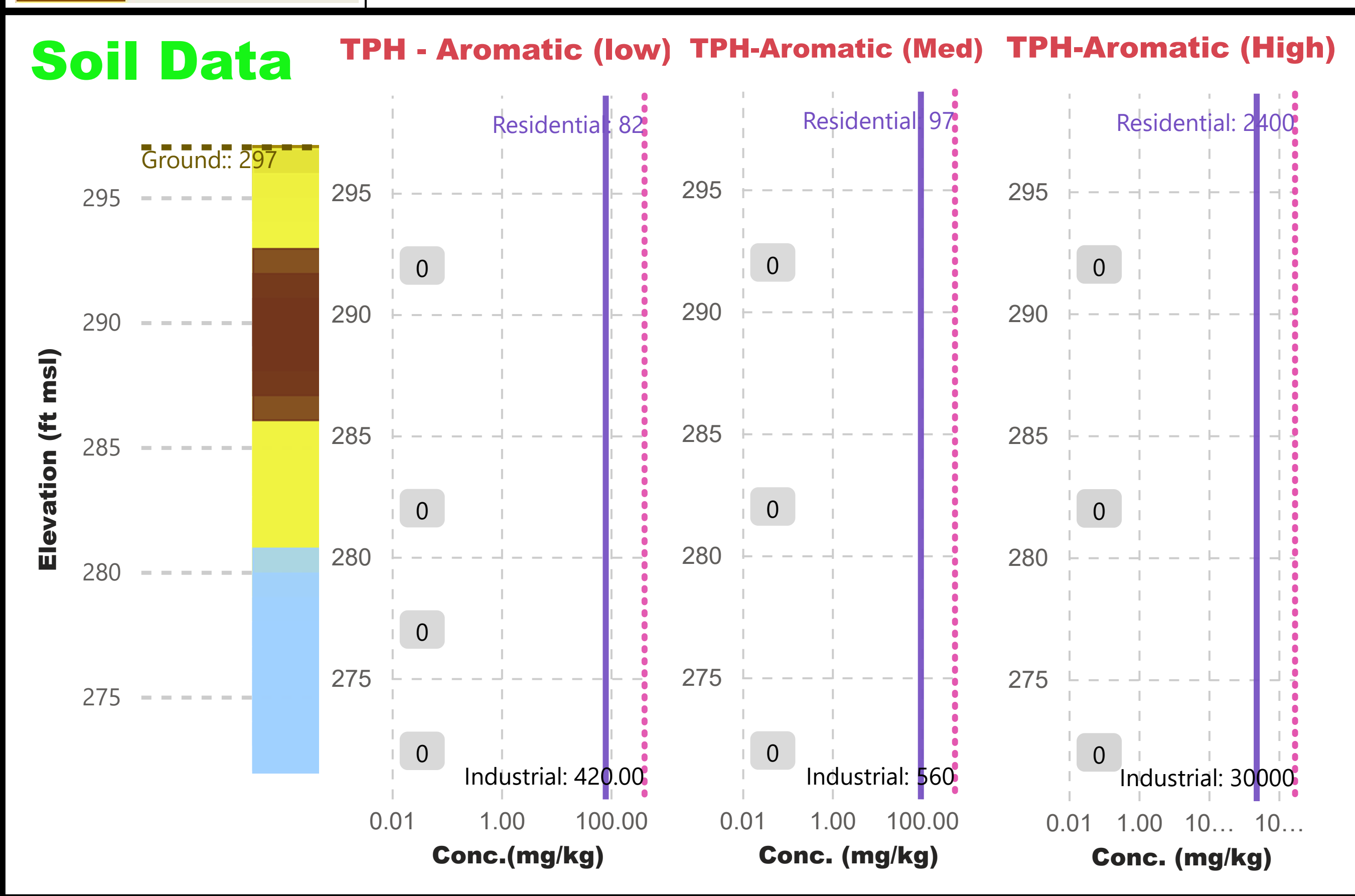
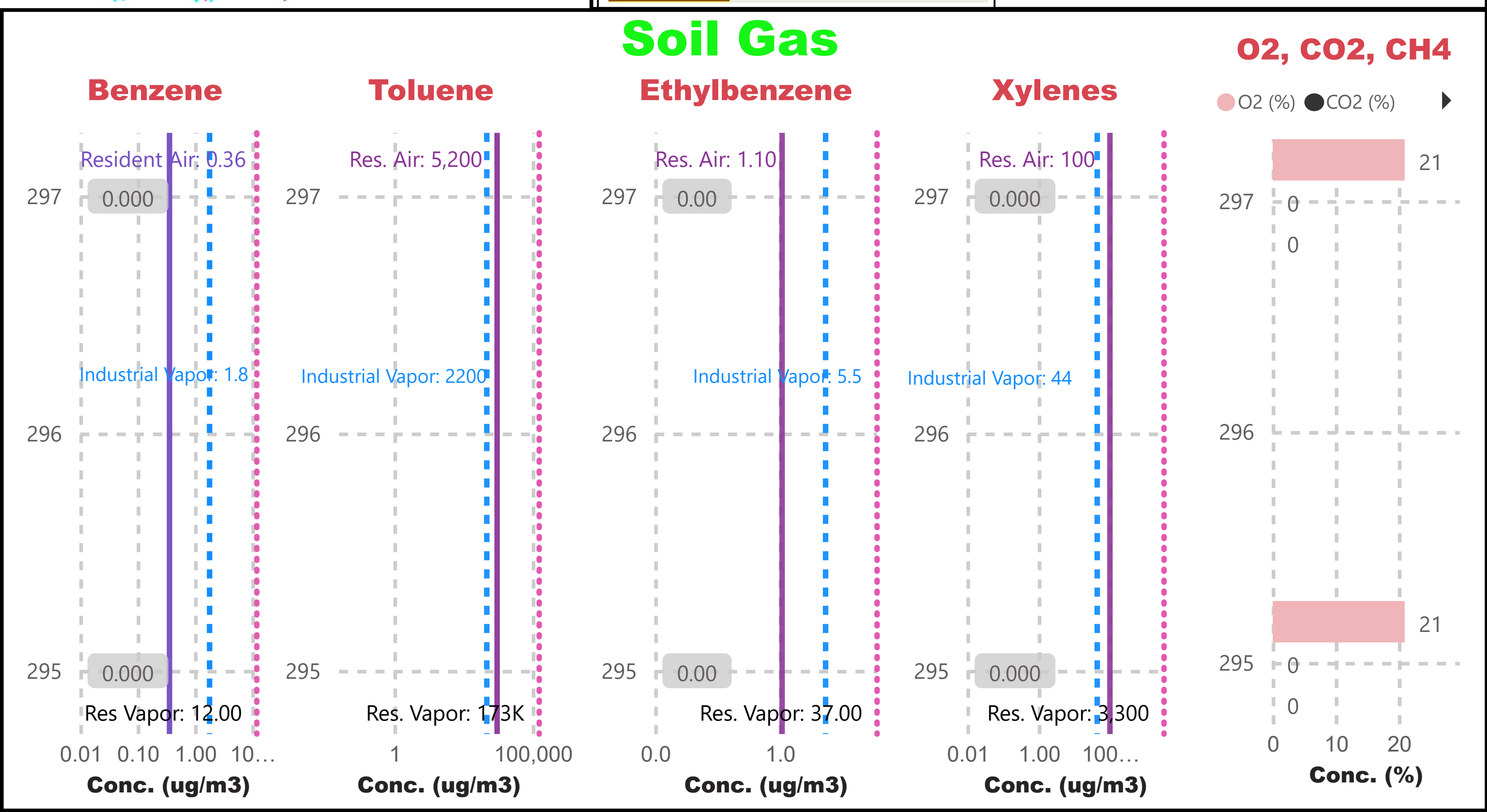
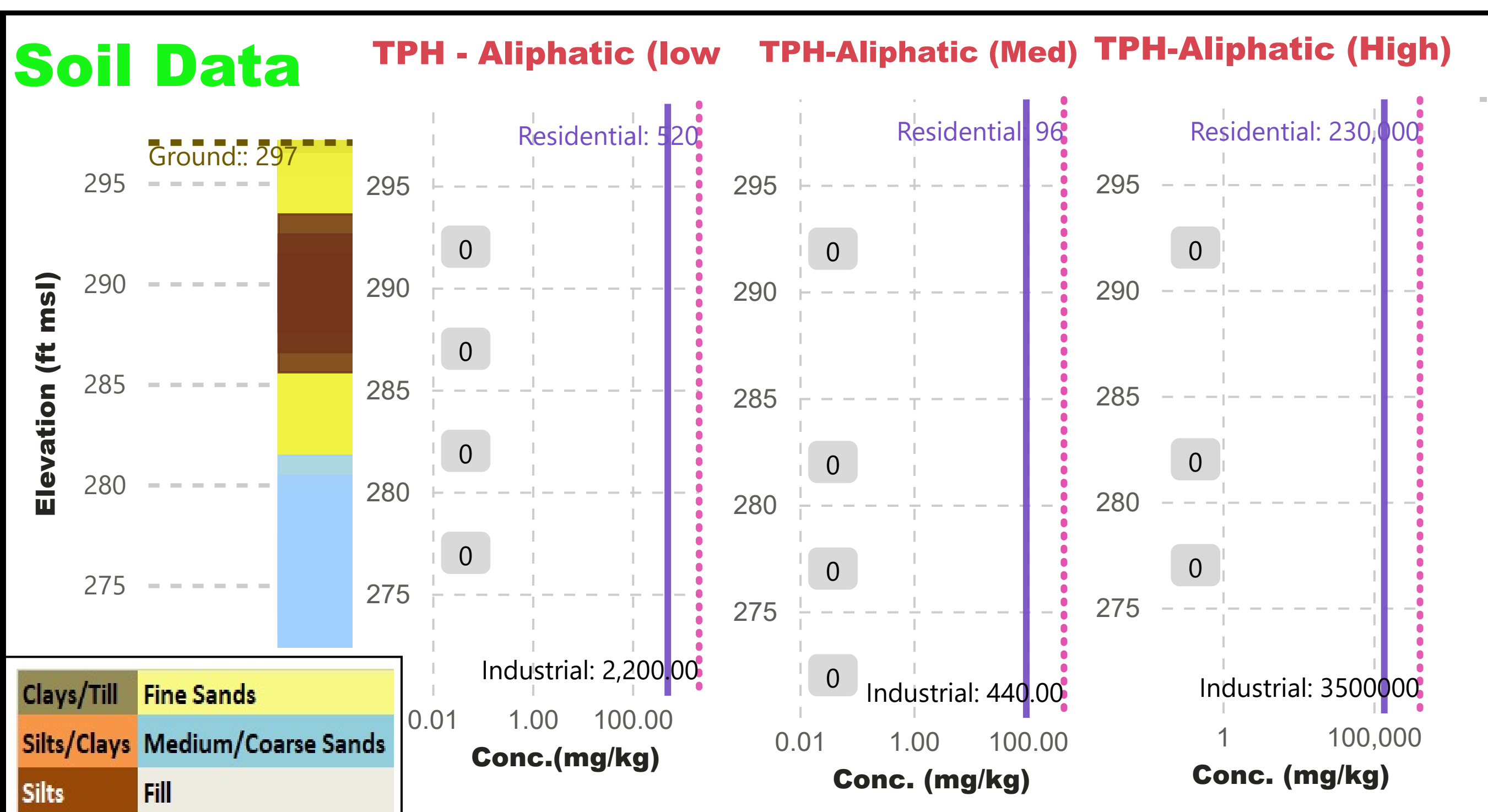
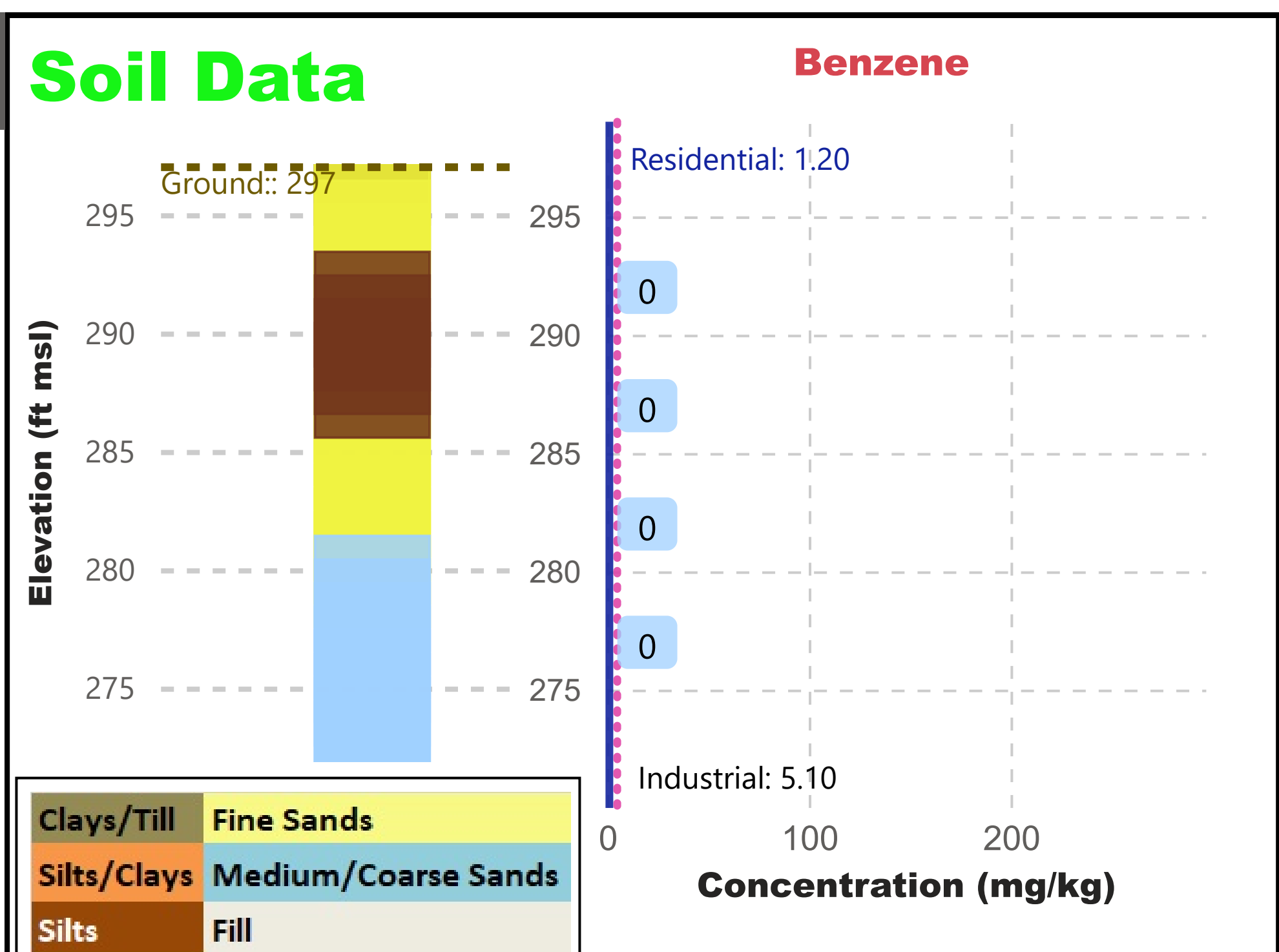
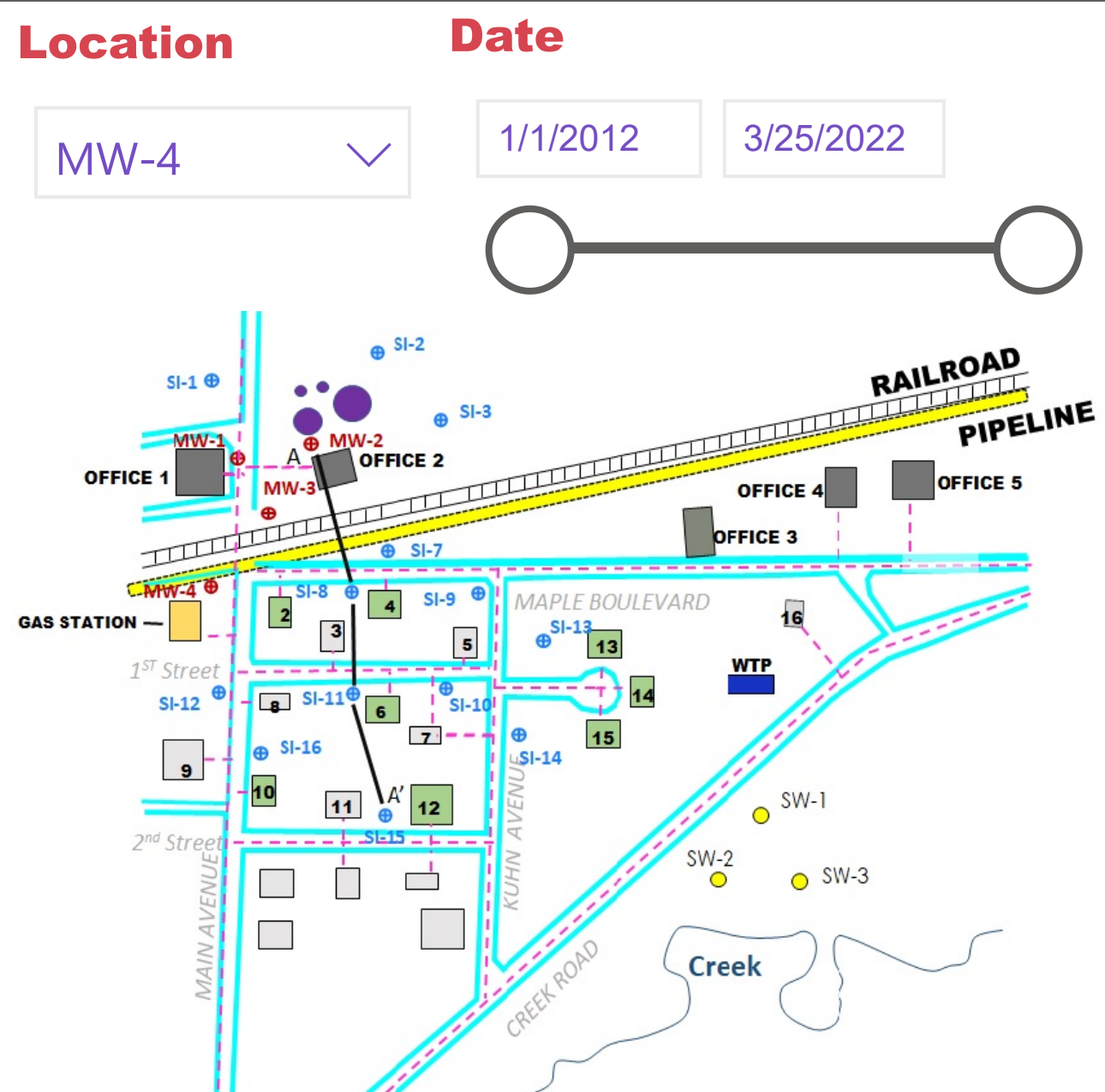
Molecular Structure	Aliphatic	Aromatic	Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	ECS-6	EC8-16	Low	EC16-35	High
Aromatic	ECS-7	EC9-22	Low	EC22-35	High
EC21-35 (same properties as EC16-21) -- not considered a transport fraction--		EC21-35			

Increasing Equivalent Carbon (EC) Number →

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

MW-3

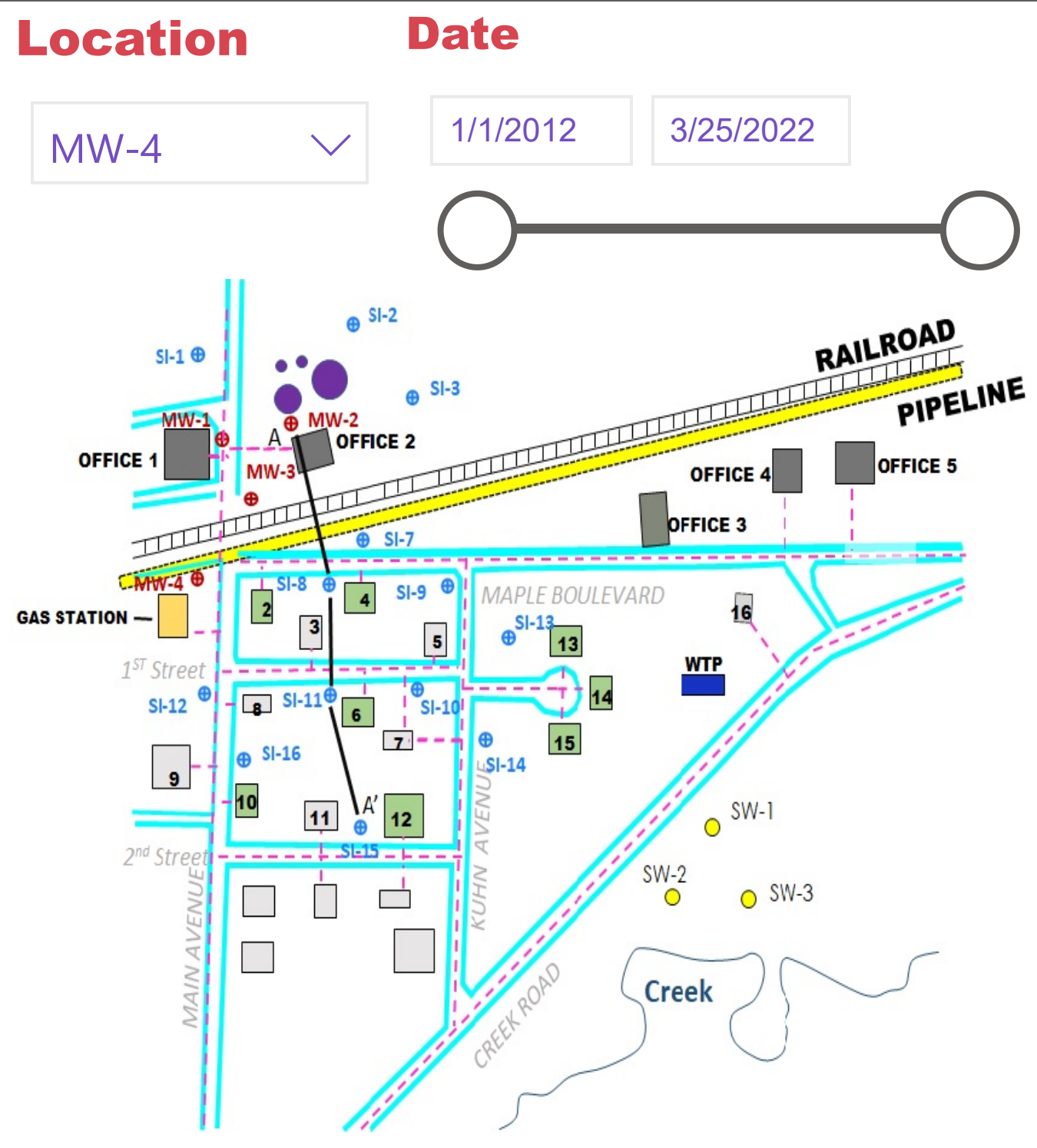
Hydrograph & Dissolved Summary



MW-4 Soil and Soil Gas Summary

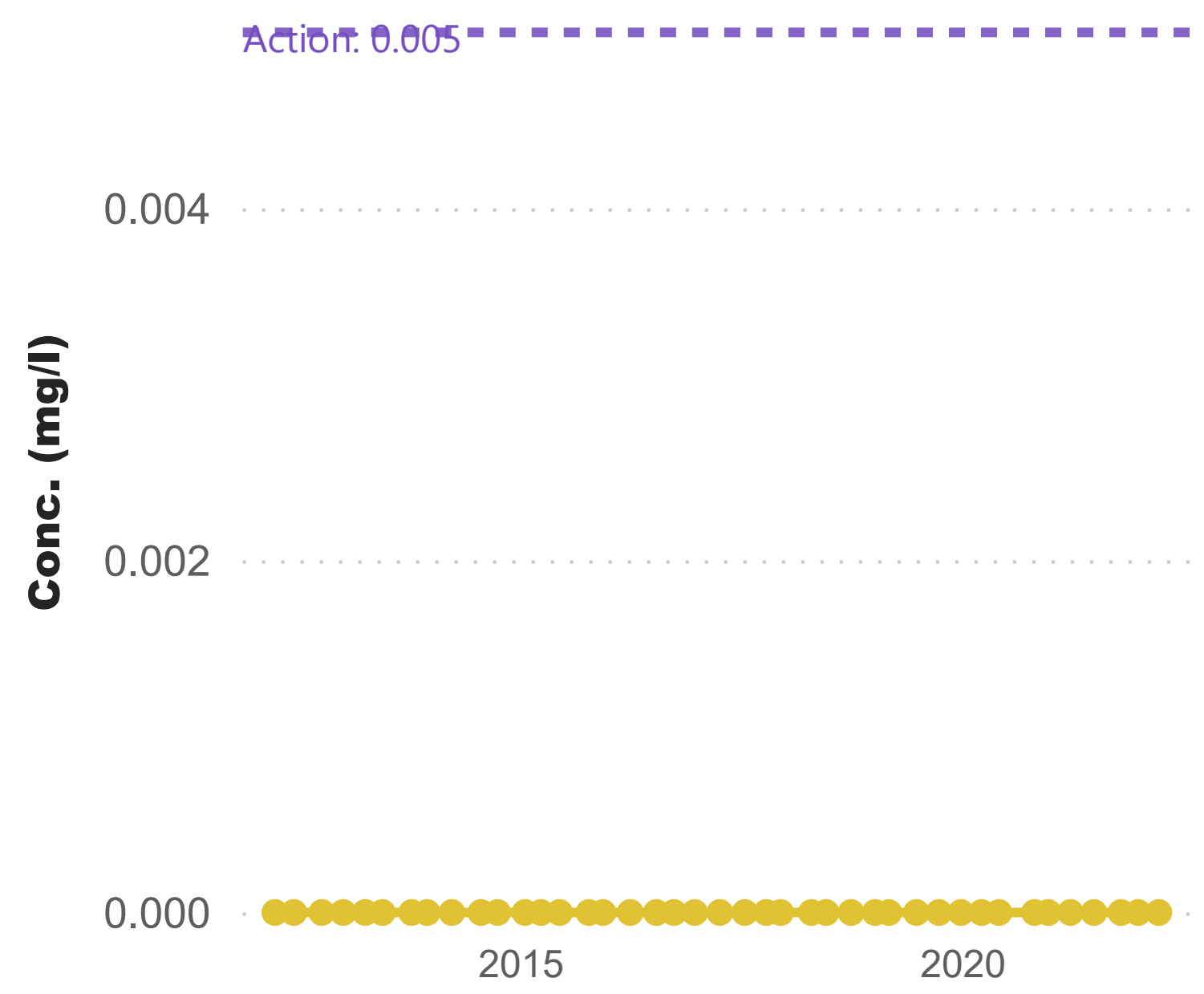
Clays/Till	Fine Sands	<table border="1"> <tr><td>EC5-6</td><td>EC8-16</td><td>EC16-35</td></tr> <tr><td>EC7-7</td><td>EC9-22</td><td>EC21-35</td></tr> <tr><td>EC8-8</td><td>EC12-16</td><td>EC22-35</td></tr> <tr><td>EC9-9</td><td>EC16-21</td><td></td></tr> </table>		EC5-6	EC8-16	EC16-35	EC7-7	EC9-22	EC21-35	EC8-8	EC12-16	EC22-35	EC9-9	EC16-21		EPA 6 Toxicity Fractions TPH Criteria Working Group 13 Transport Fractions
EC5-6	EC8-16	EC16-35														
EC7-7	EC9-22	EC21-35														
EC8-8	EC12-16	EC22-35														
EC9-9	EC16-21															
Silts/Clays	Medium/Coarse Sands	<table border="1"> <tr><td>EC10-12</td><td>EC12-16</td><td>EC16-21</td></tr> <tr><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> </table>		EC10-12	EC12-16	EC16-21	EC12-16	EC16-21	EC21-35							
EC10-12	EC12-16	EC16-21														
EC12-16	EC16-21	EC21-35														
Silts	Fill	<table border="1"> <tr><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> </table>		EC12-16	EC16-21	EC21-35										
EC12-16	EC16-21	EC21-35														

Increasing Equivalent Carbon (EC) Number →

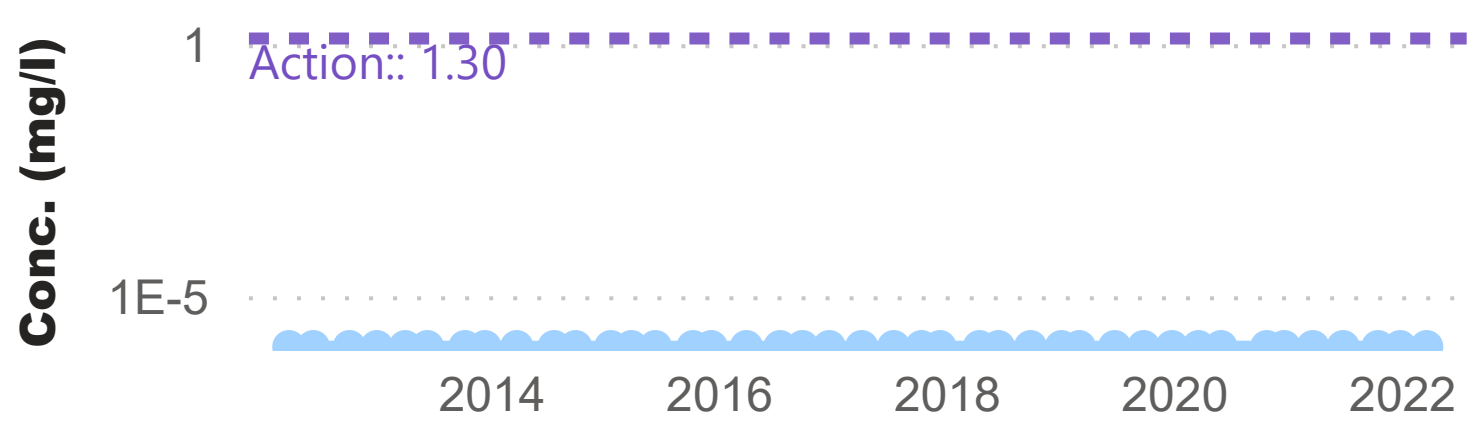


Dissolved Phase

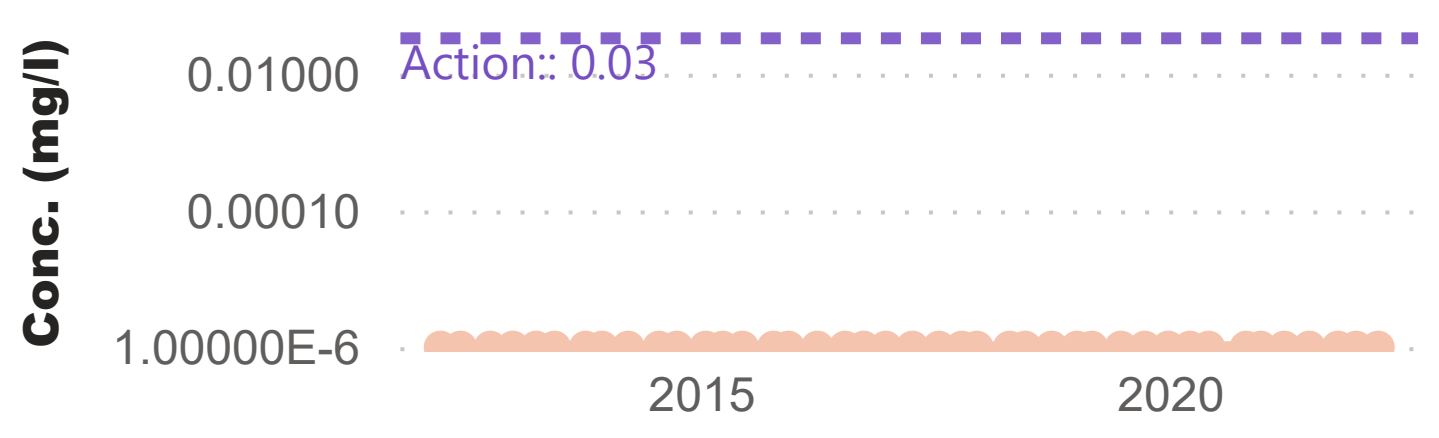
Benzene



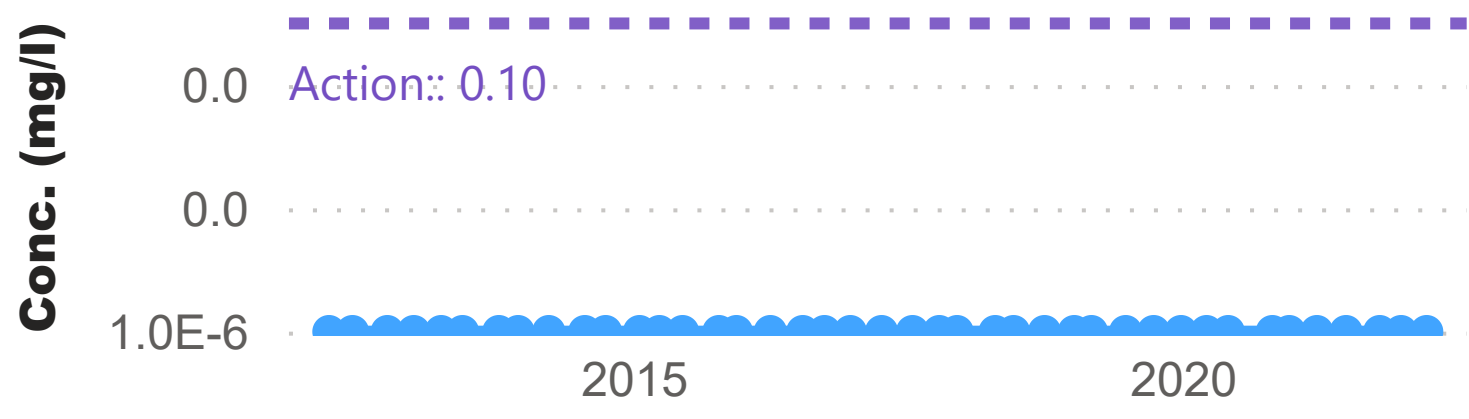
TPH-Aliphatic (Low)



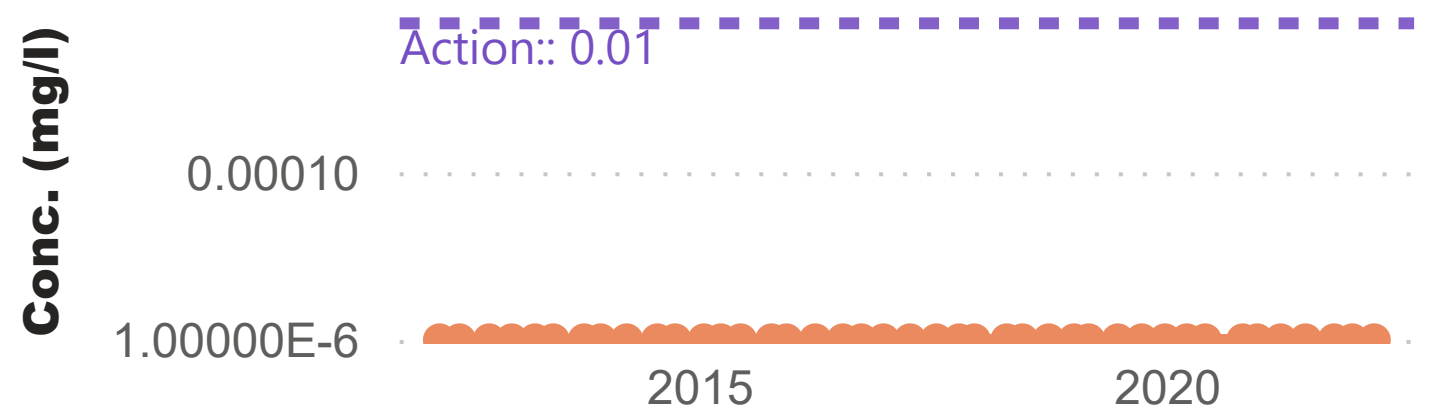
TPH-Aromatic (Low)



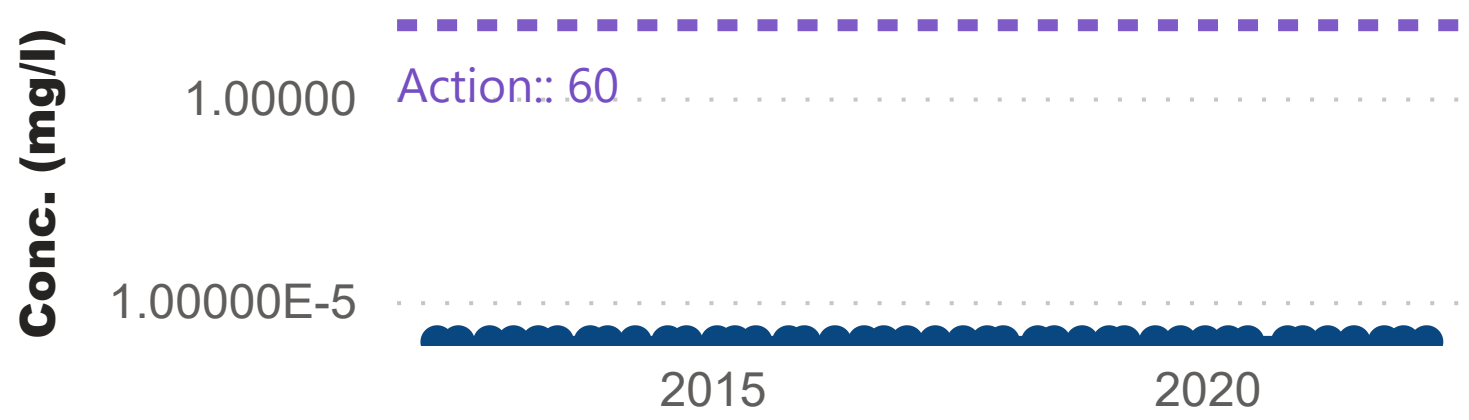
TPH-Aliphatic (Medium)



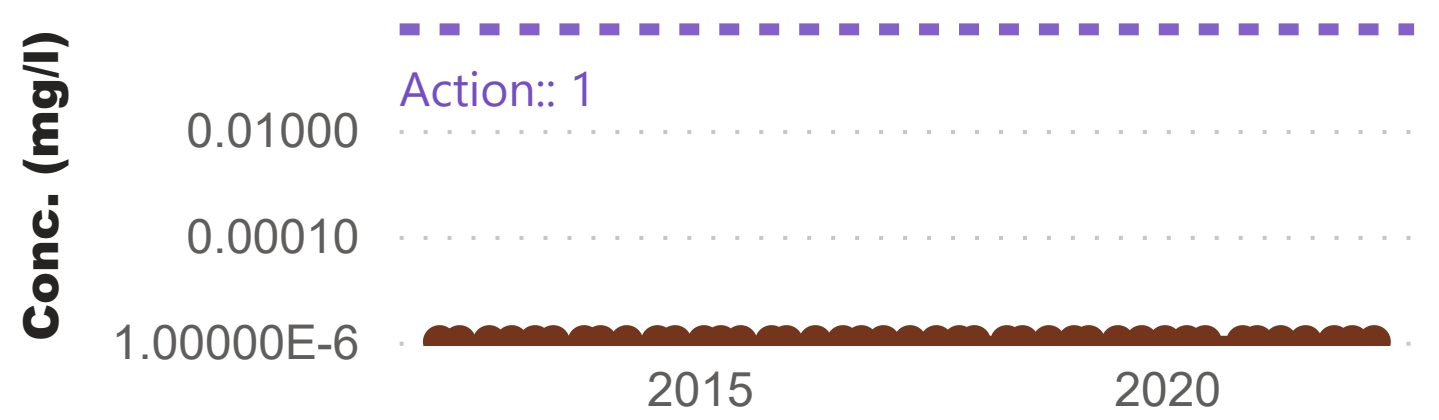
TPH-Aromatic (Medium)



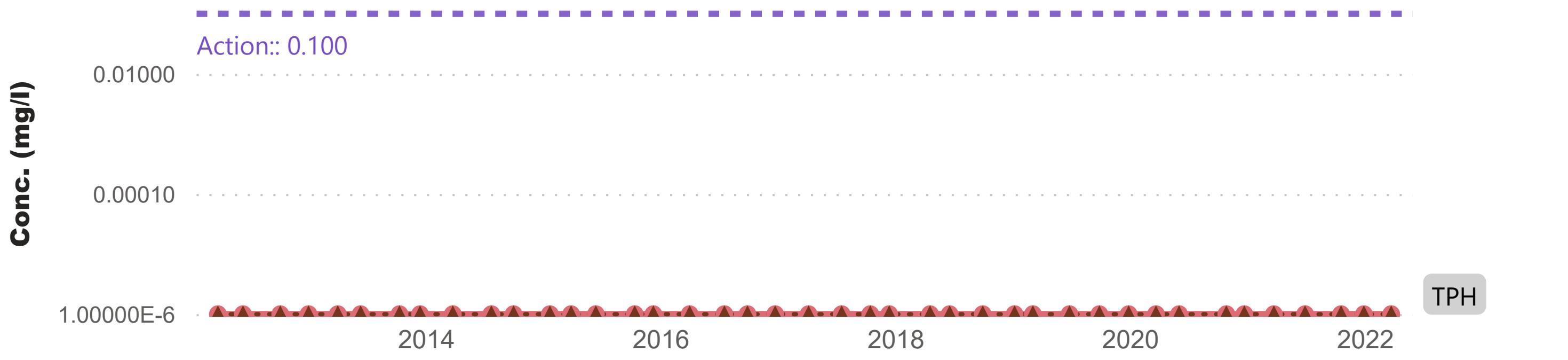
TPH-Aliphatic (High)



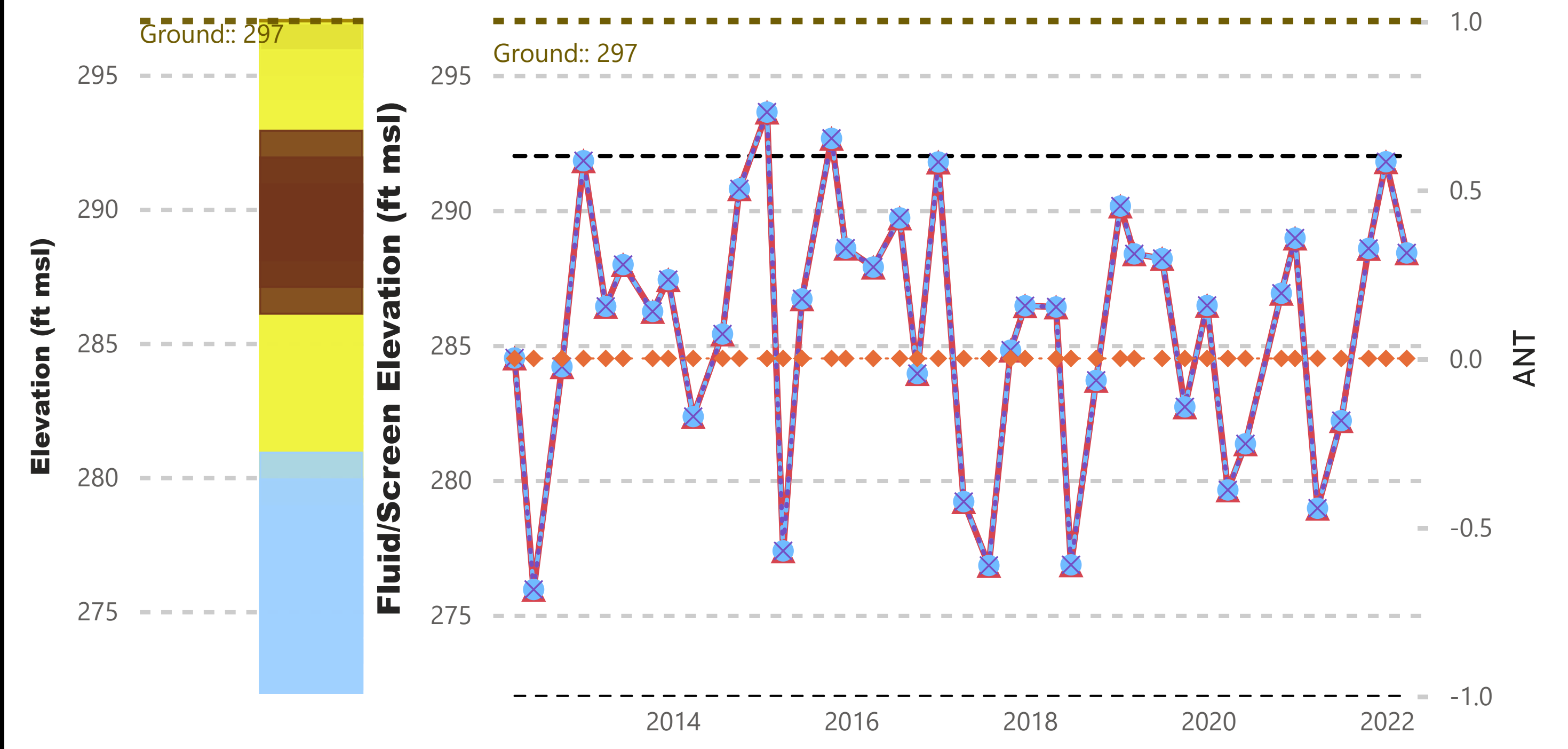
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



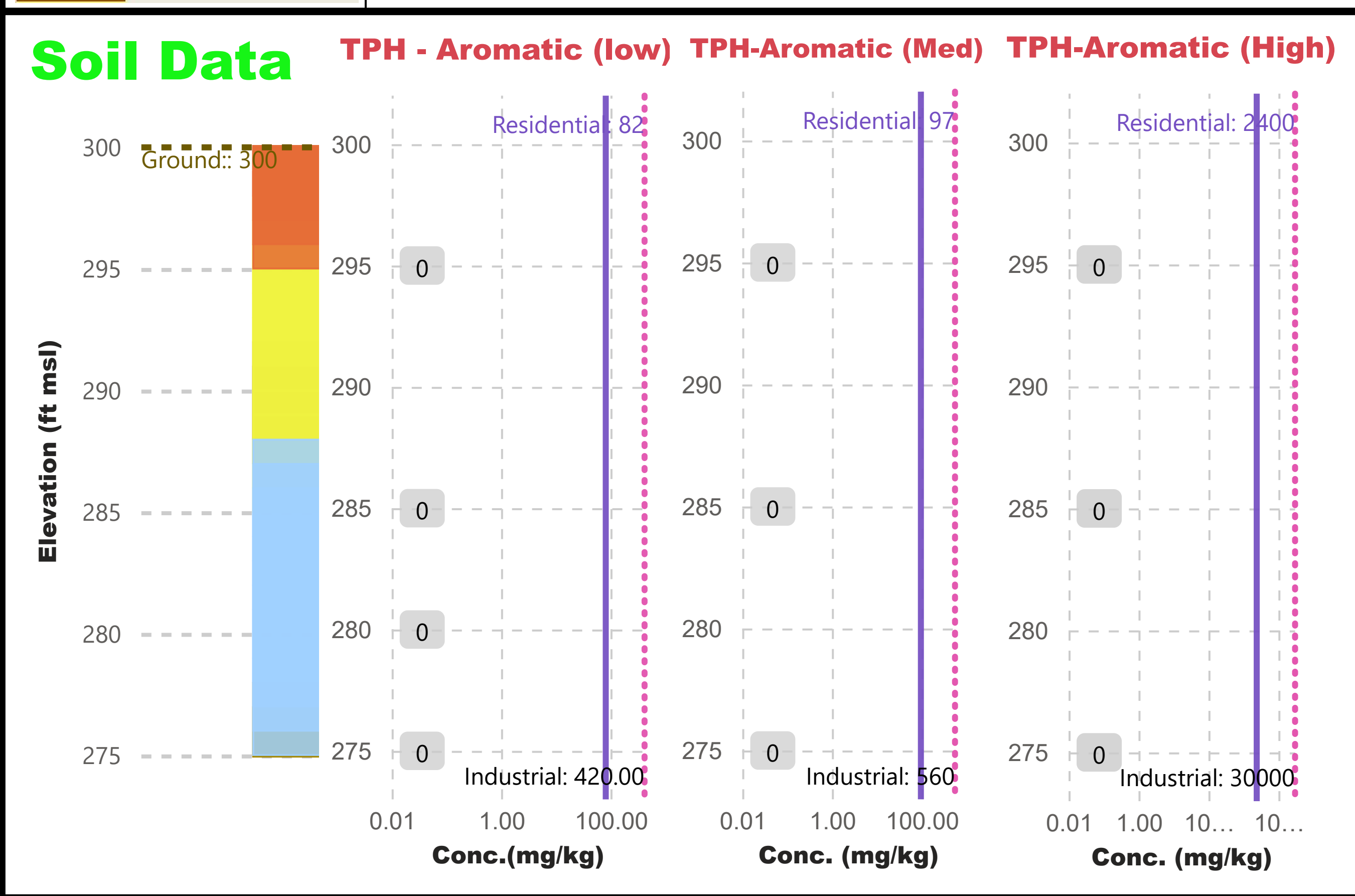
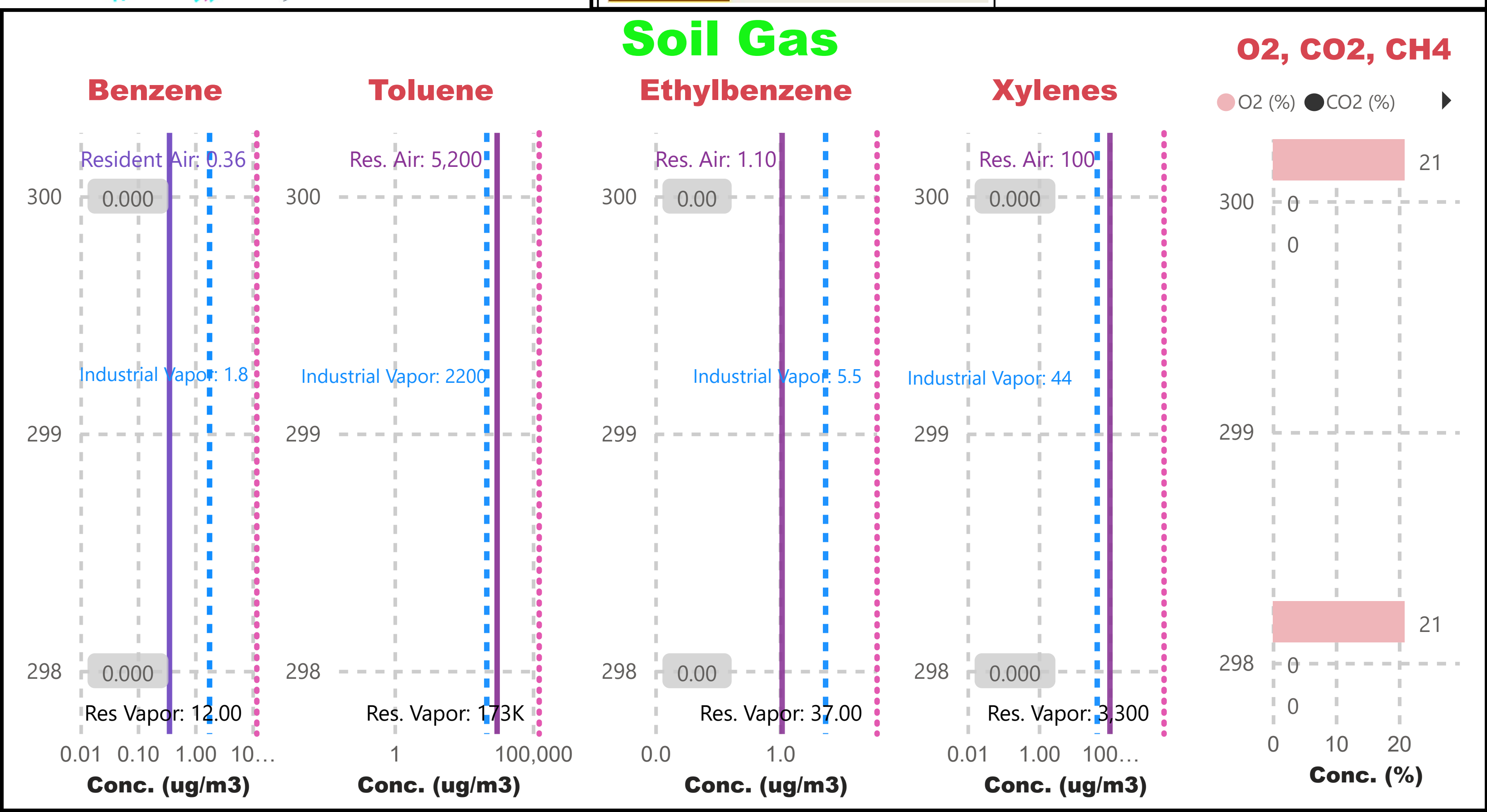
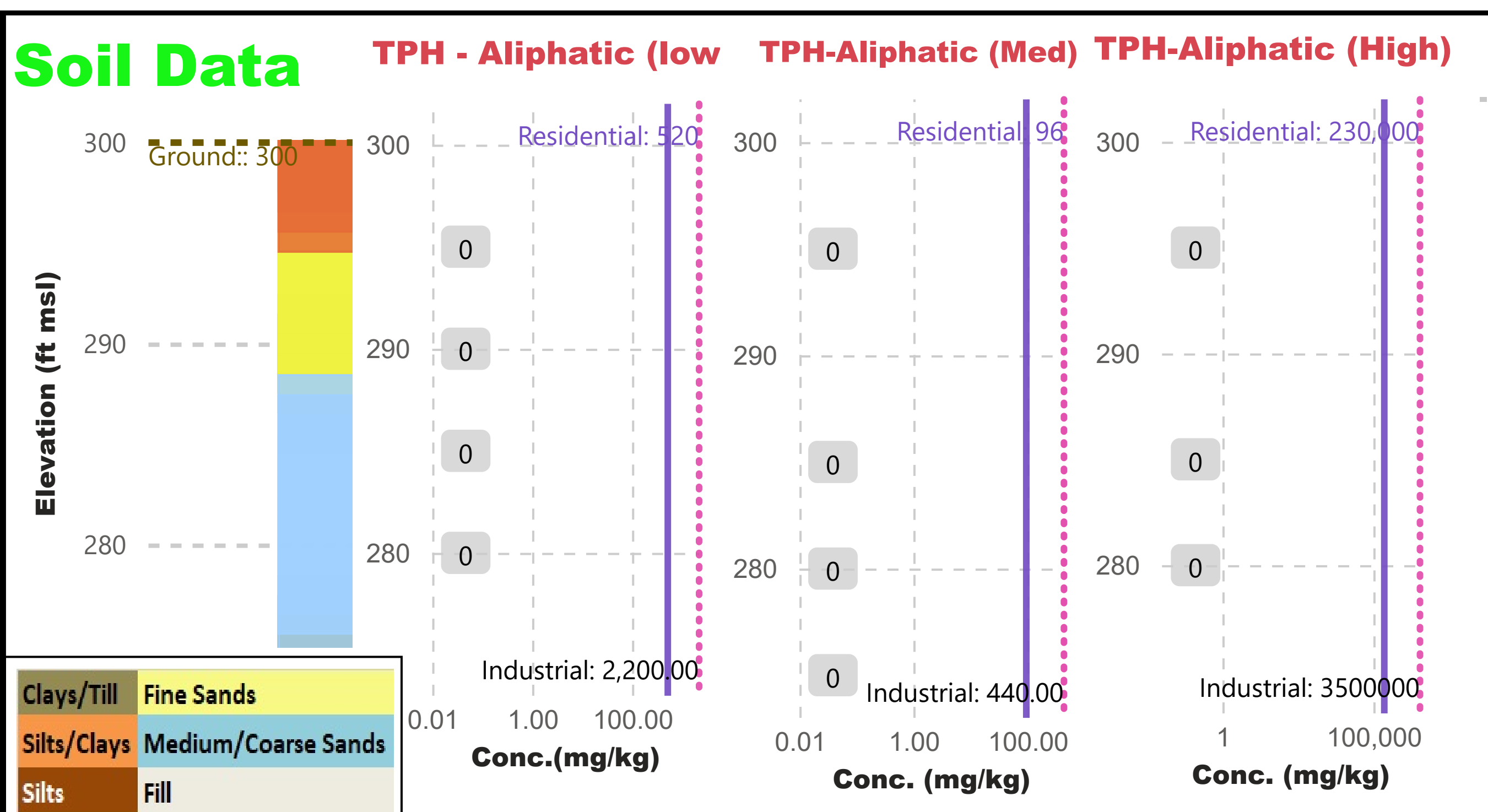
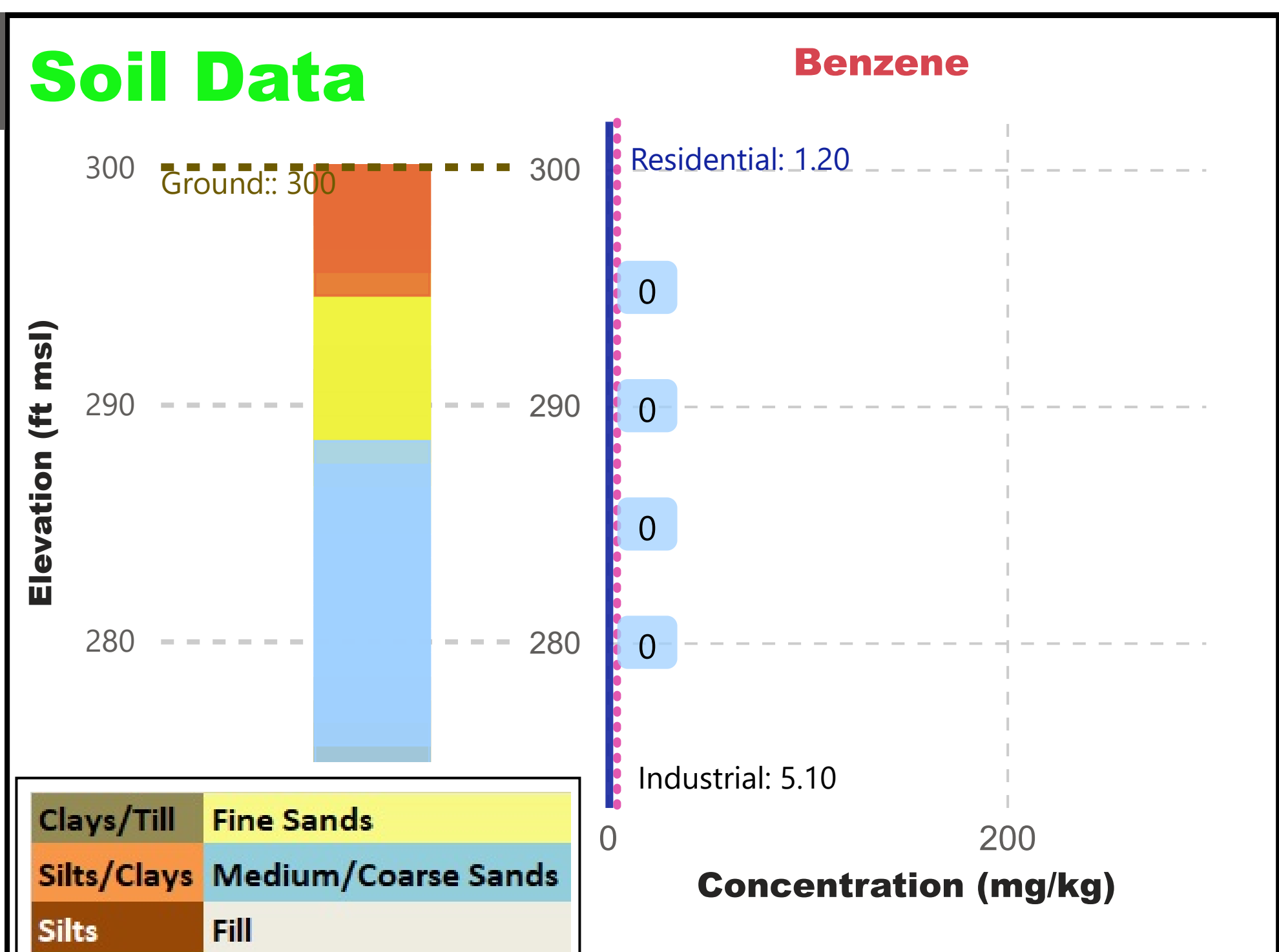
The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	ECS-6	EC8-16	Low	EC16-35	High
Aromatic	ECS-7	EC9-22	Low	EC22-35	High
ECS-8		EC8-16	Low	EC16-35	High
ECS-9		EC9-22	Low	EC22-35	High
ECS-10		EC10-12	Low	EC10-12	High
ECS-11		EC11-14	Low	EC11-14	High
ECS-12		EC12-16	Low	EC12-16	High
ECS-13		EC13-16	Low	EC13-16	High
ECS-14		EC14-21	Low	EC14-21	High
ECS-15		EC15-21	Low	EC15-21	High
ECS-16		EC16-21	Low	EC16-21	High
ECS-17		EC17-21	Low	EC17-21	High
ECS-18		EC18-21	Low	EC18-21	High
ECS-19		EC19-21	Low	EC19-21	High
ECS-20		EC20-21	Low	EC20-21	High
ECS-21		EC21-35	Low	EC21-35	High

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

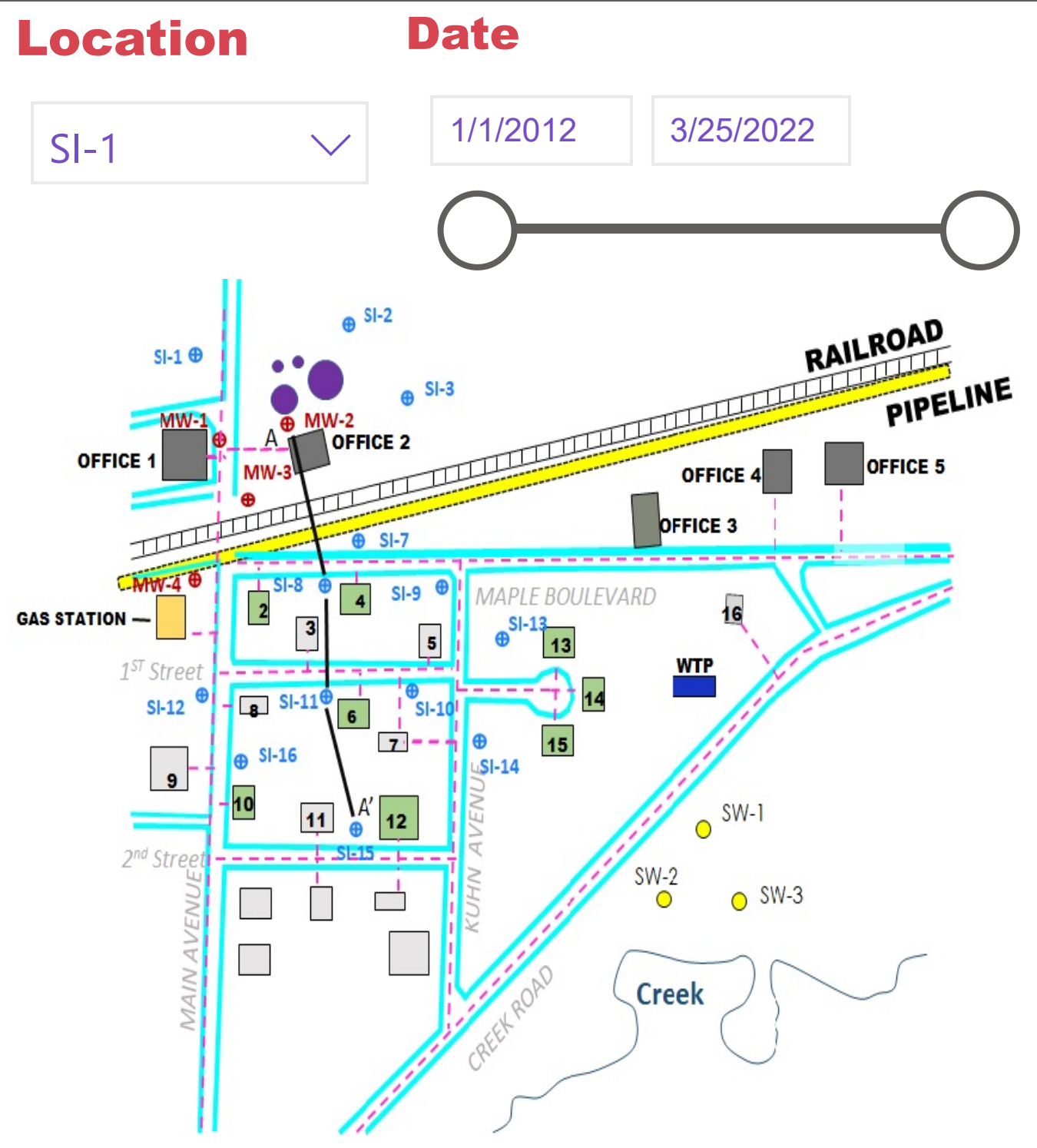
MW-4

Hydrograph & Dissolved Summary

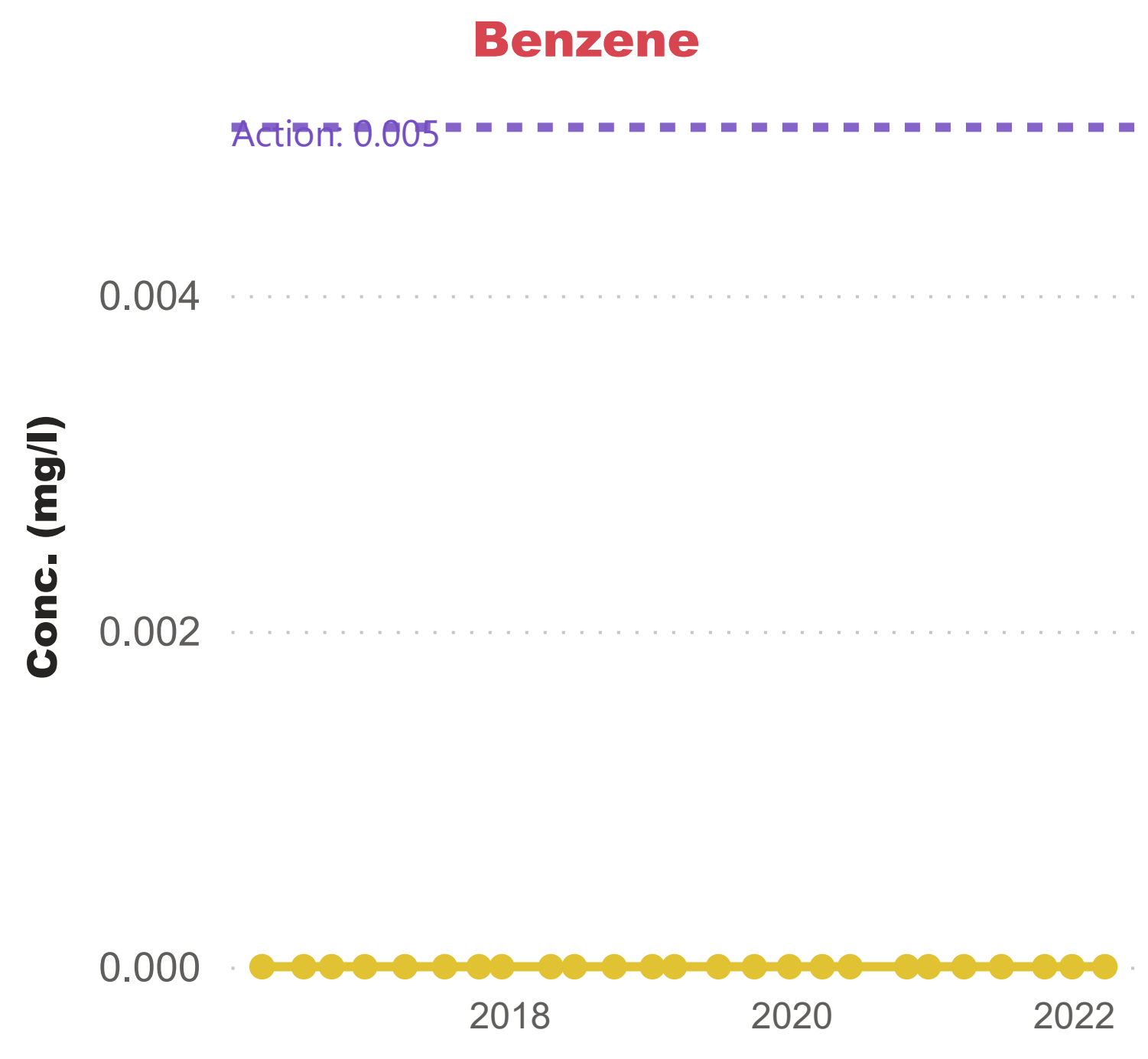


SI-1 Soil and Soil Gas Summary

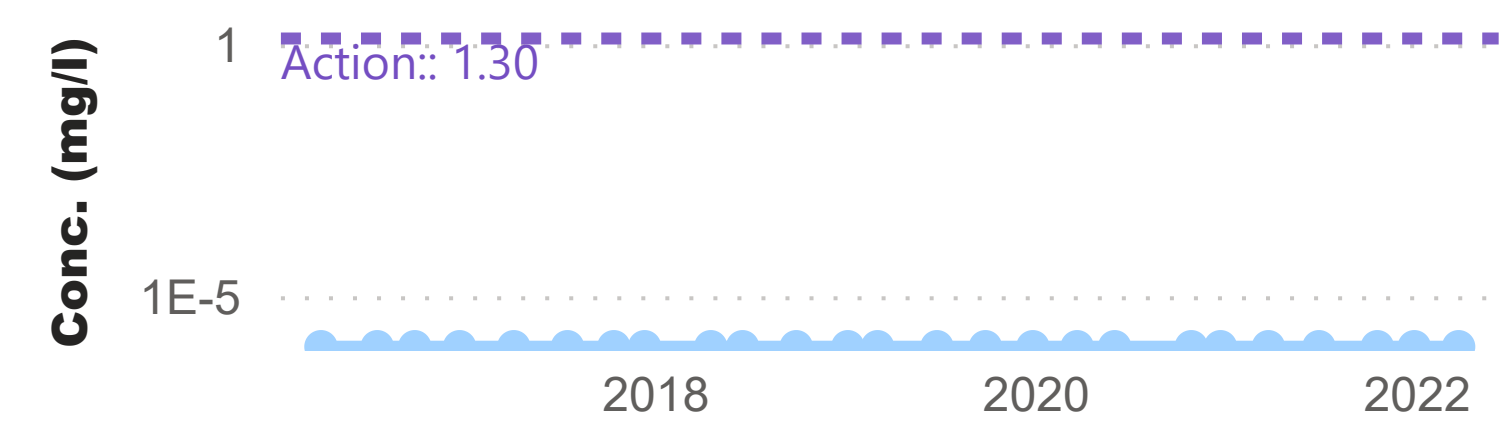
Clays/Till	Fine Sands		EPA 6 Toxicity Fractions
Silts/Clays	Medium/Coarse Sands		
Silts	Fill		



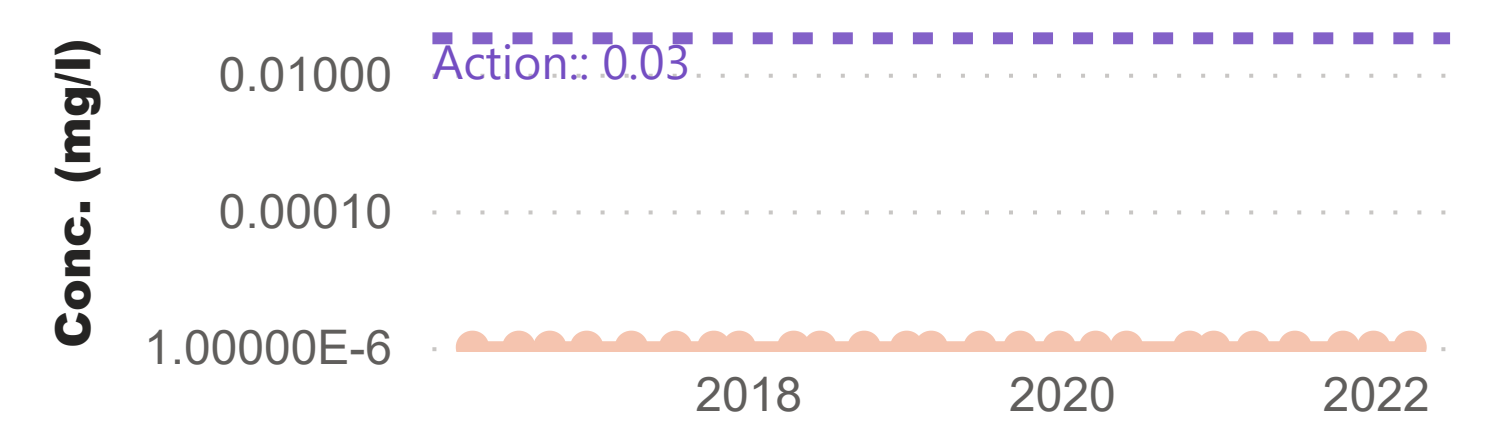
Dissolved Phase



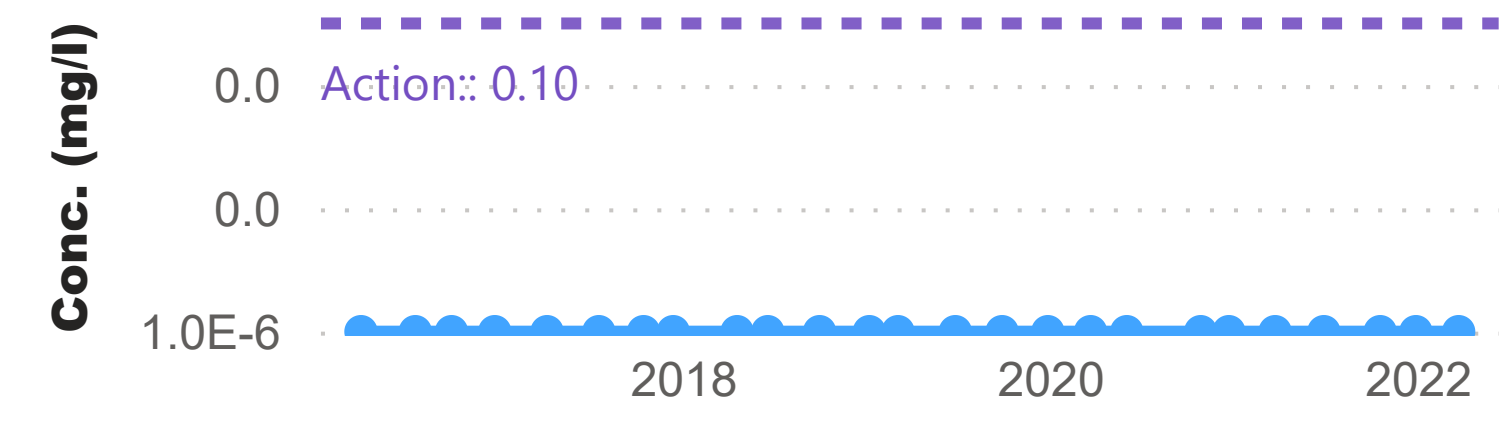
TPH-Aliphatic (Low)



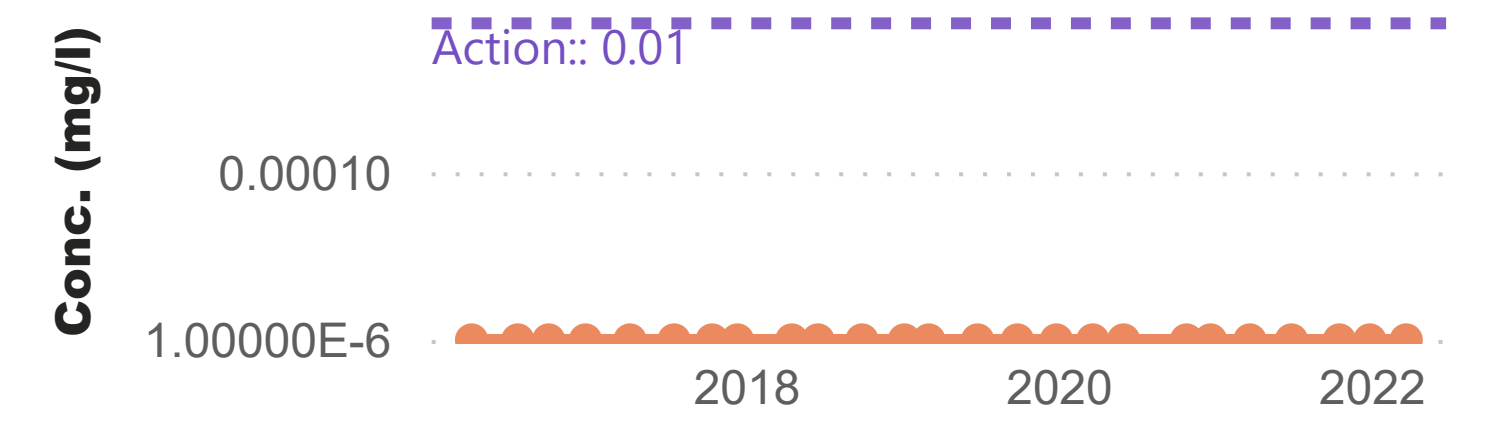
TPH-Aromatic (Low)



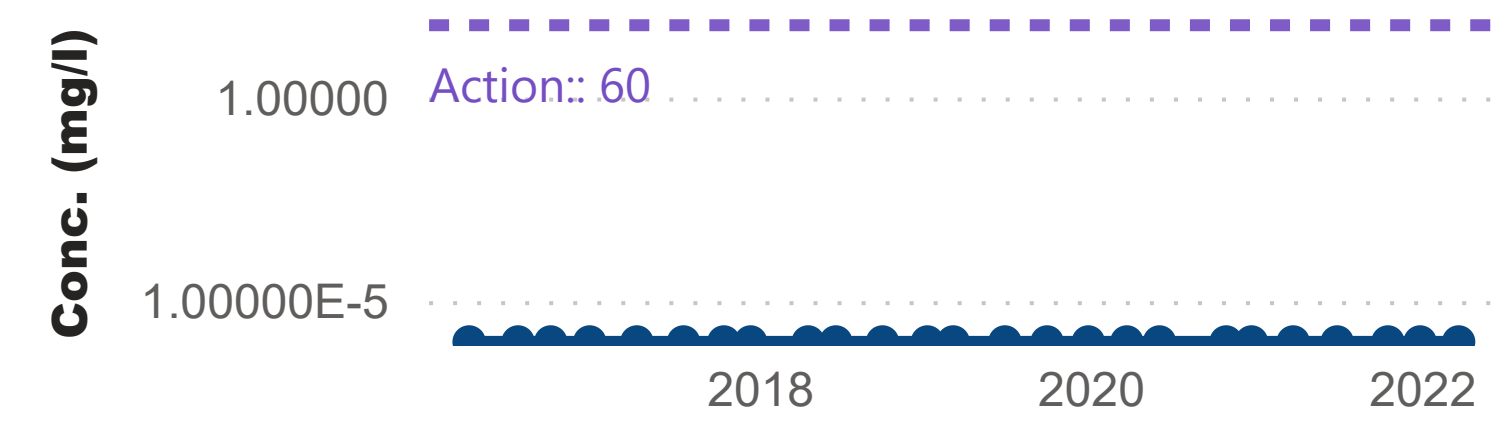
TPH-Aliphatic (Medium)



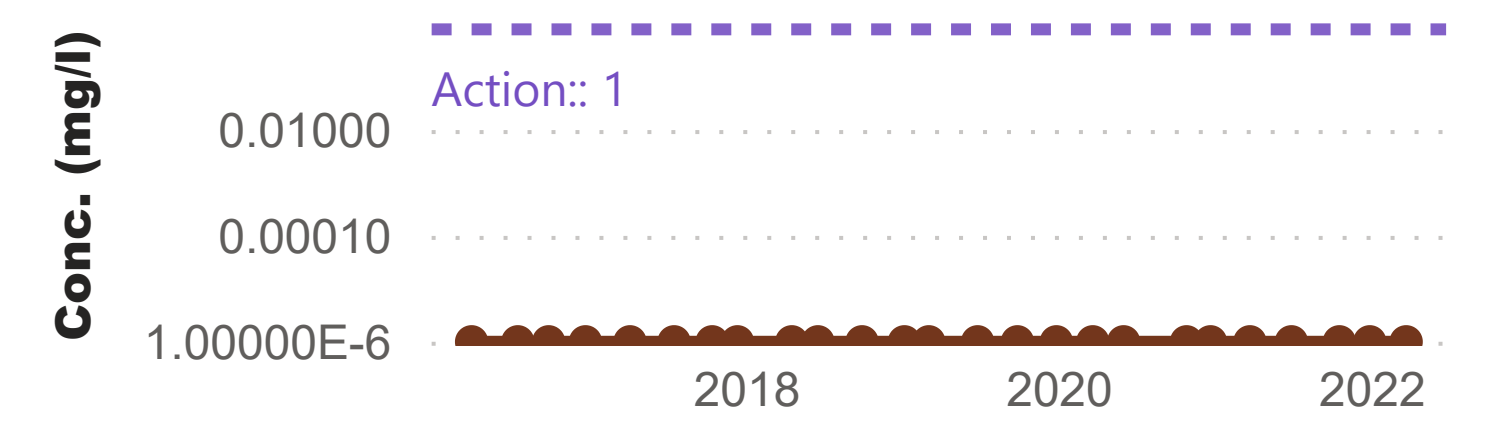
TPH-Aromatic (Medium)



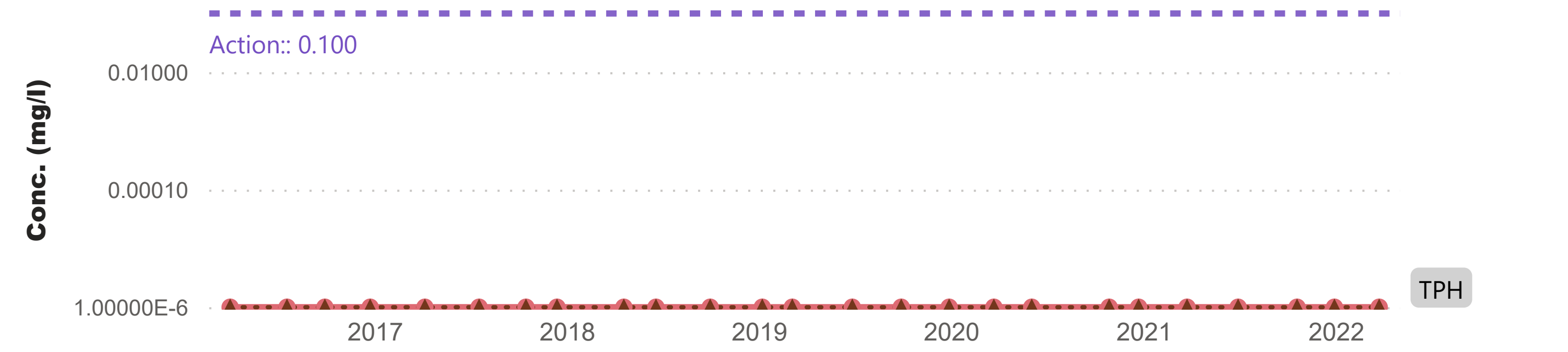
TPH-Aliphatic (High)



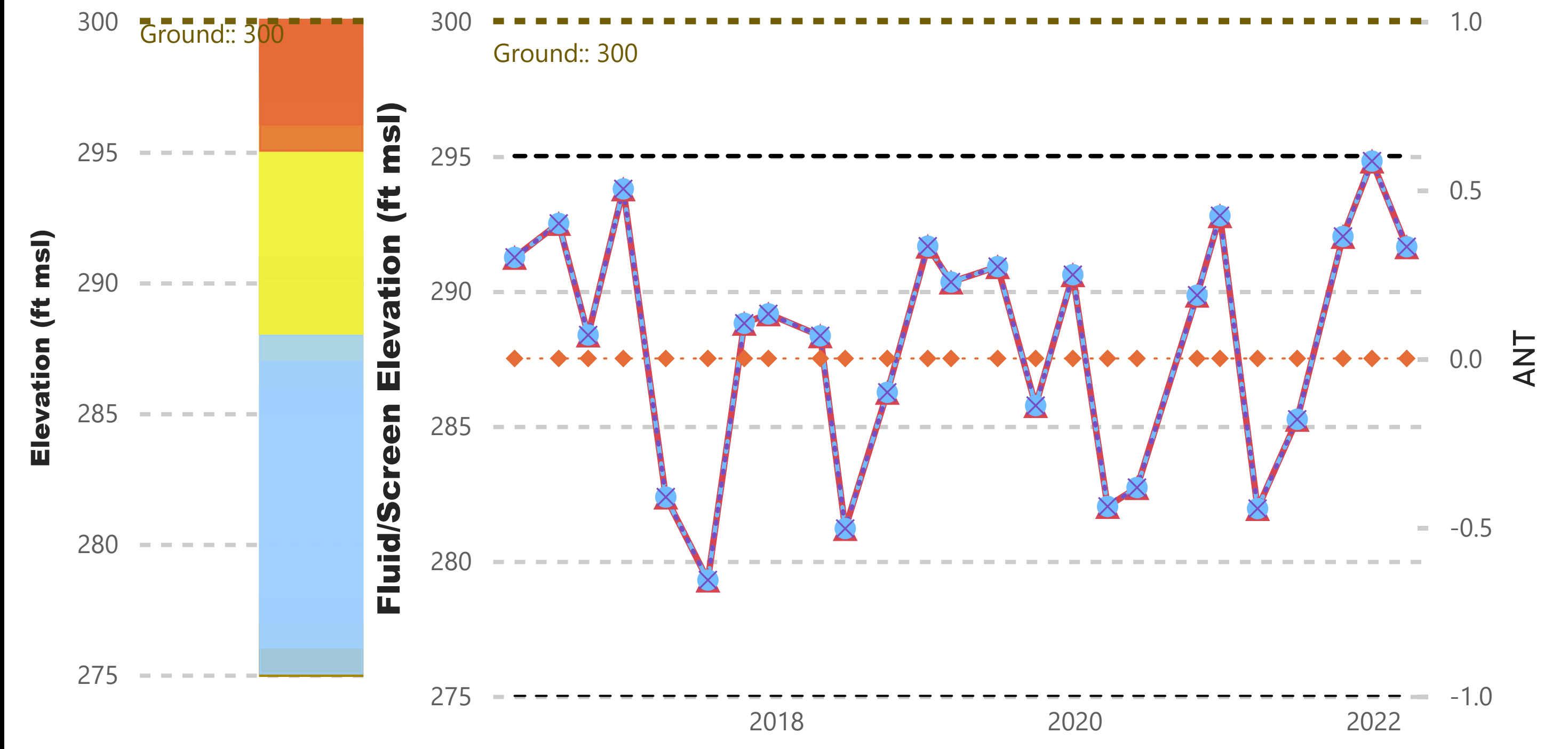
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



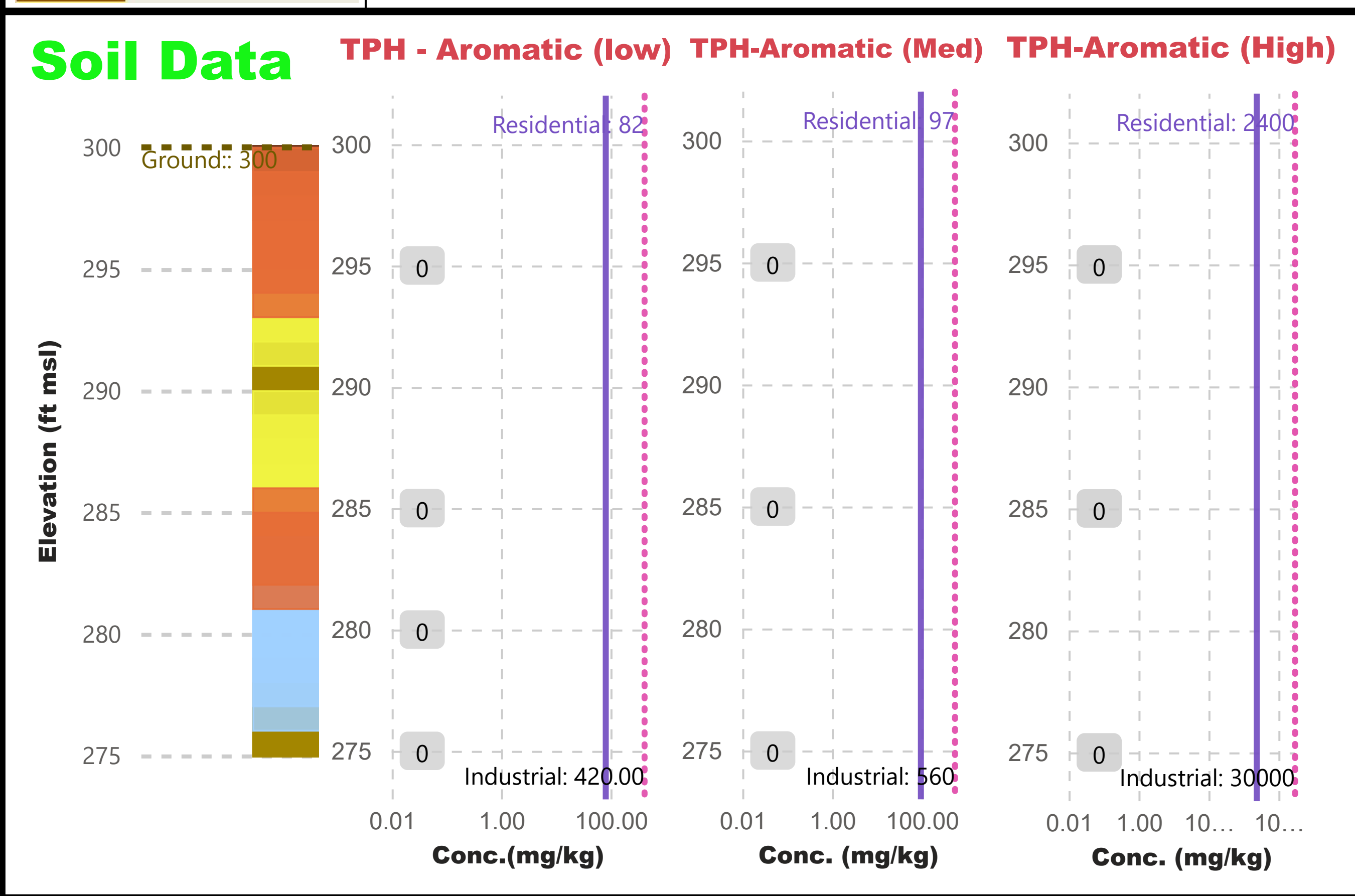
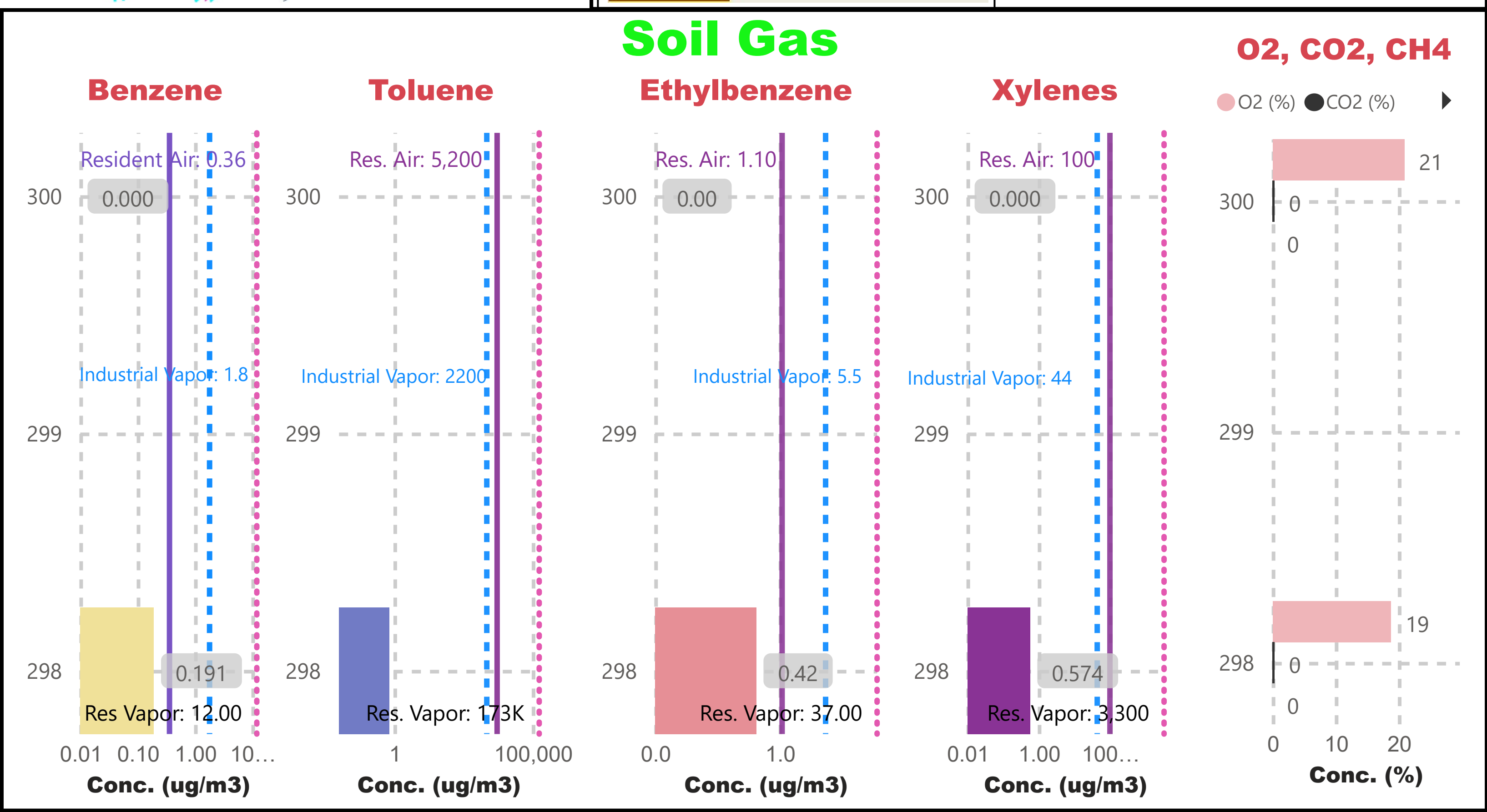
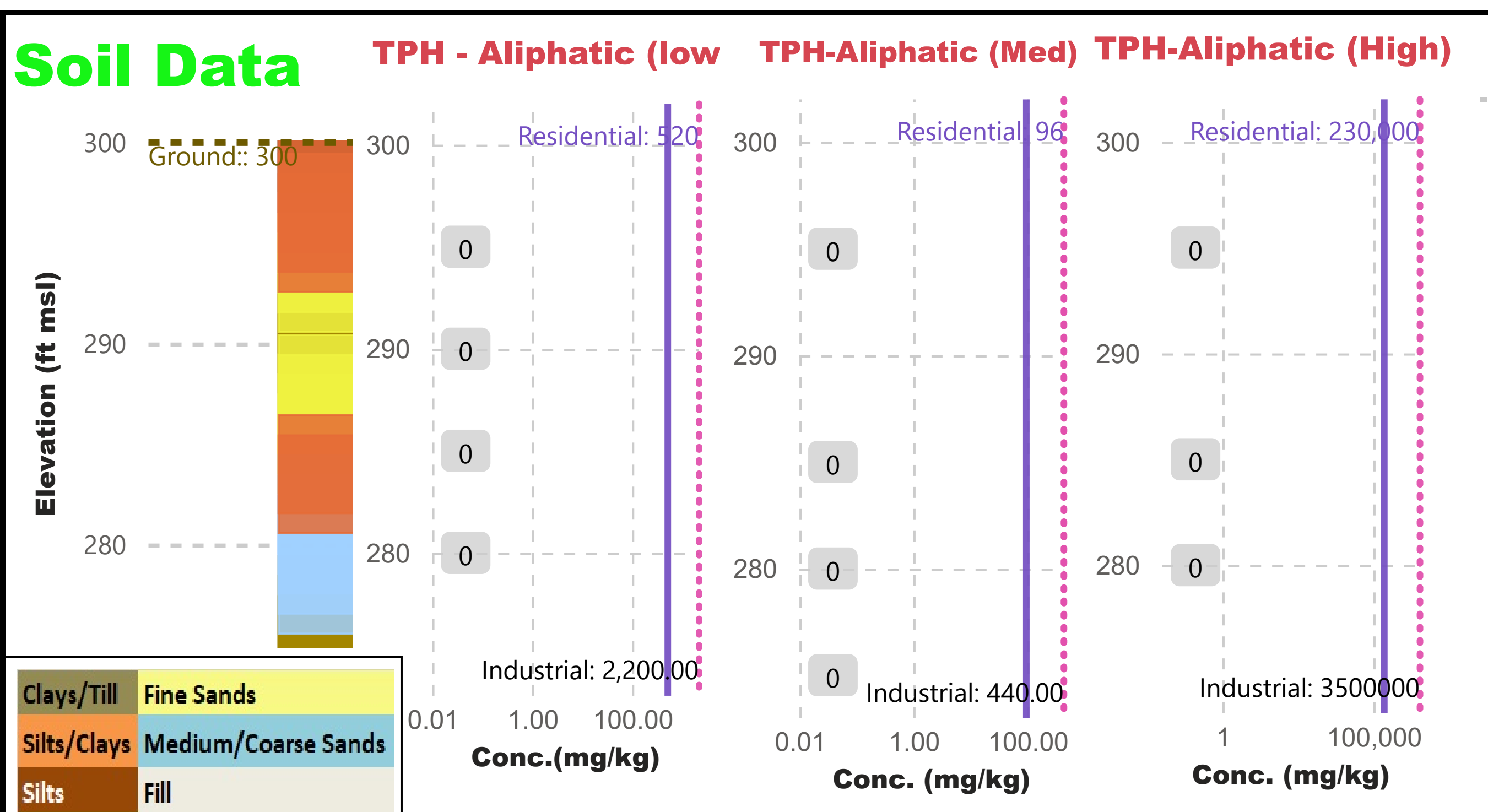
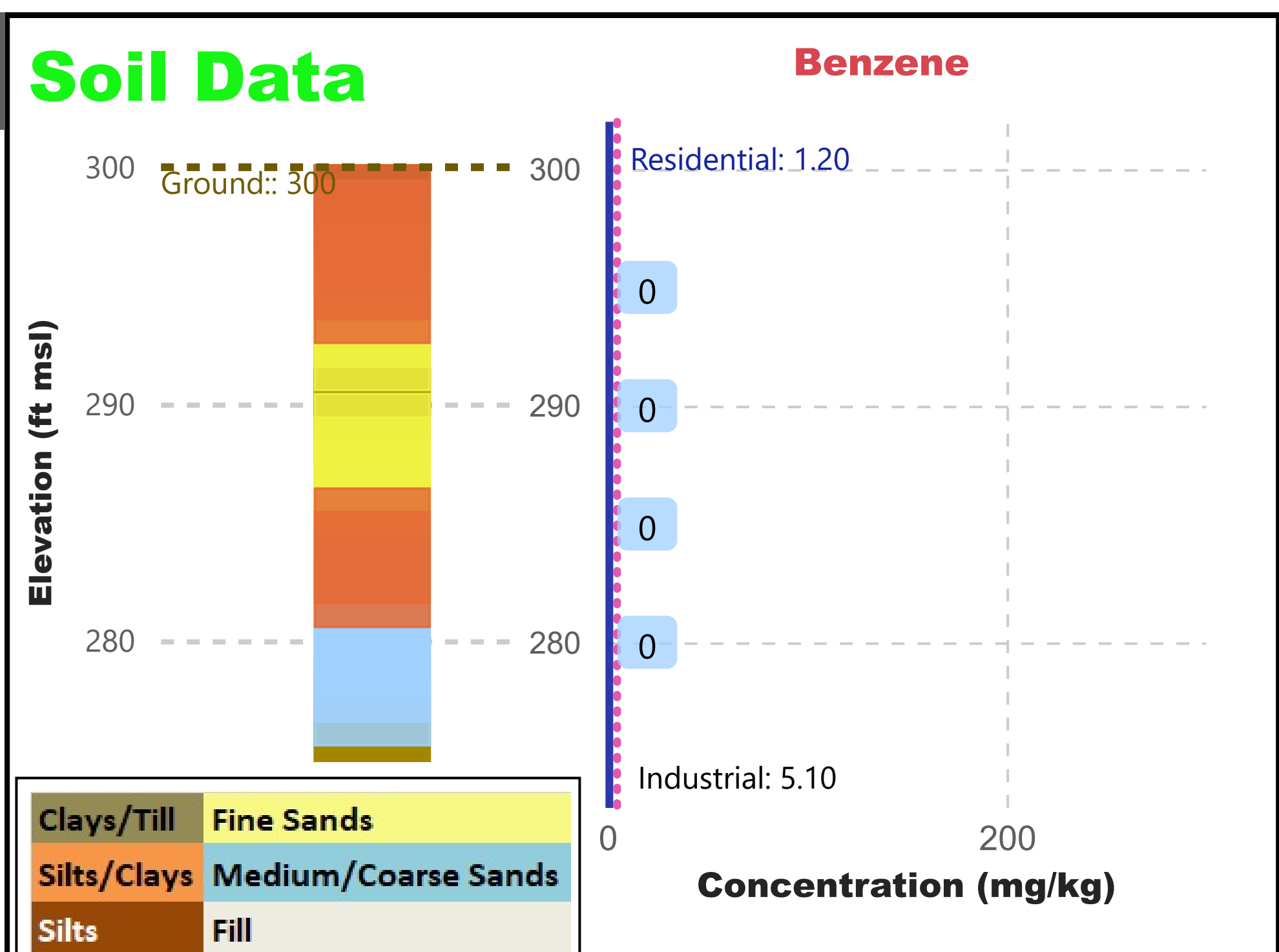
The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group 13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	EC5-6	EC8-16	EC8-16	EC8-16
Aromatic	EC7-10	EC9-12	EC9-22	EC9-22
	EC12-16	EC16-21	EC16-35	EC16-35
	EC12-16	EC16-21	EC21-35	EC21-35
			EC22-35	EC22-35

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

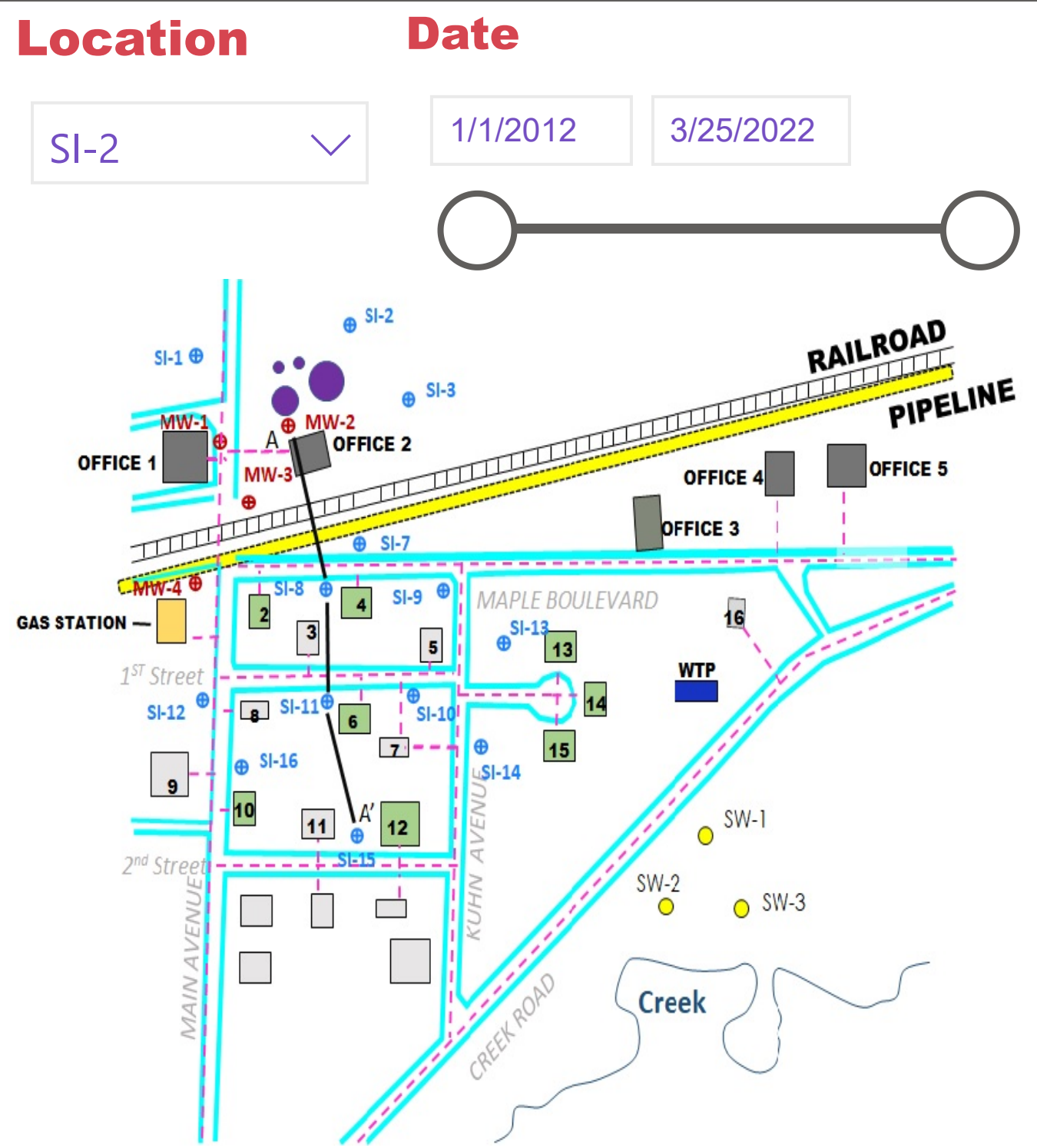
SI-1

Hydrograph & Dissolved Summary

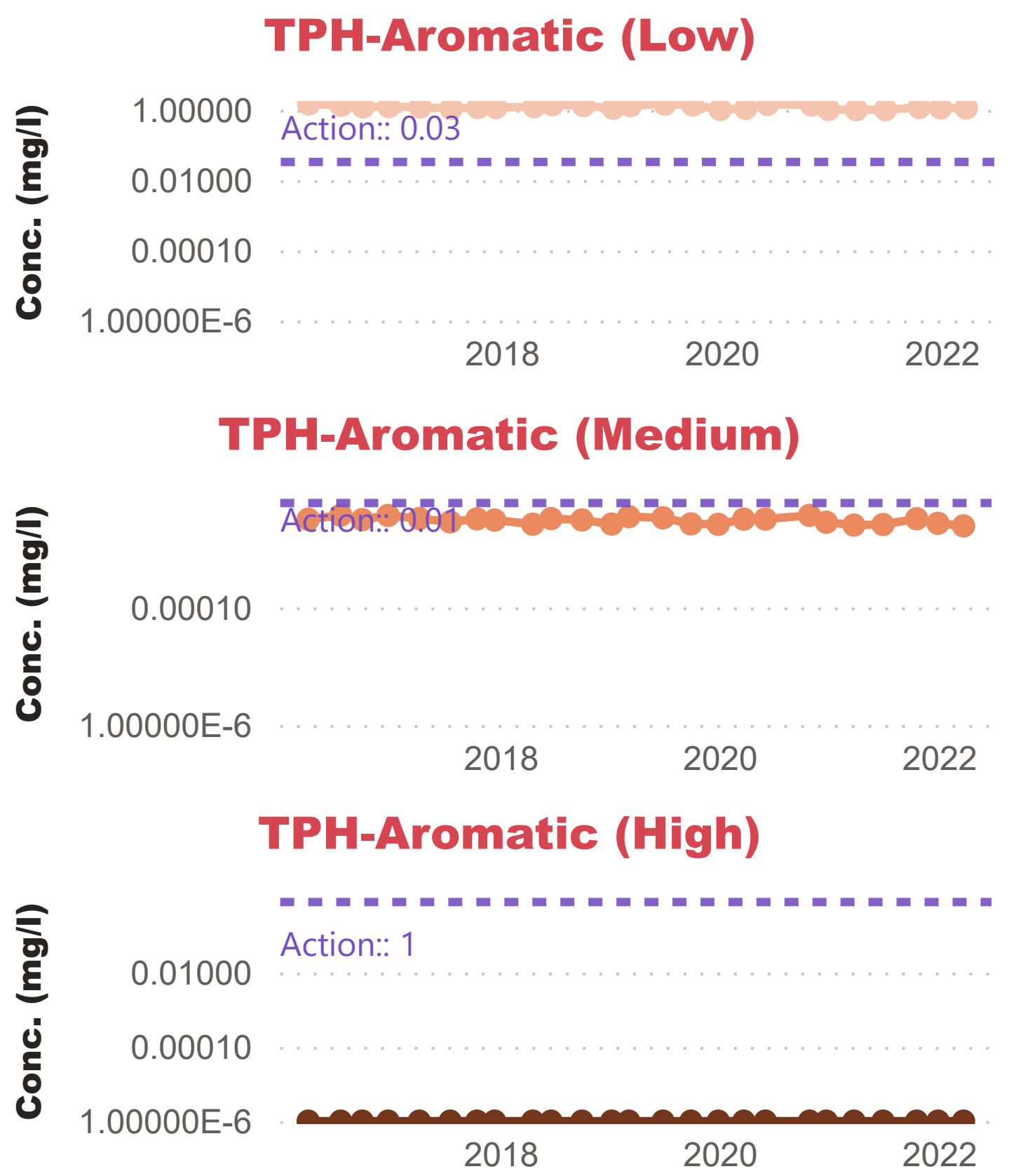
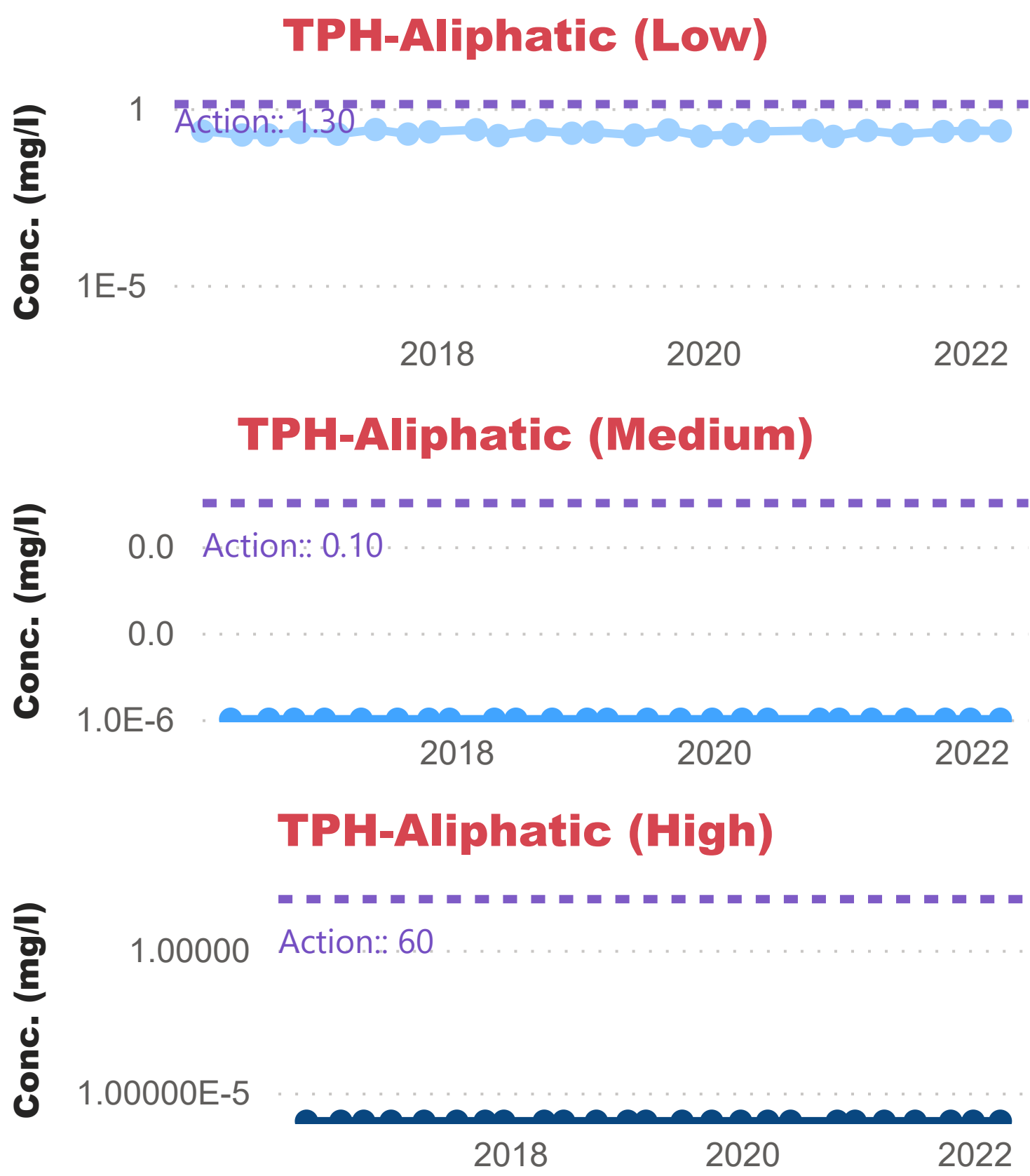
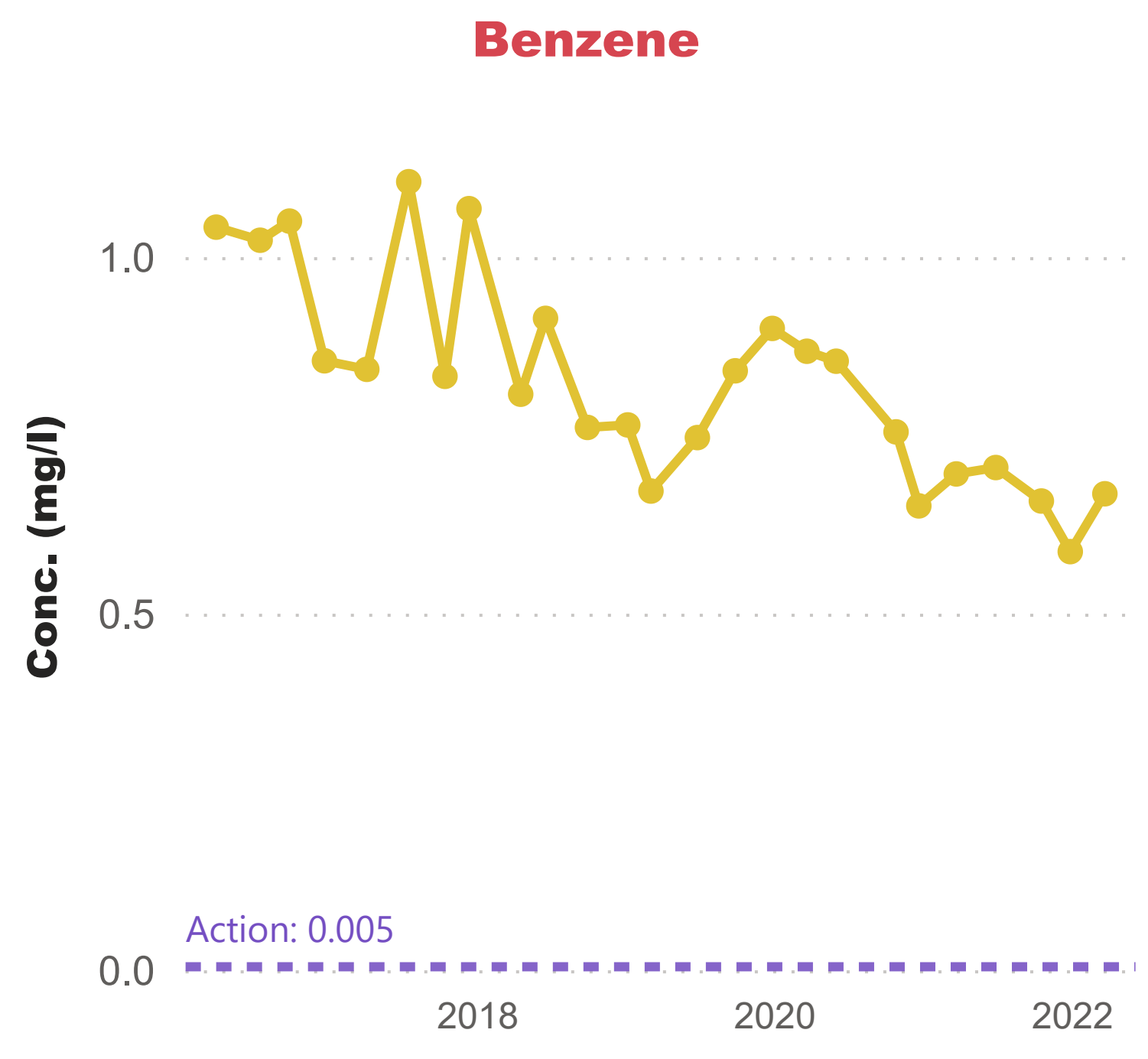


SI-2 Soil and Soil Gas Summary

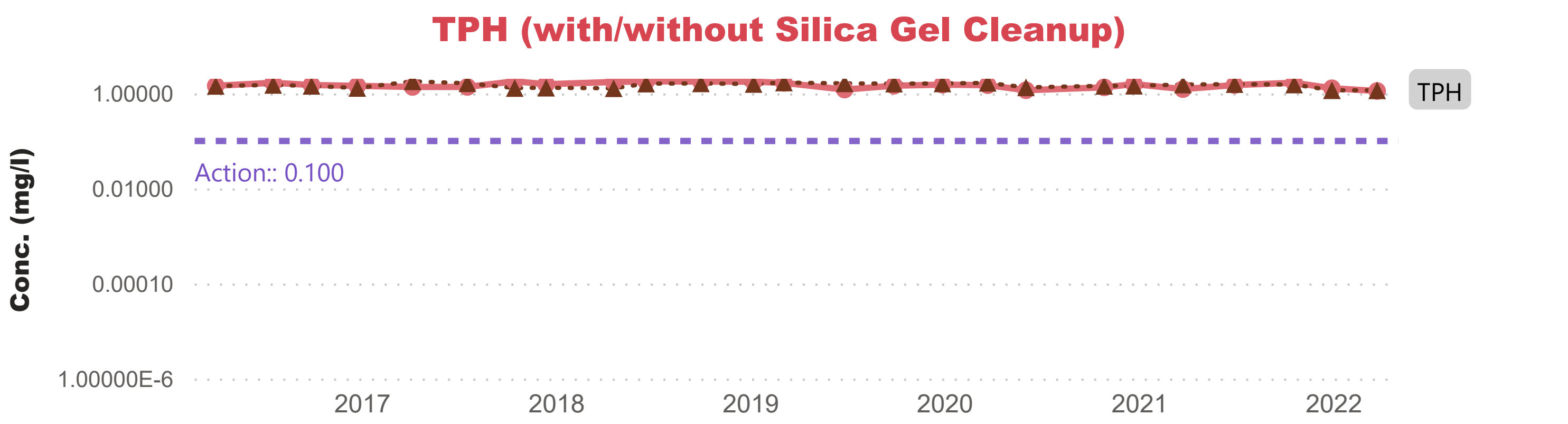
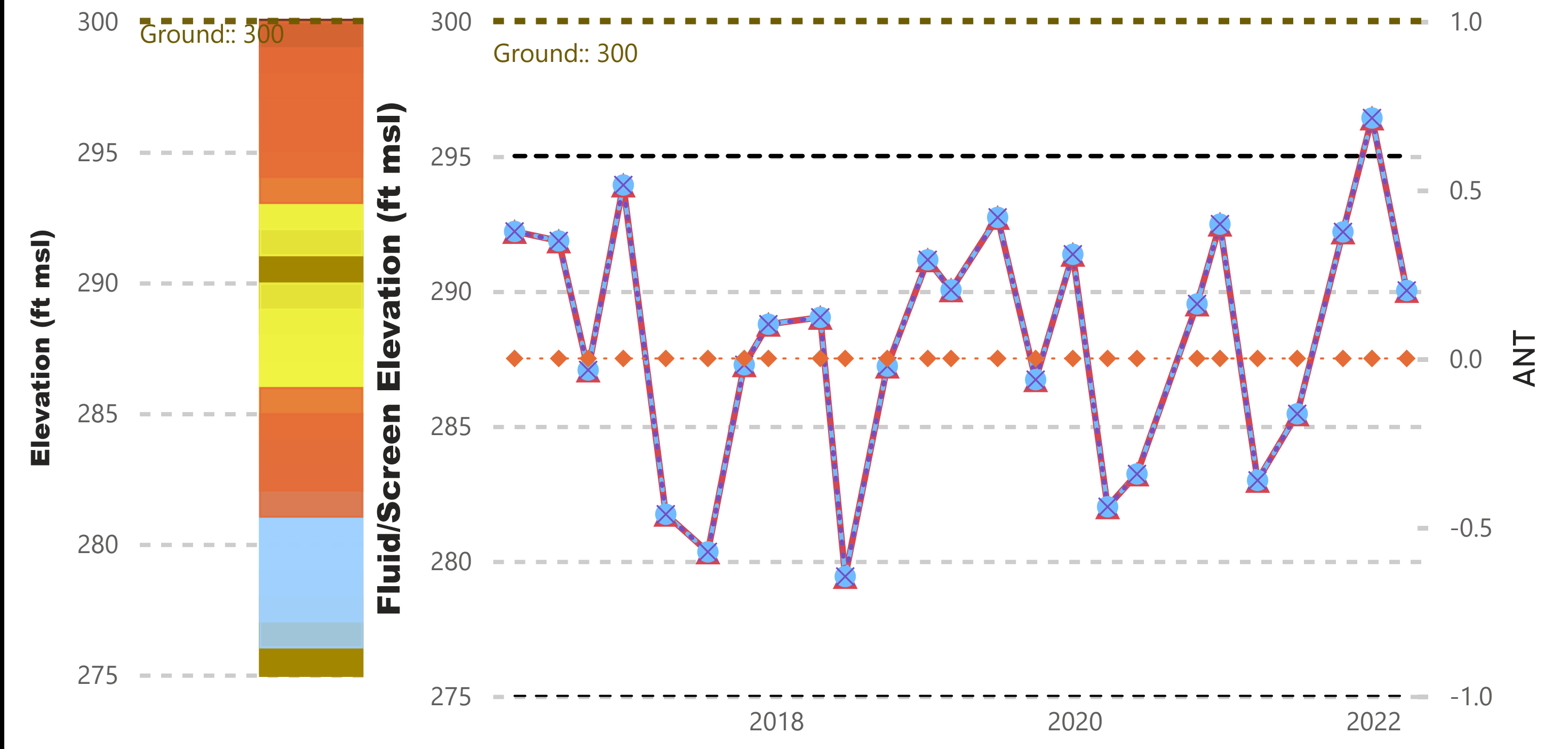
Clays/Till	Fine Sands	<table border="1"> <tr><td>EC5-6</td><td>EC6-8</td><td>EC9-12</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35 (same properties as EC16-21) -- not considered a transport fraction--</td></tr> <tr><td>EC7</td><td>EC9</td><td>EC10-12</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> </table>		EC5-6	EC6-8	EC9-12	EC12-16	EC16-21	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--	EC7	EC9	EC10-12	EC12-16	EC16-21	EC21-35	TPH Criteria Working Group 13 Transport Fractions Increasing Equivalent Carbon (EC) Number →	EPA 6 Toxicity Fractions Increasing Equivalent Carbon (EC) Number →
EC5-6	EC6-8	EC9-12	EC12-16	EC16-21	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--												
EC7	EC9	EC10-12	EC12-16	EC16-21	EC21-35												
Silts/Clays	Medium/Coarse Sands	<table border="1"> <tr><td>EC5-8</td><td>EC8-16</td><td>EC16-35</td></tr> <tr><td>Low</td><td>Medium</td><td>High</td></tr> <tr><td>EC6-9</td><td>EC9-22</td><td>EC22-35</td></tr> <tr><td>Low</td><td>Medium</td><td>High</td></tr> </table>		EC5-8	EC8-16	EC16-35	Low	Medium	High	EC6-9	EC9-22	EC22-35	Low	Medium	High		
EC5-8	EC8-16	EC16-35															
Low	Medium	High															
EC6-9	EC9-22	EC22-35															
Low	Medium	High															
Silts	Fill																



Dissolved Phase



Hydrograph



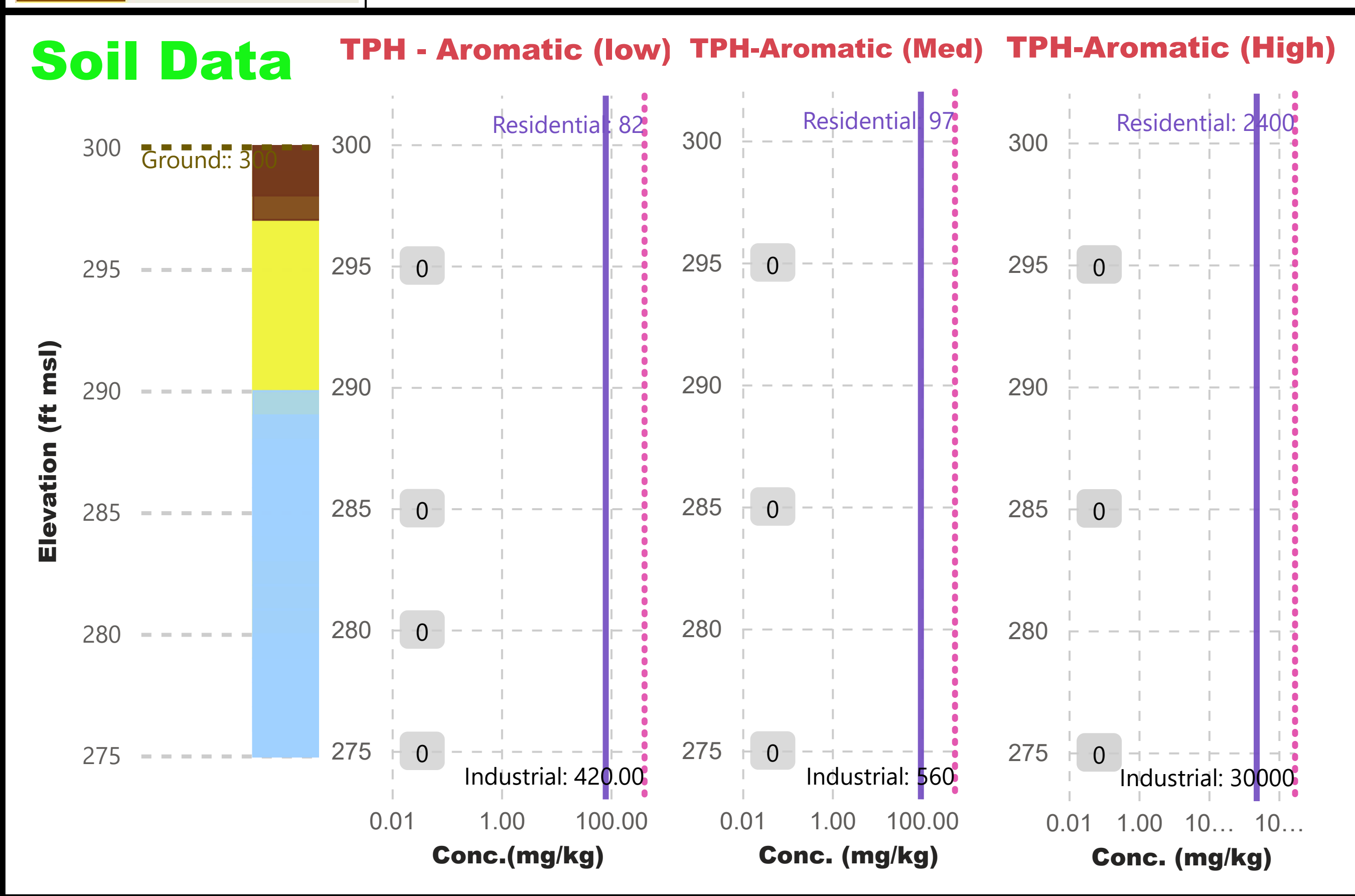
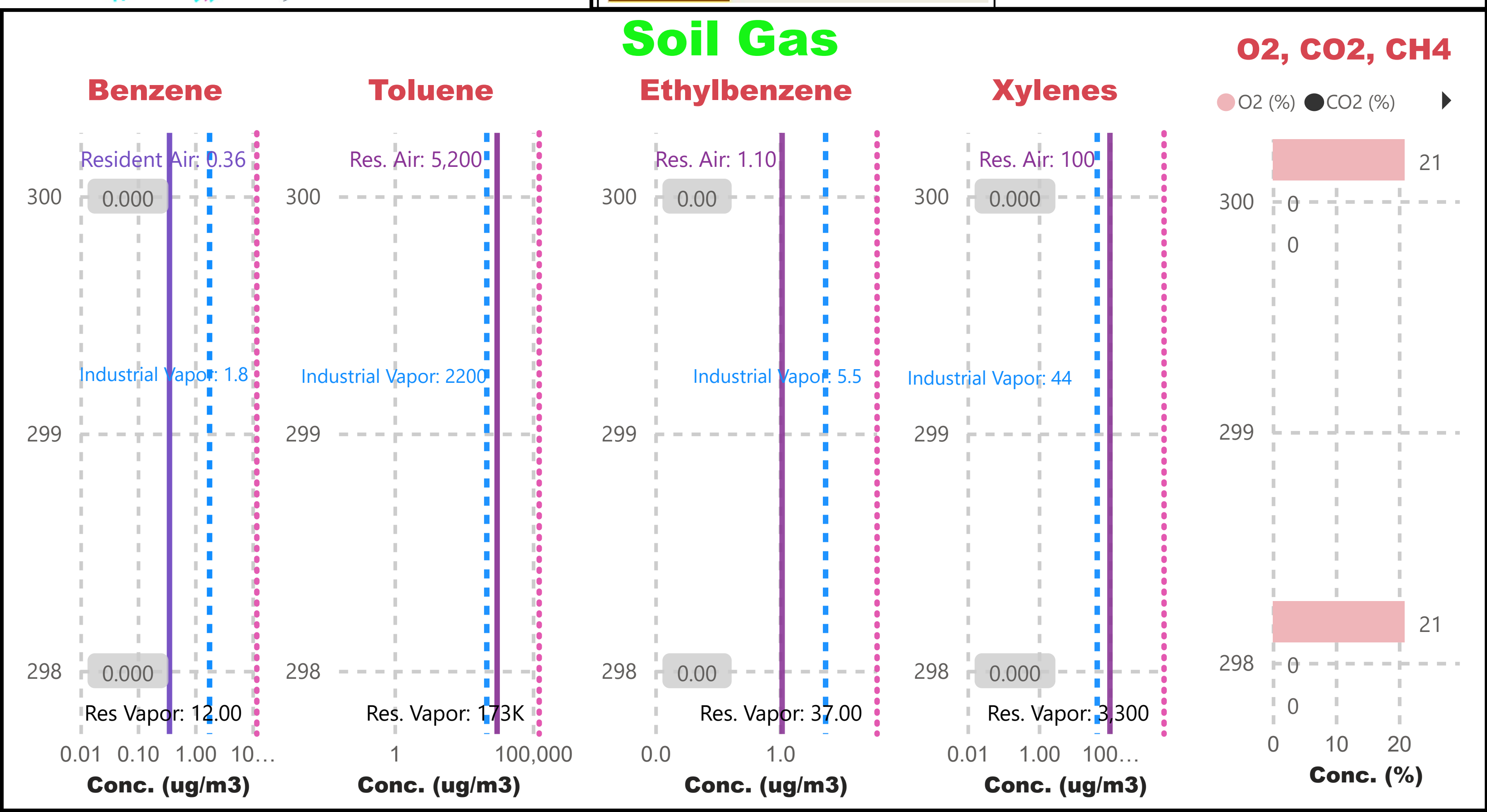
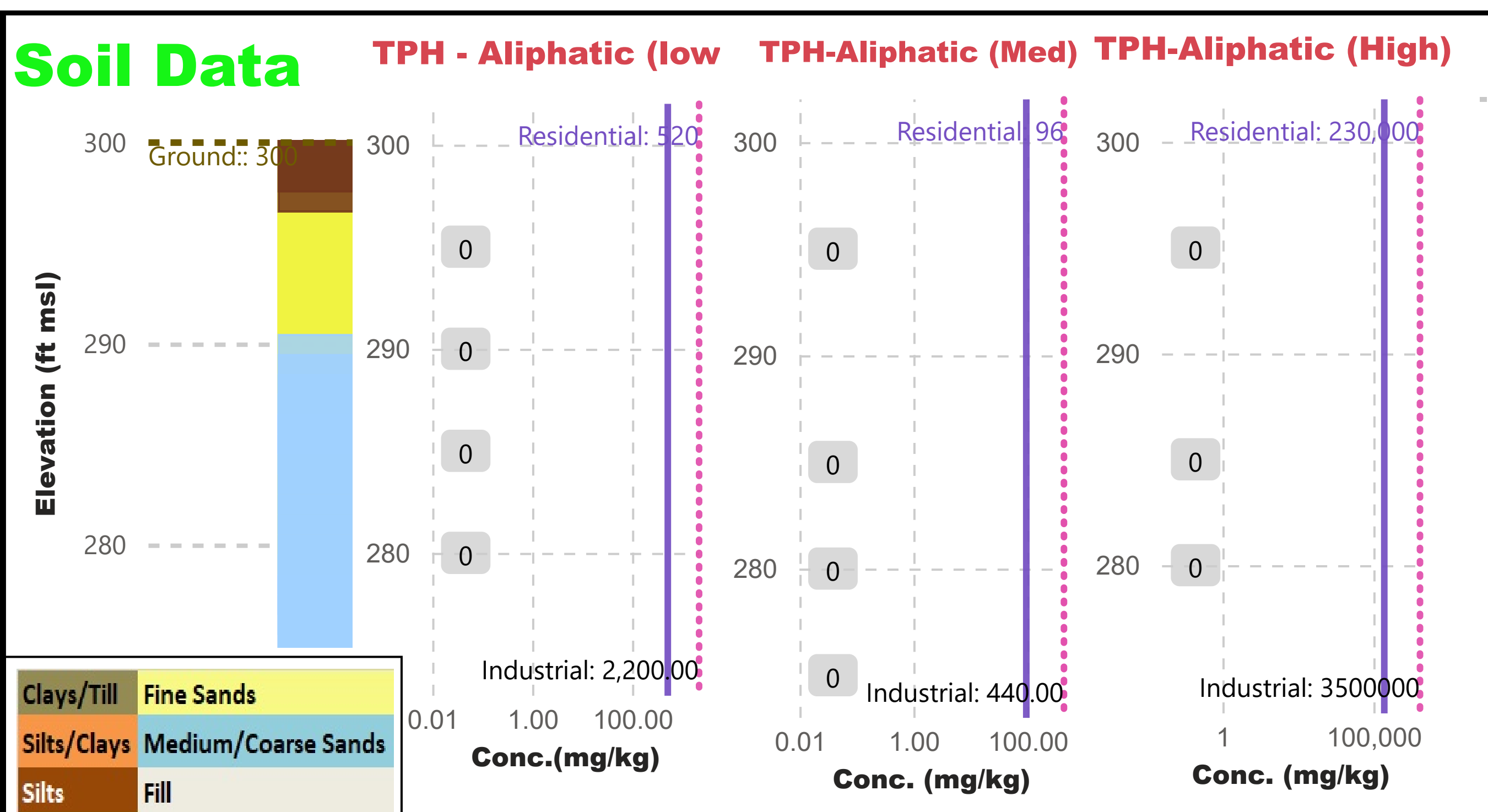
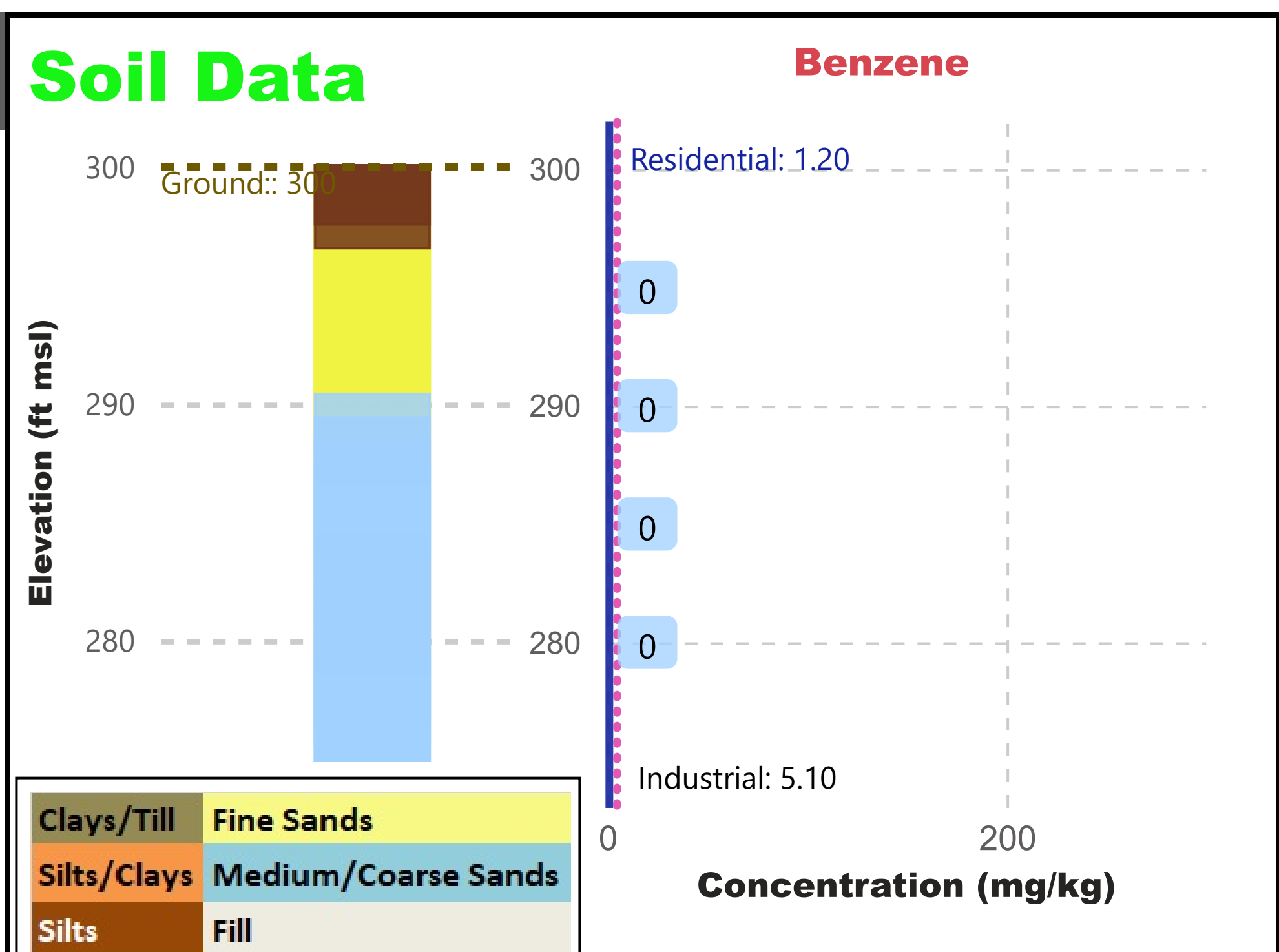
The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group 13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	EC5-6	EC8-10	EC5-6	EC5-6
Aliphatic	EC7	EC9-10	EC7	EC7
Aliphatic	EC8-10	EC11-12	EC8-10	EC8-10
Aliphatic	EC12-16	EC16-21	EC12-16	EC12-16
Aliphatic	EC16-21	EC21-35	EC16-21	EC16-21
Aliphatic	EC21-35	EC21-35	EC21-35	EC21-35
Aromatic	EC8-9	EC9-22	EC8-9	EC8-9
Aromatic	EC16-35	EC22-35	EC16-35	EC16-35

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

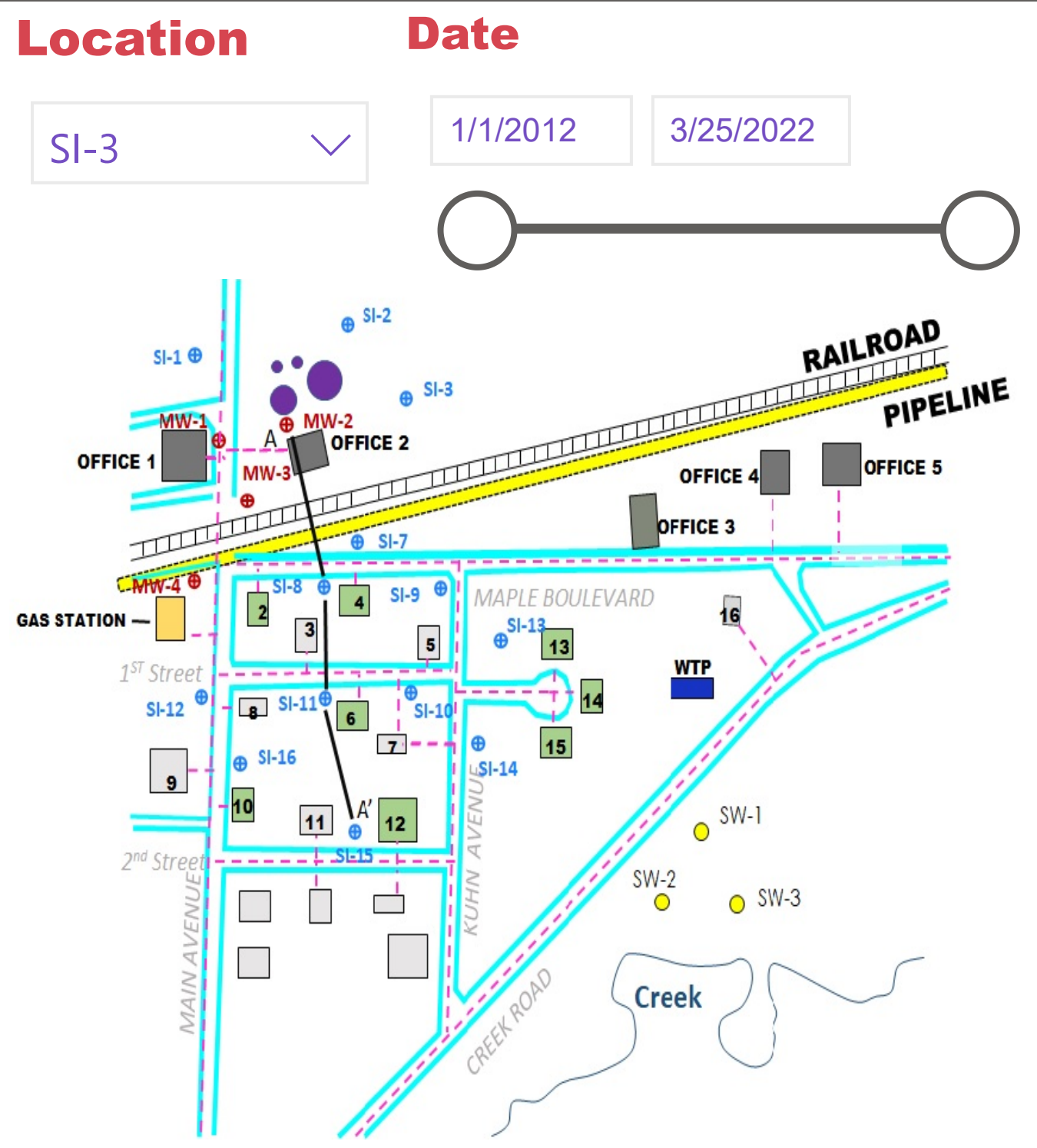
SI-2

Hydrograph & Dissolved Summary

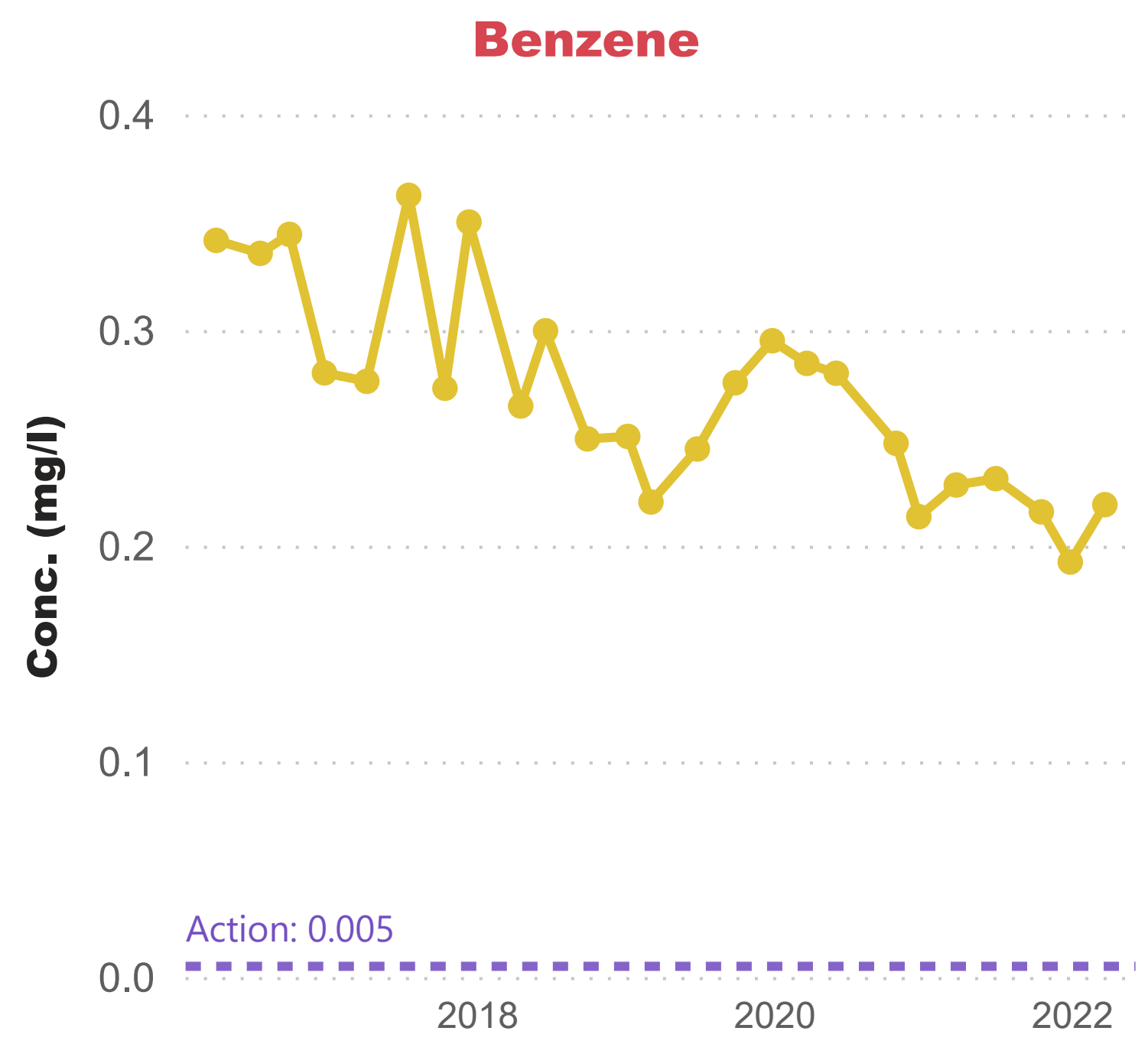


SI-3 Soil and Soil Gas Summary

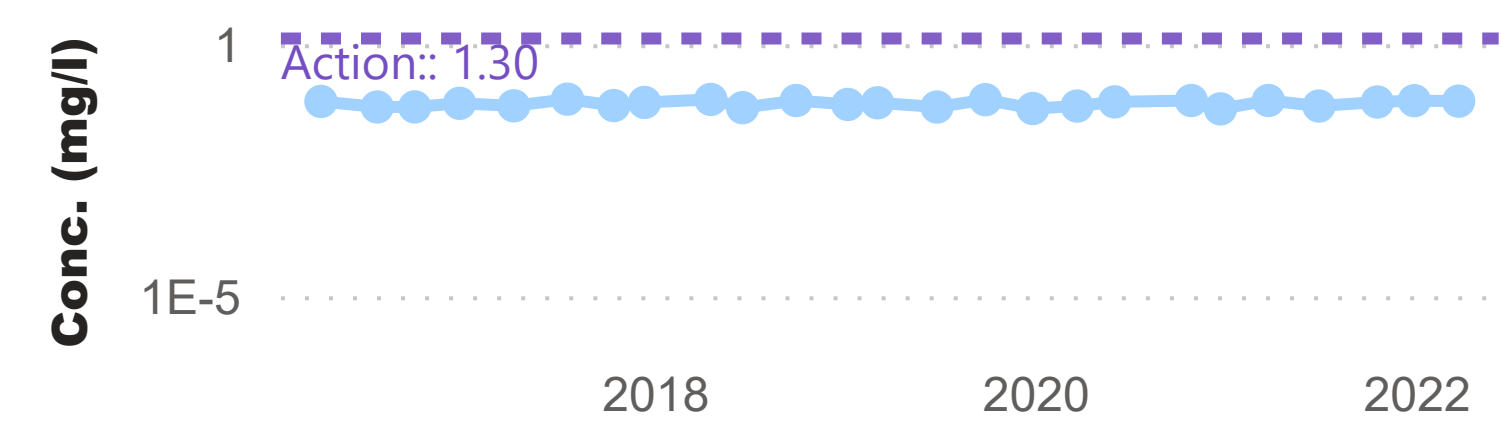
Clays/Till	Fine Sands		EPA 6 Toxicity Fractions
Silts/Clays	Medium/Coarse Sands		
Silts	Fill		



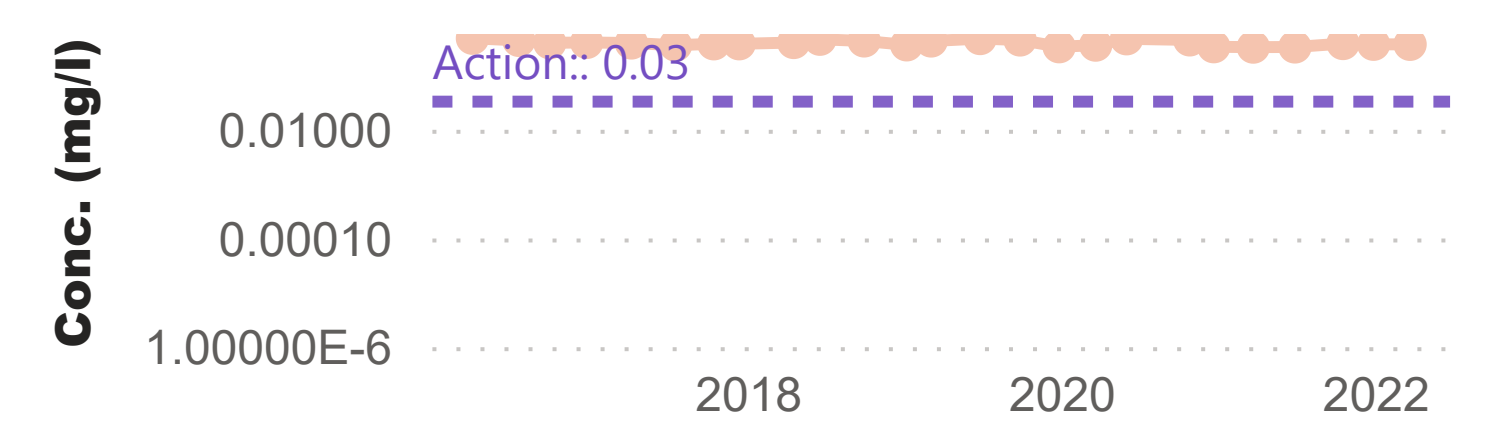
Dissolved Phase



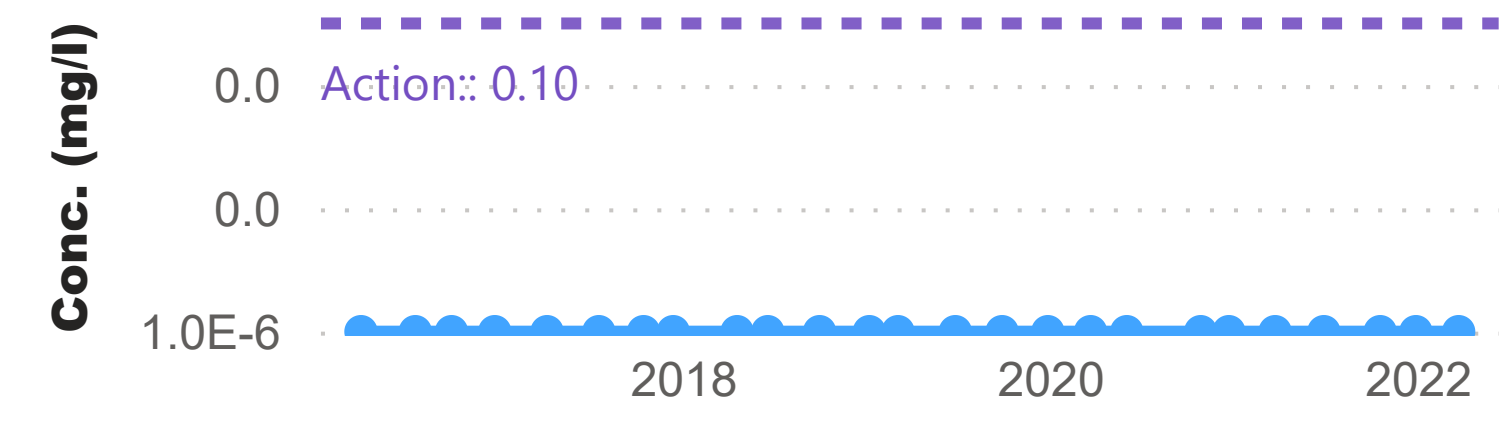
TPH-Aliphatic (Low)



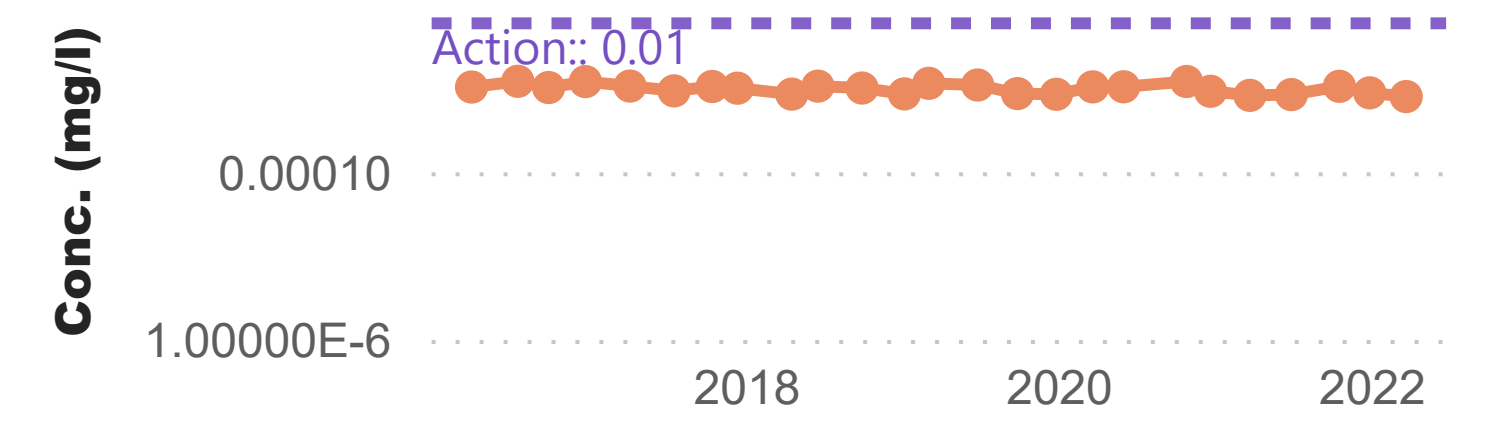
TPH-Aromatic (Low)



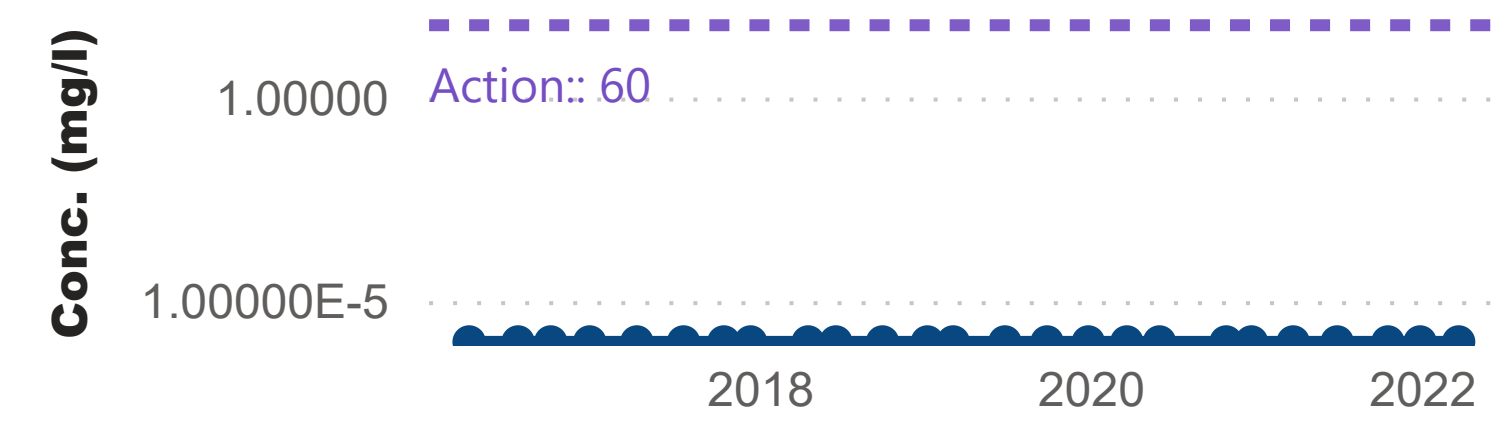
TPH-Aliphatic (Medium)



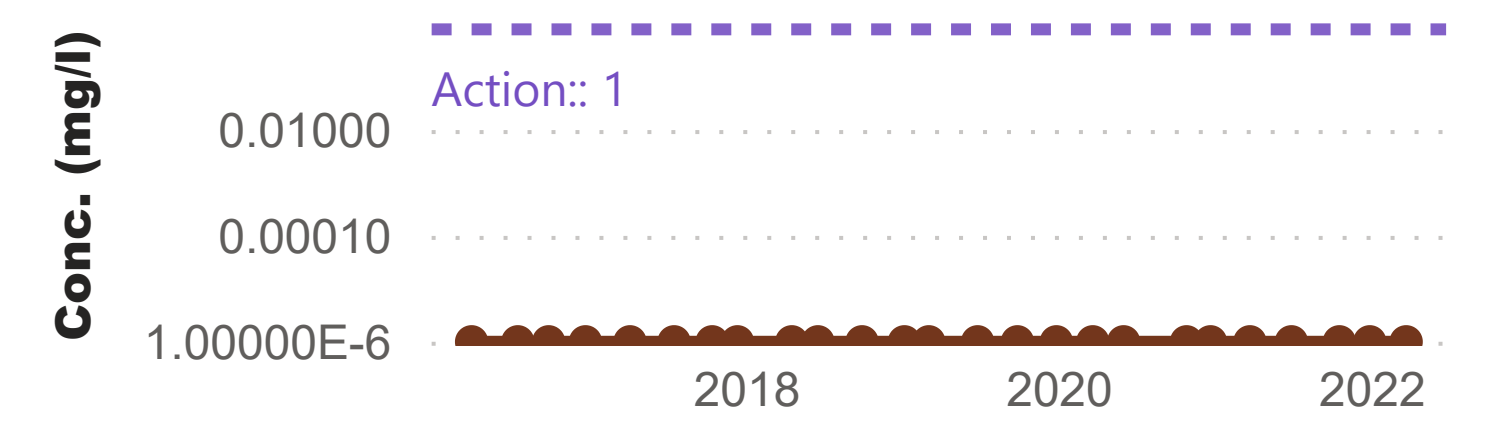
TPH-Aromatic (Medium)



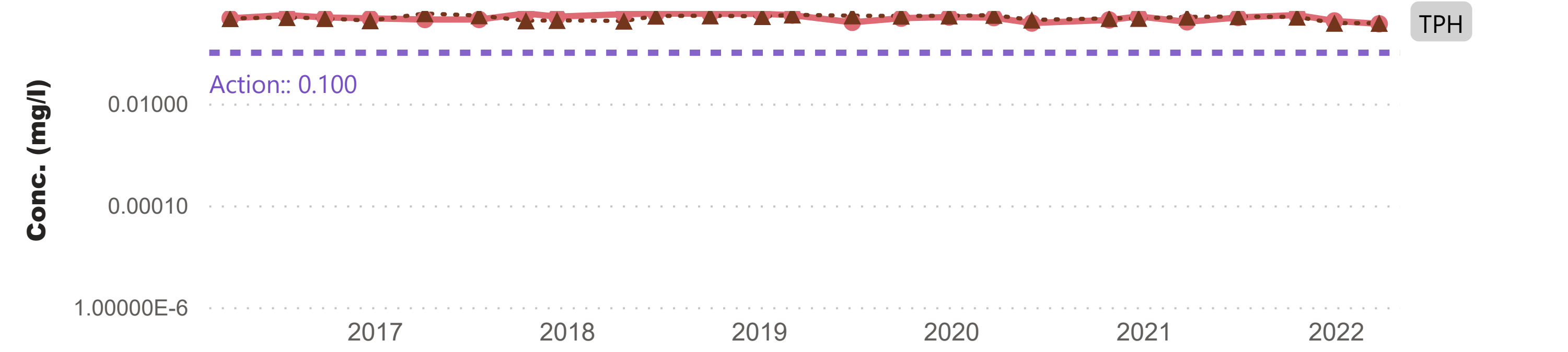
TPH-Aliphatic (High)



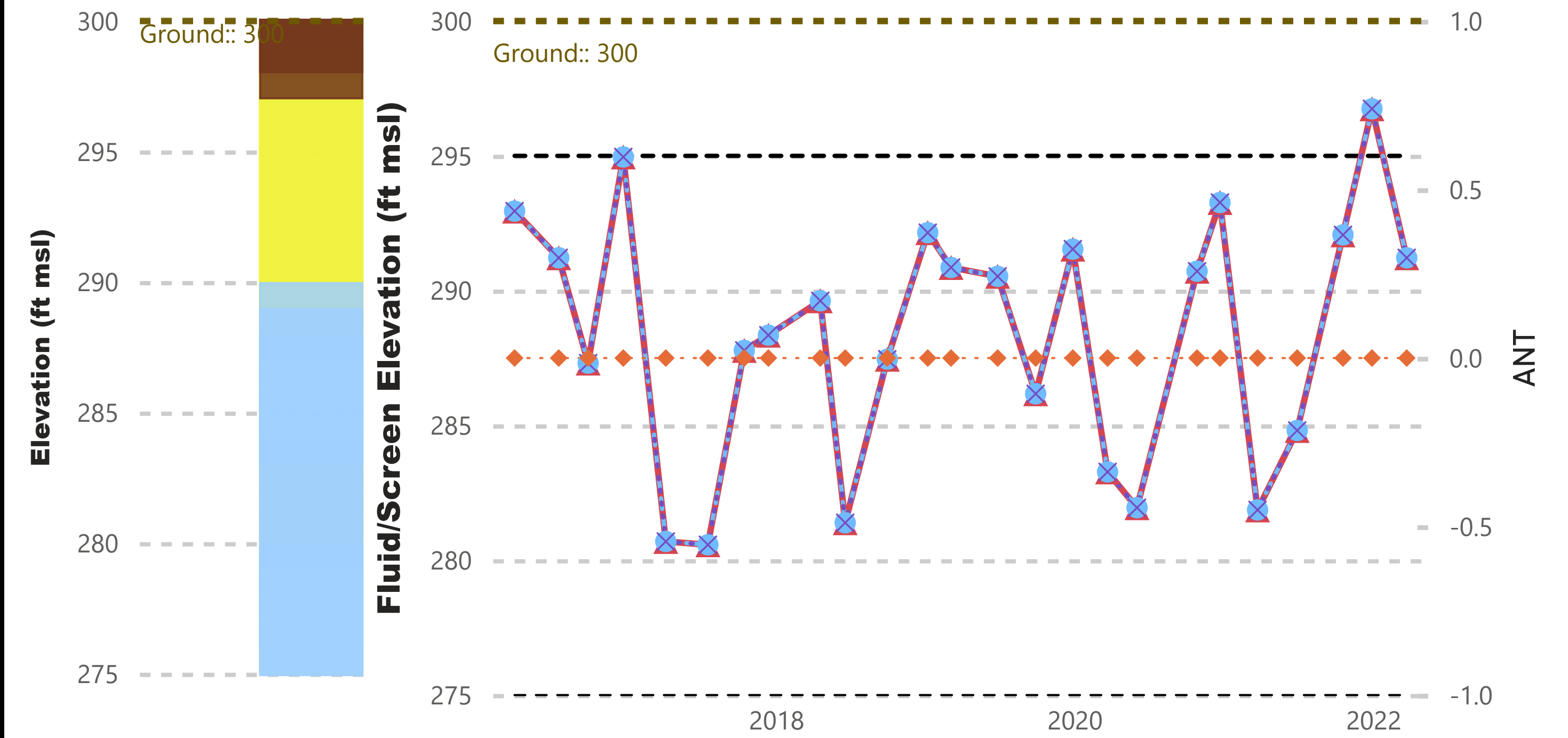
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

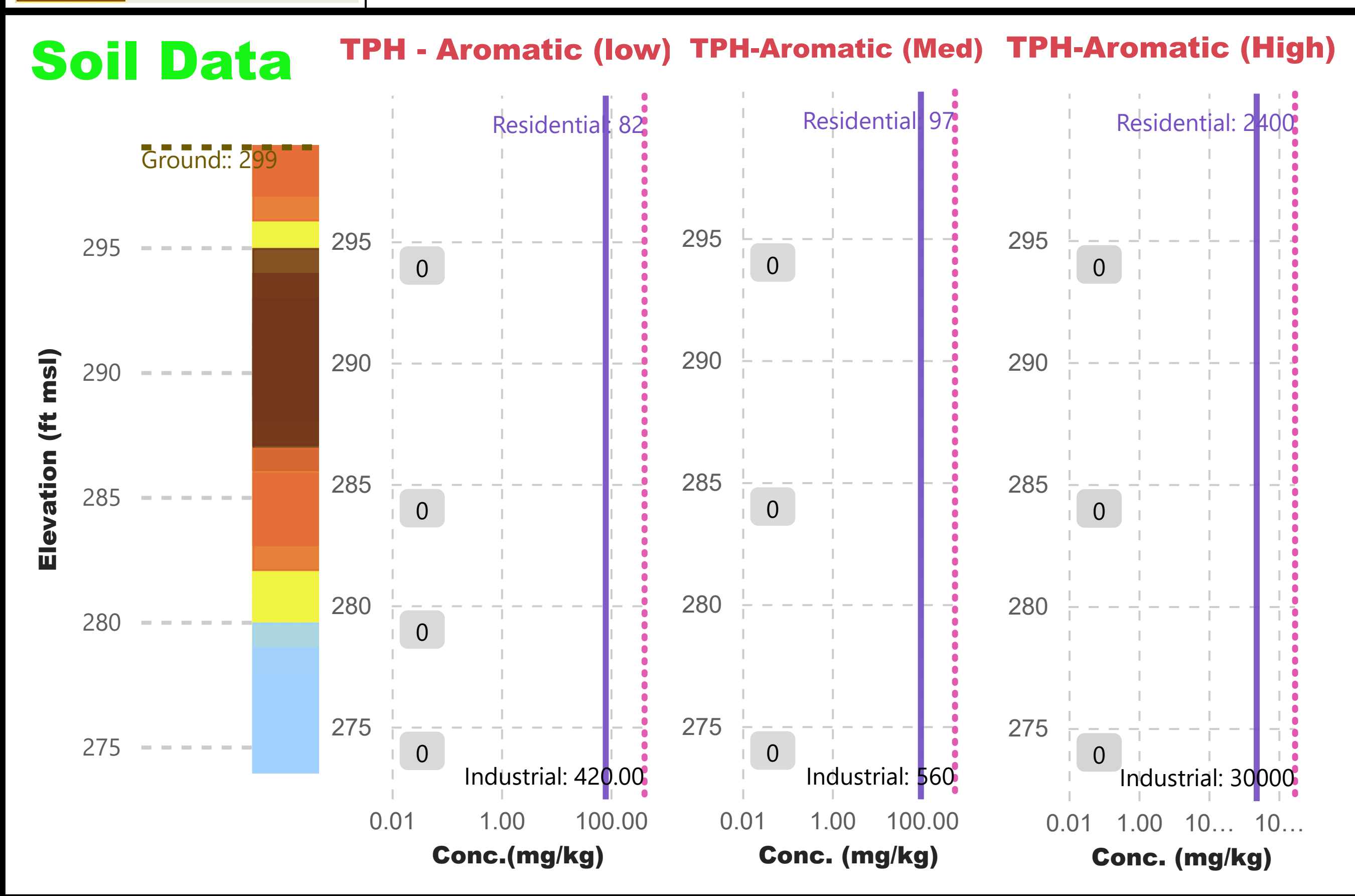
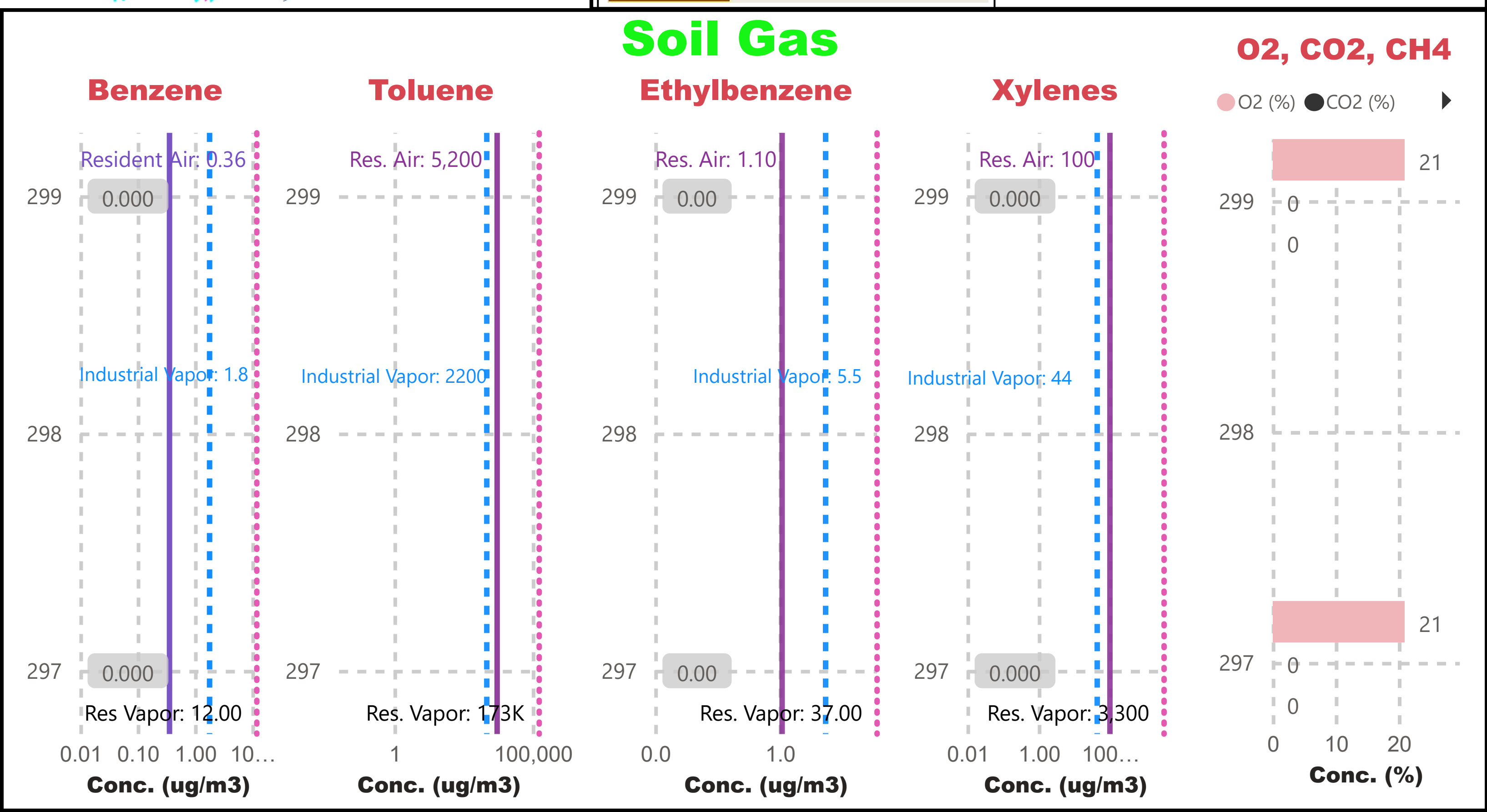
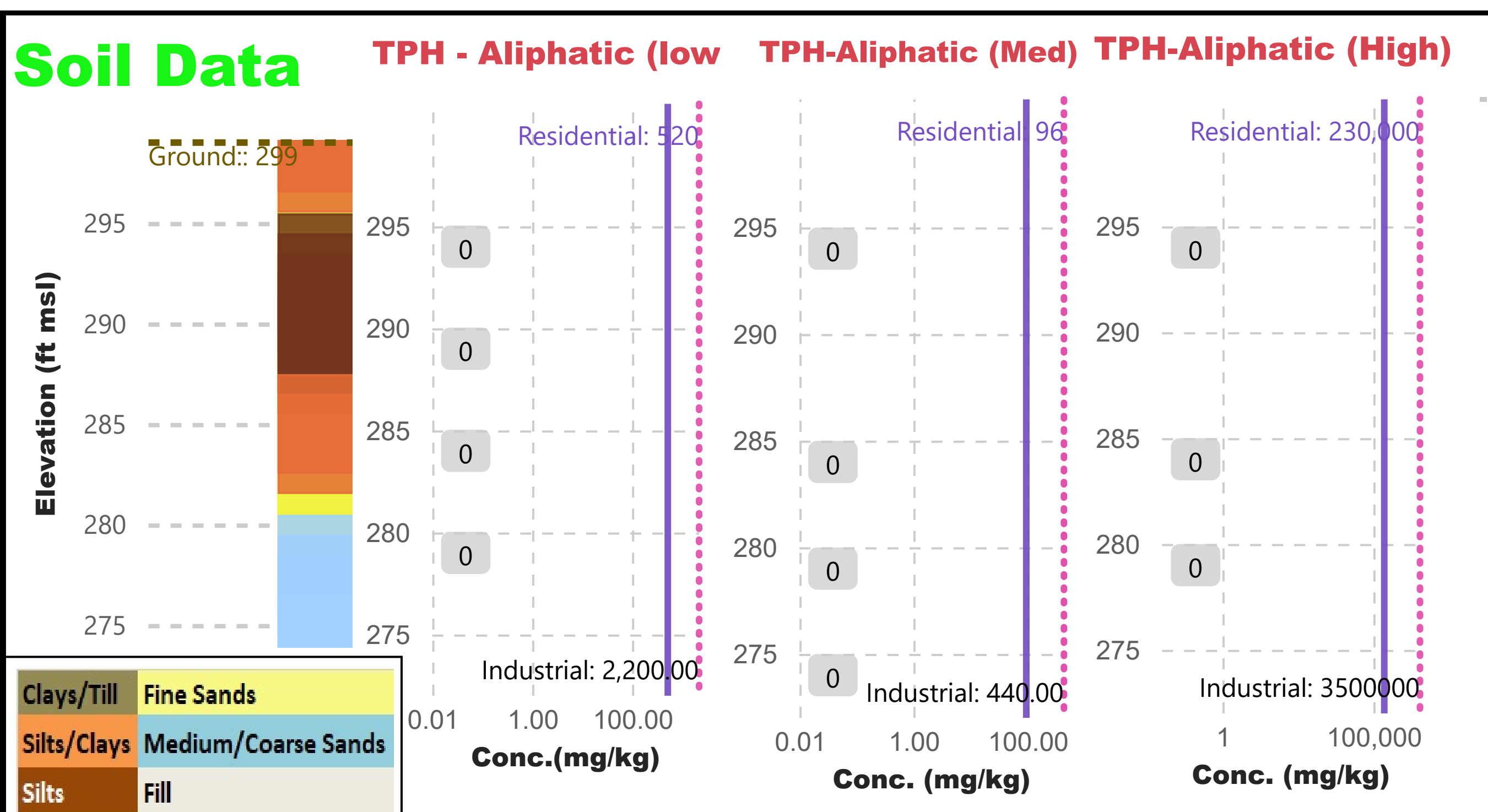
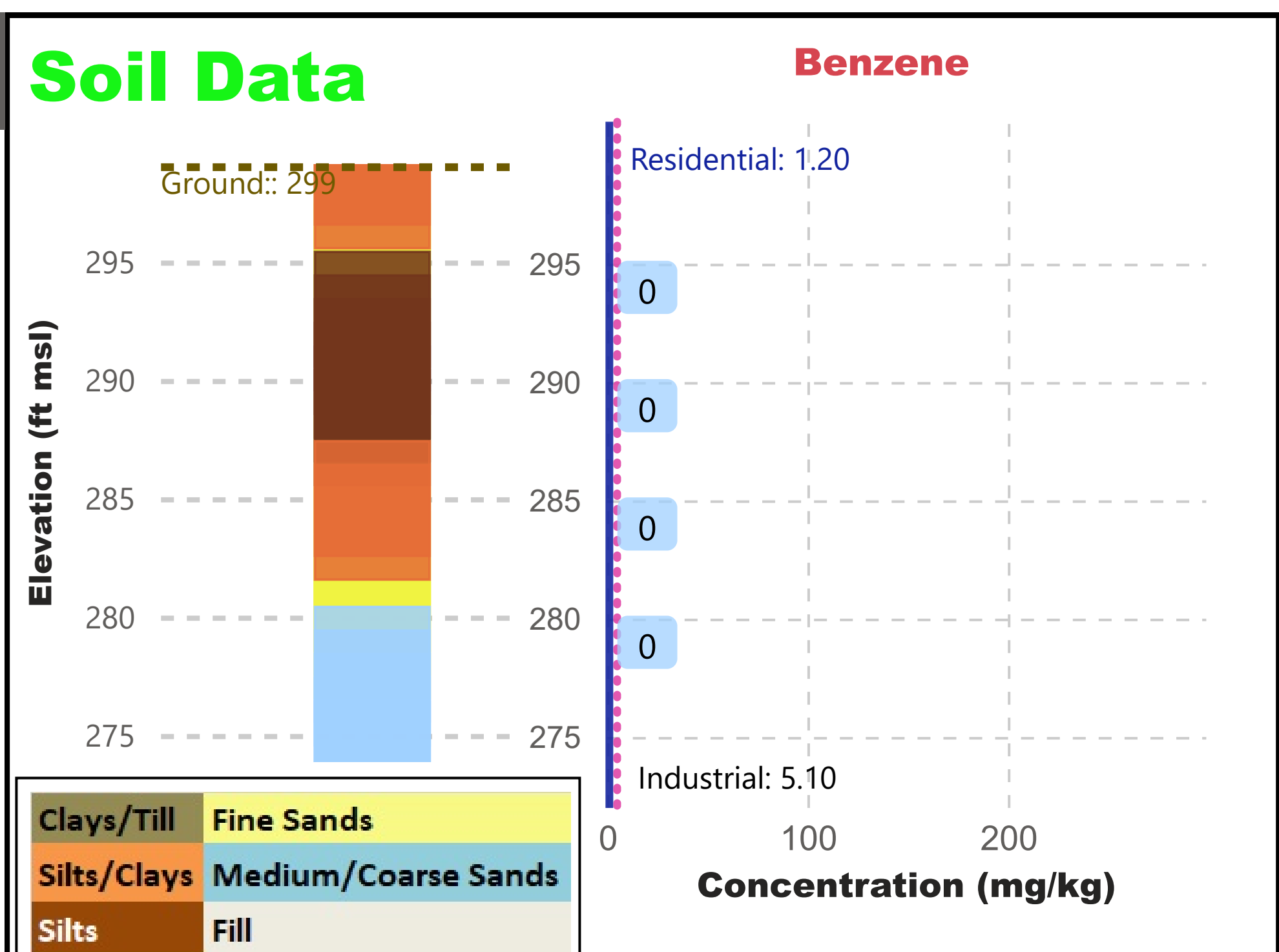
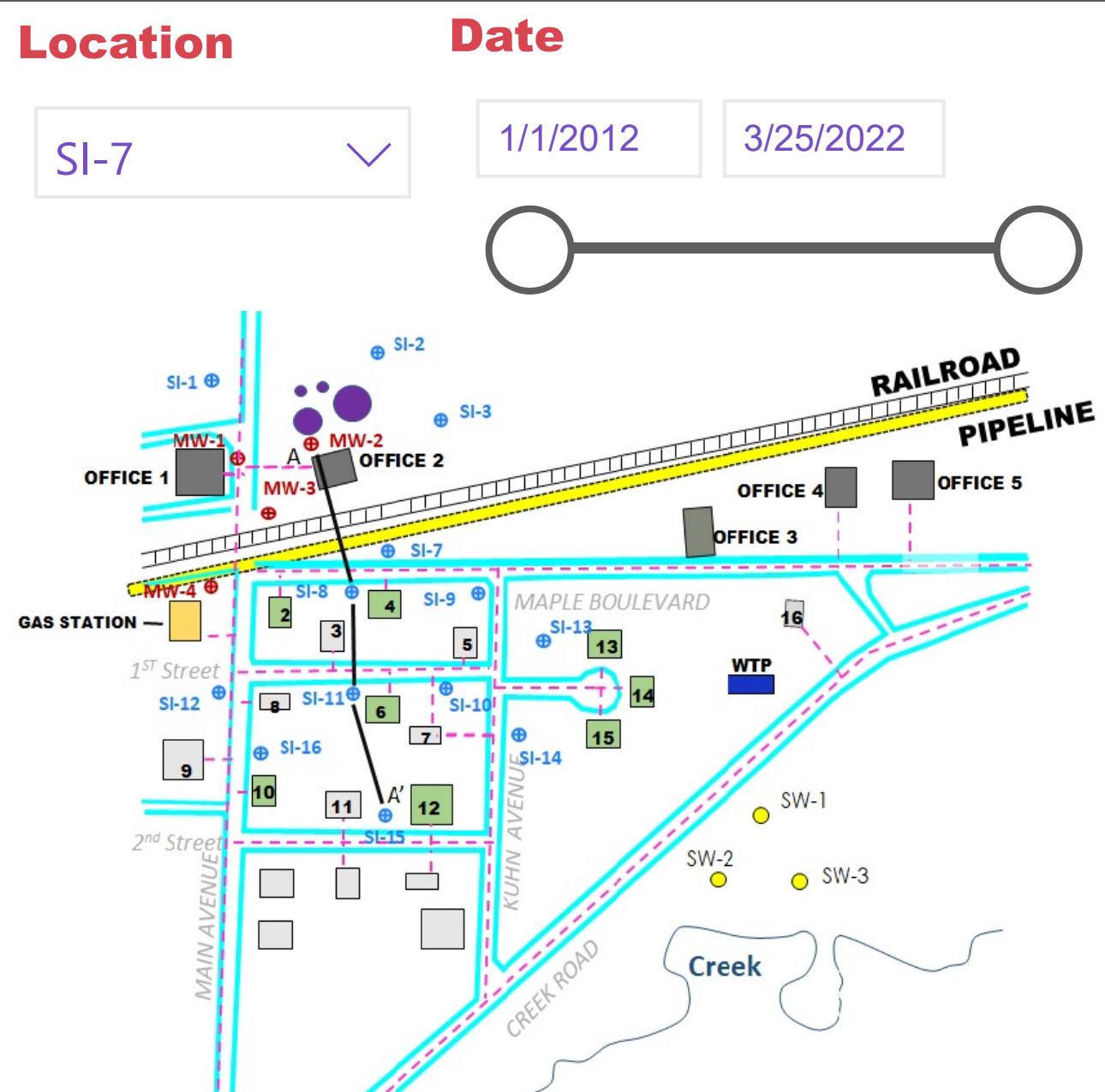
Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group 13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	EC5-6	EC8-16	EC8-16	EC8-16
Aromatic	EC7-10	EC10-12	EC12-16	EC16-35
	EC12-16	EC16-21	EC16-21	EC16-35
	EC21-35	EC21-35	EC21-35	EC22-35

Increasing Equivalent Carbon (EC) Number

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

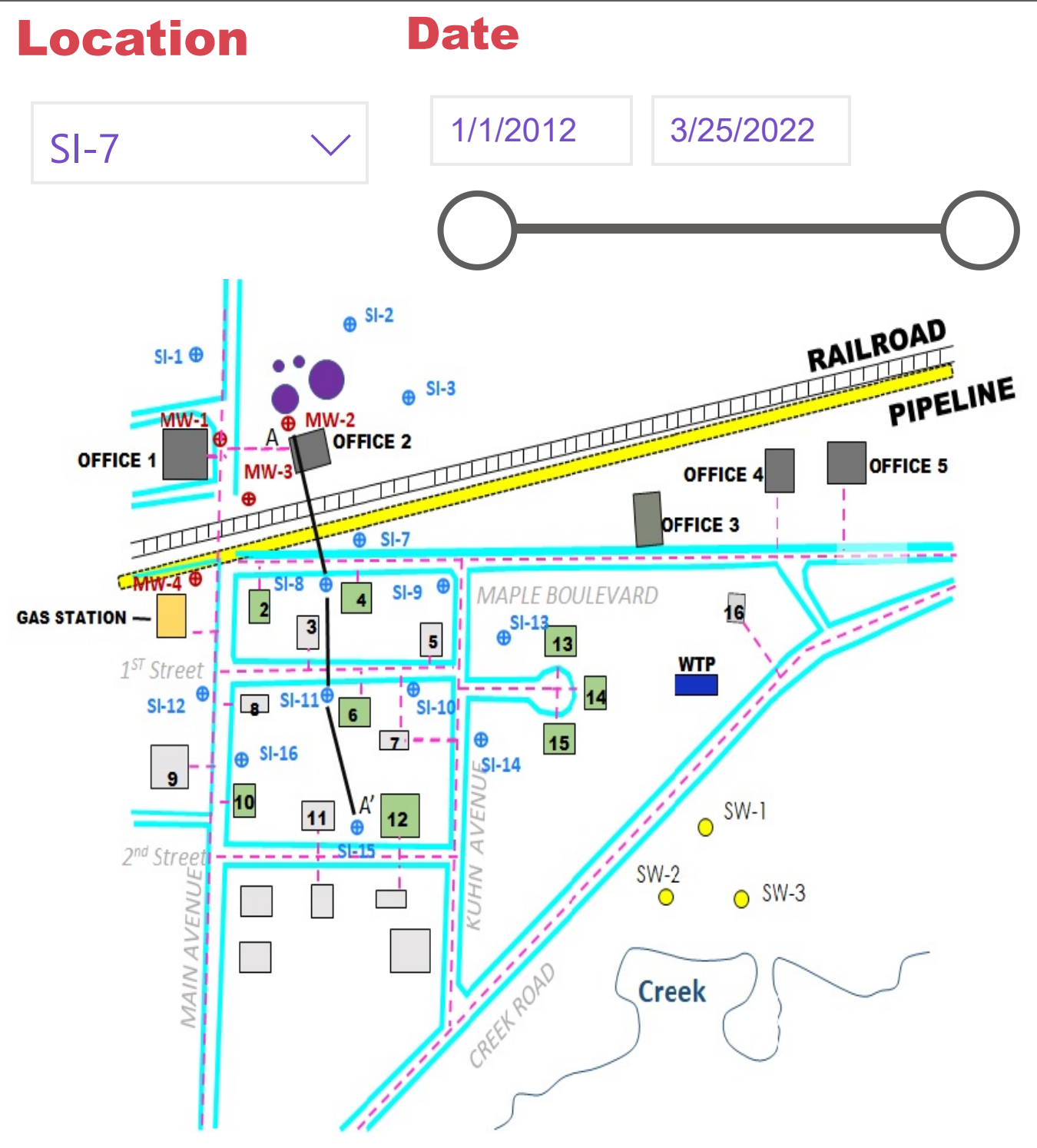
SI-3

Hydrograph & Dissolved Summary

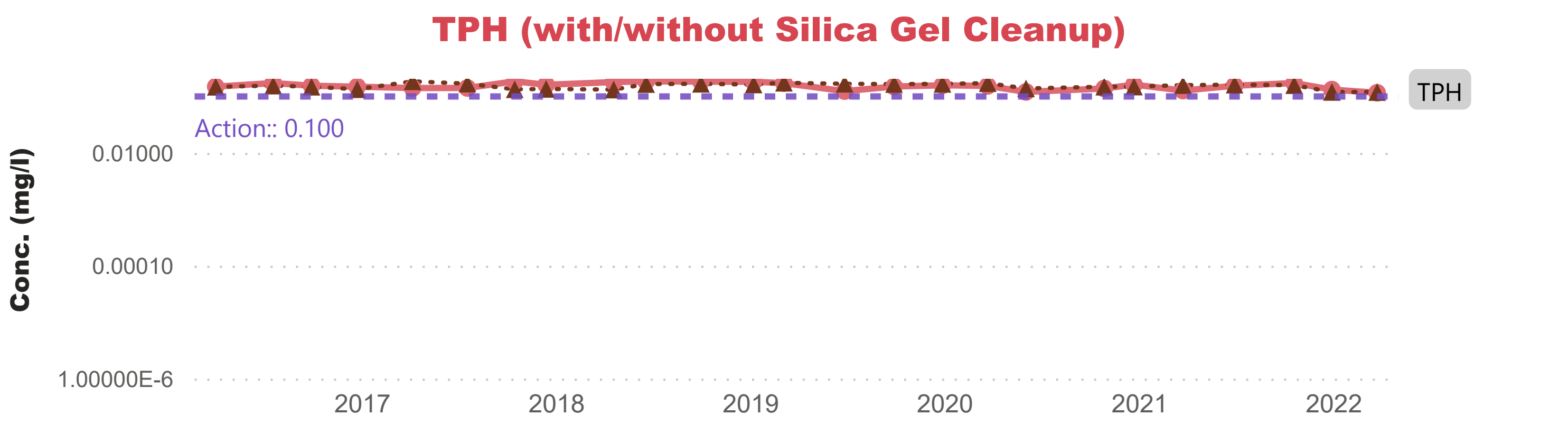
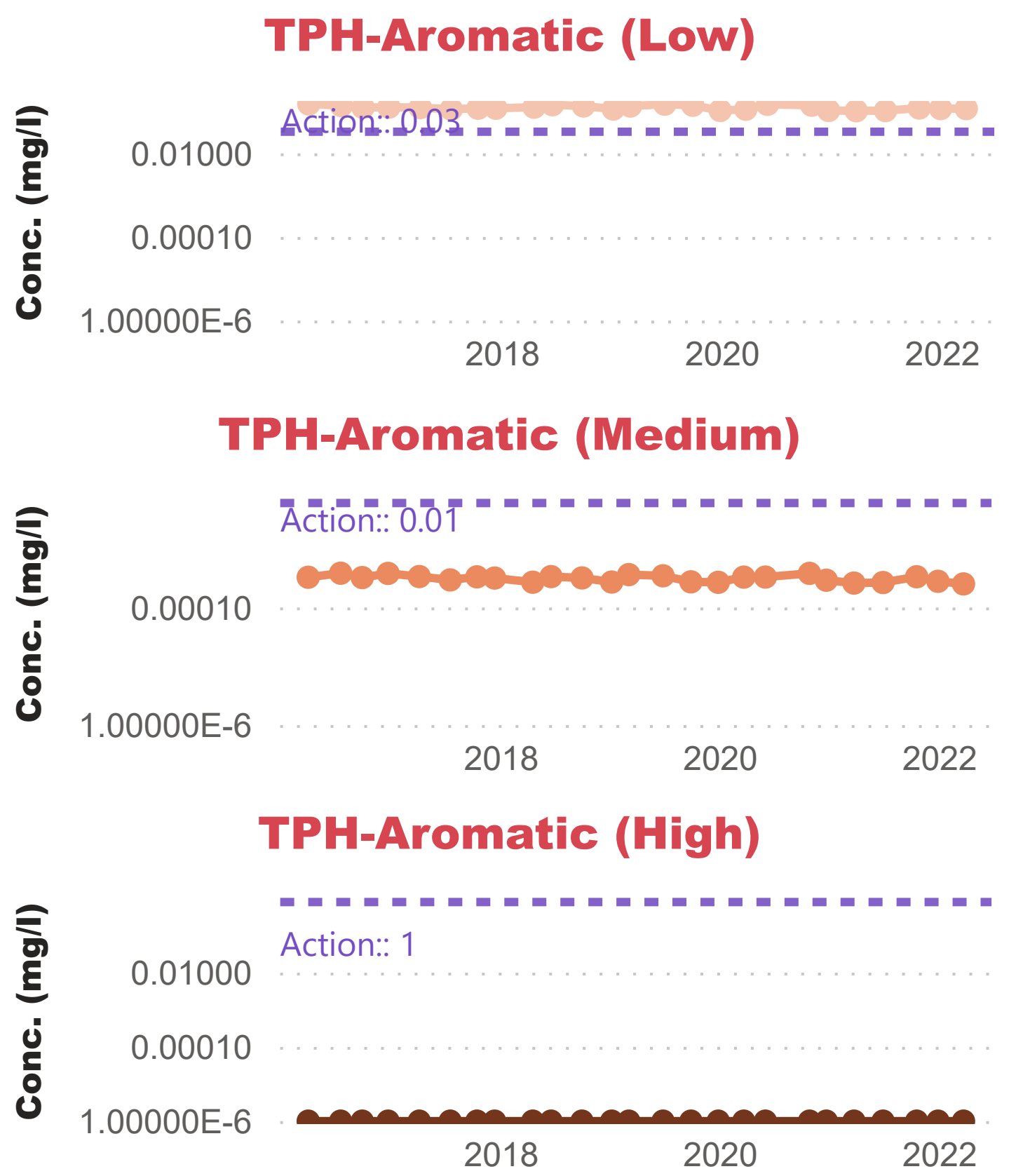
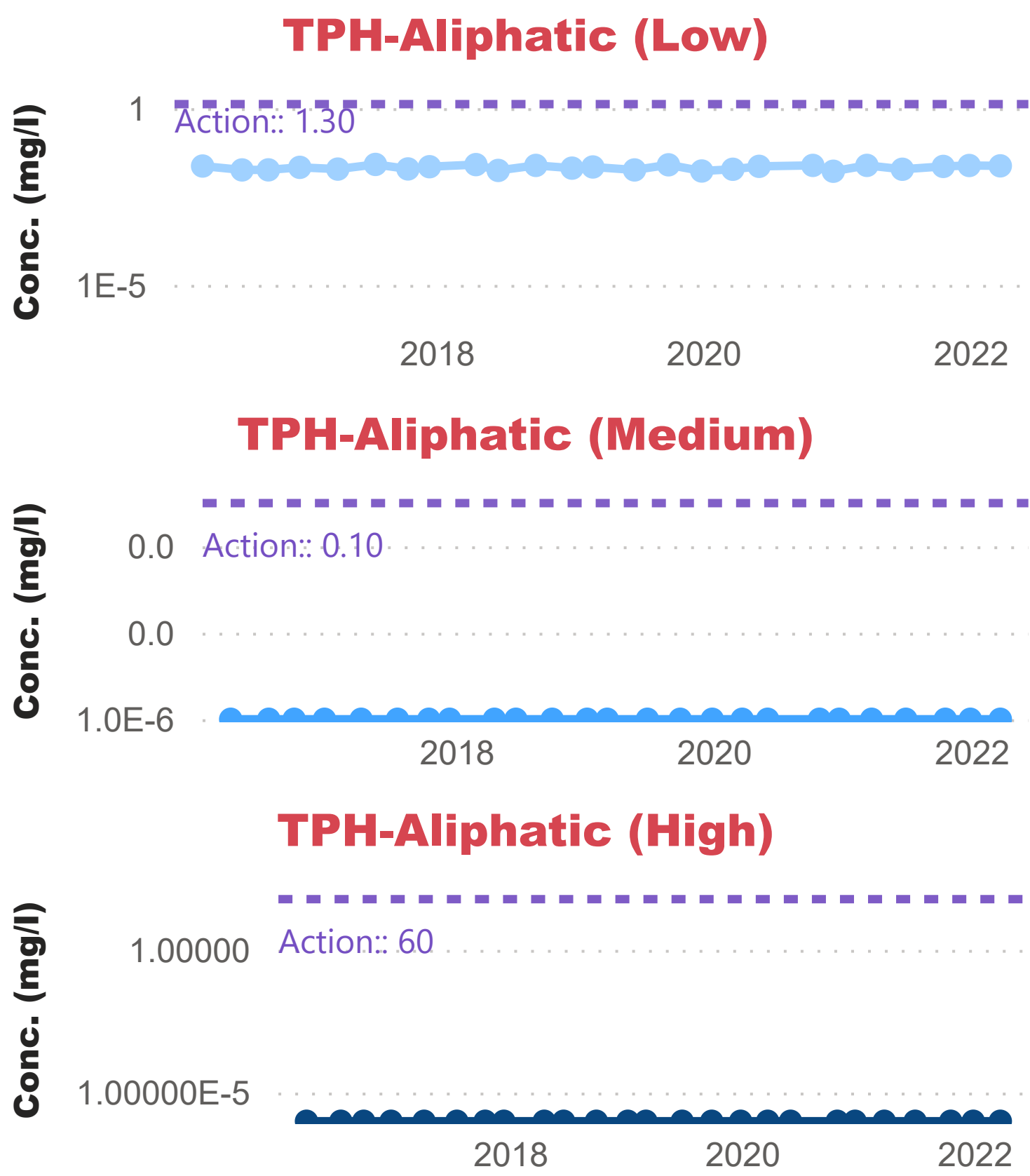
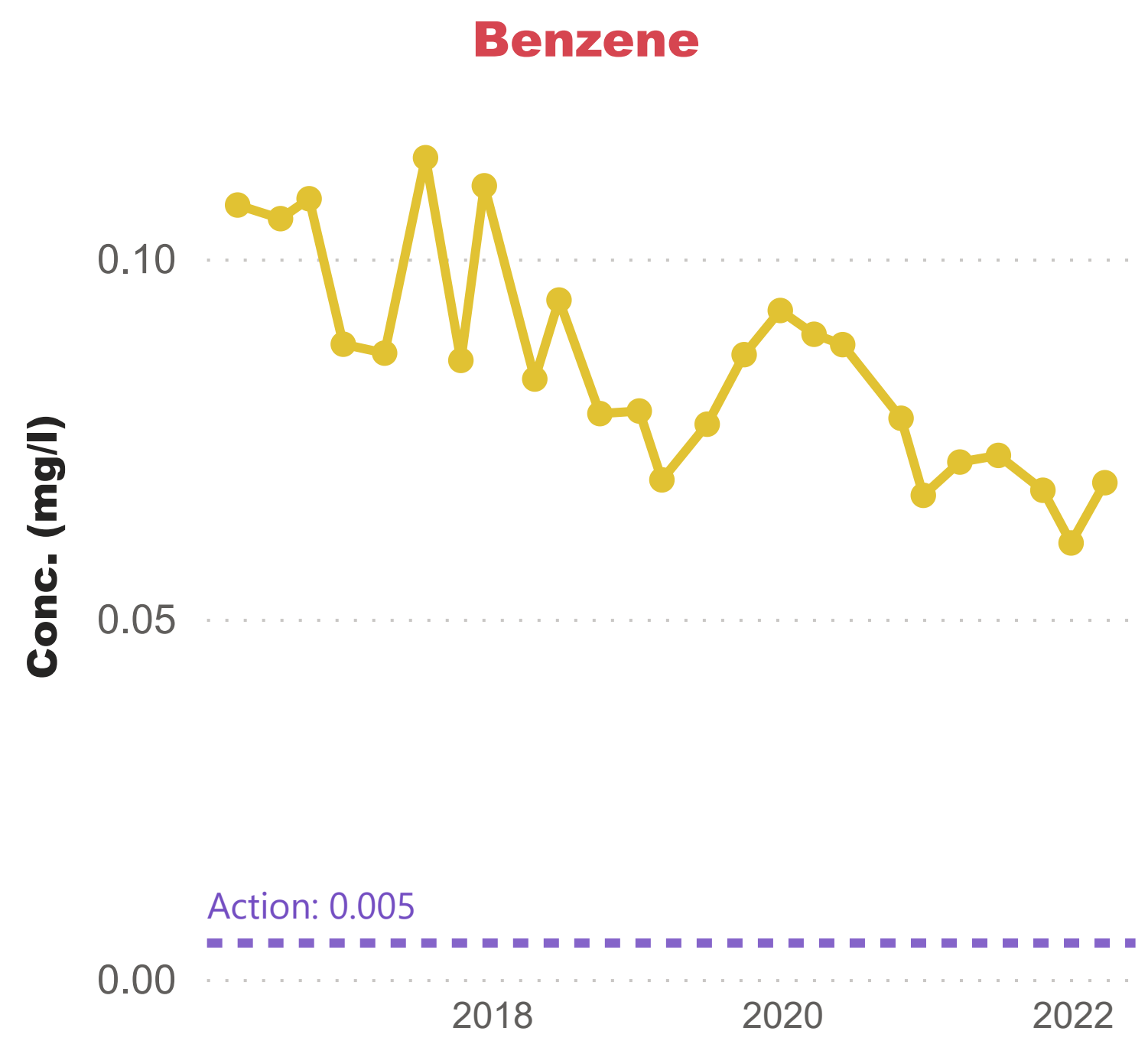


SI-7 Soil and Soil Gas Summary

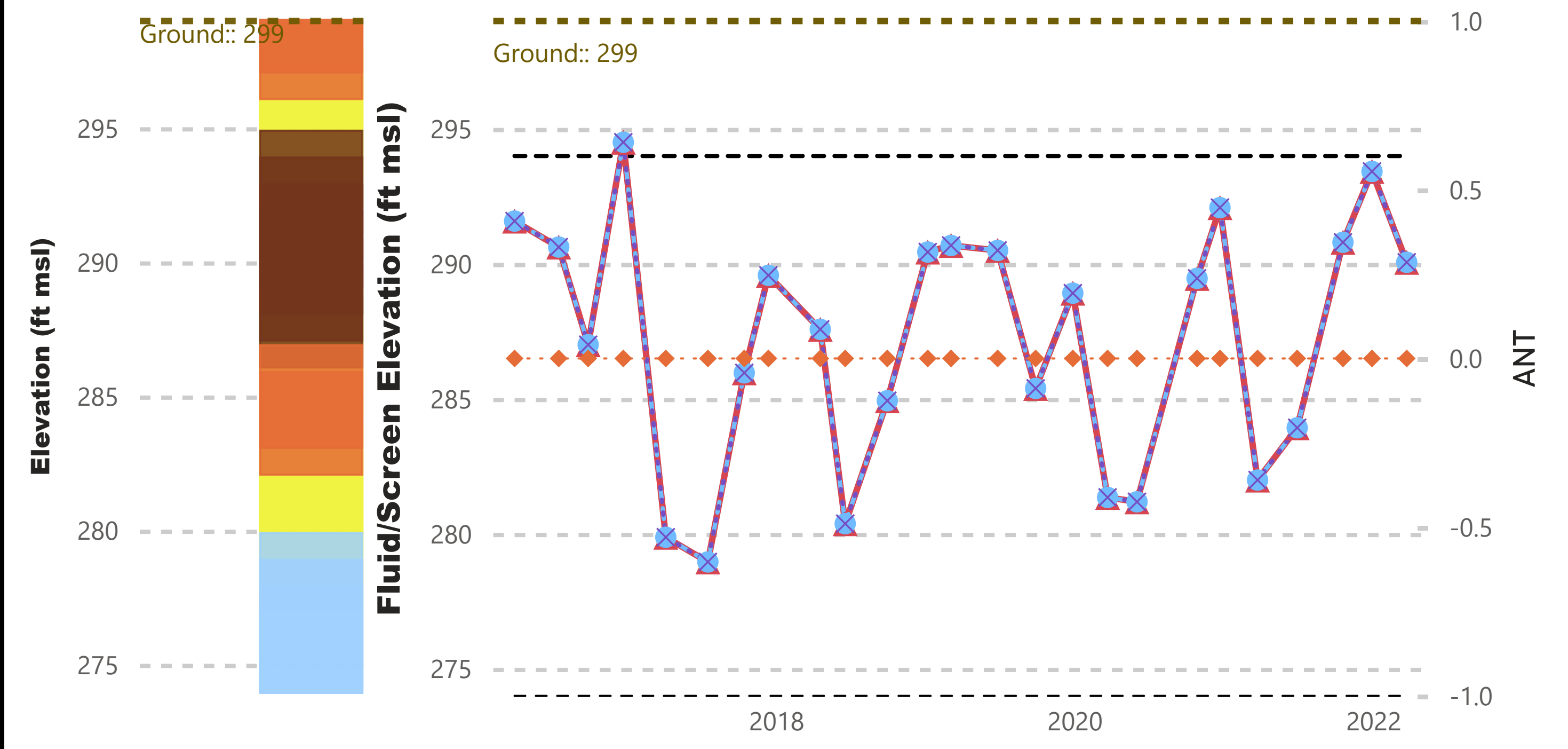
Clays/Till	Fine Sands		EPA 6 Toxicity Fractions
Silts/Clays	Medium/Coarse Sands		
Silts	Fill		



Dissolved Phase



Hydrograph



The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

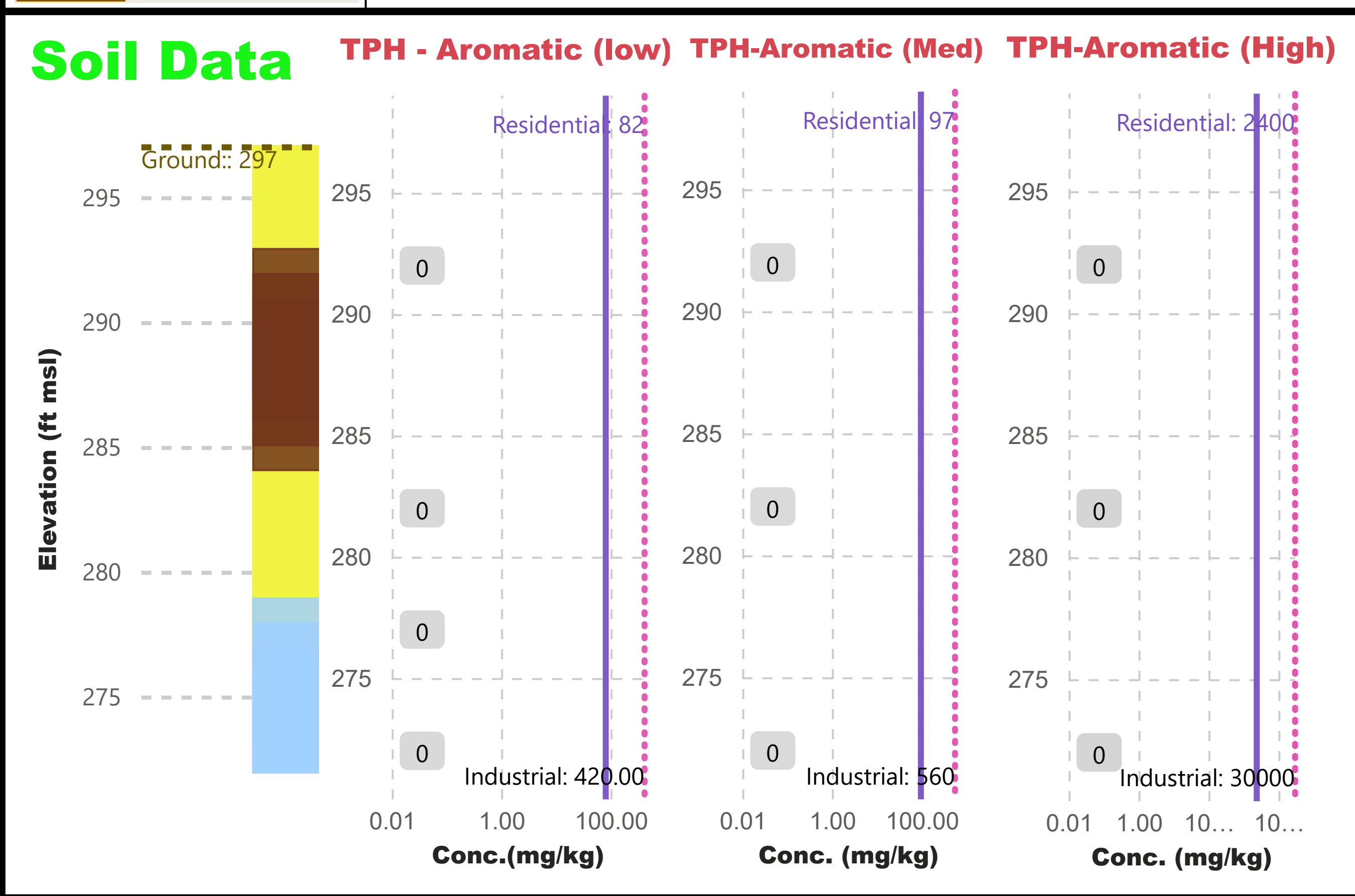
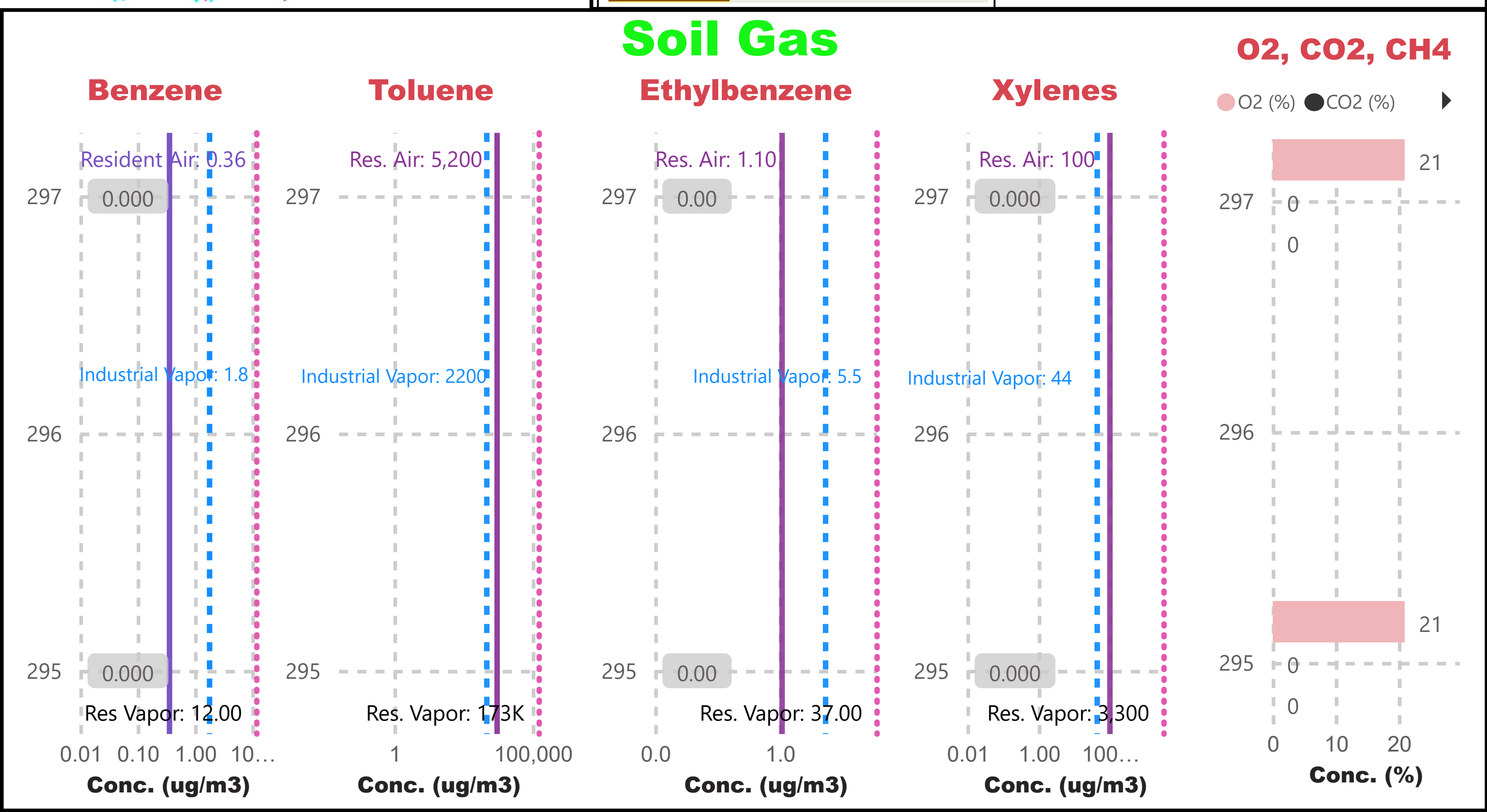
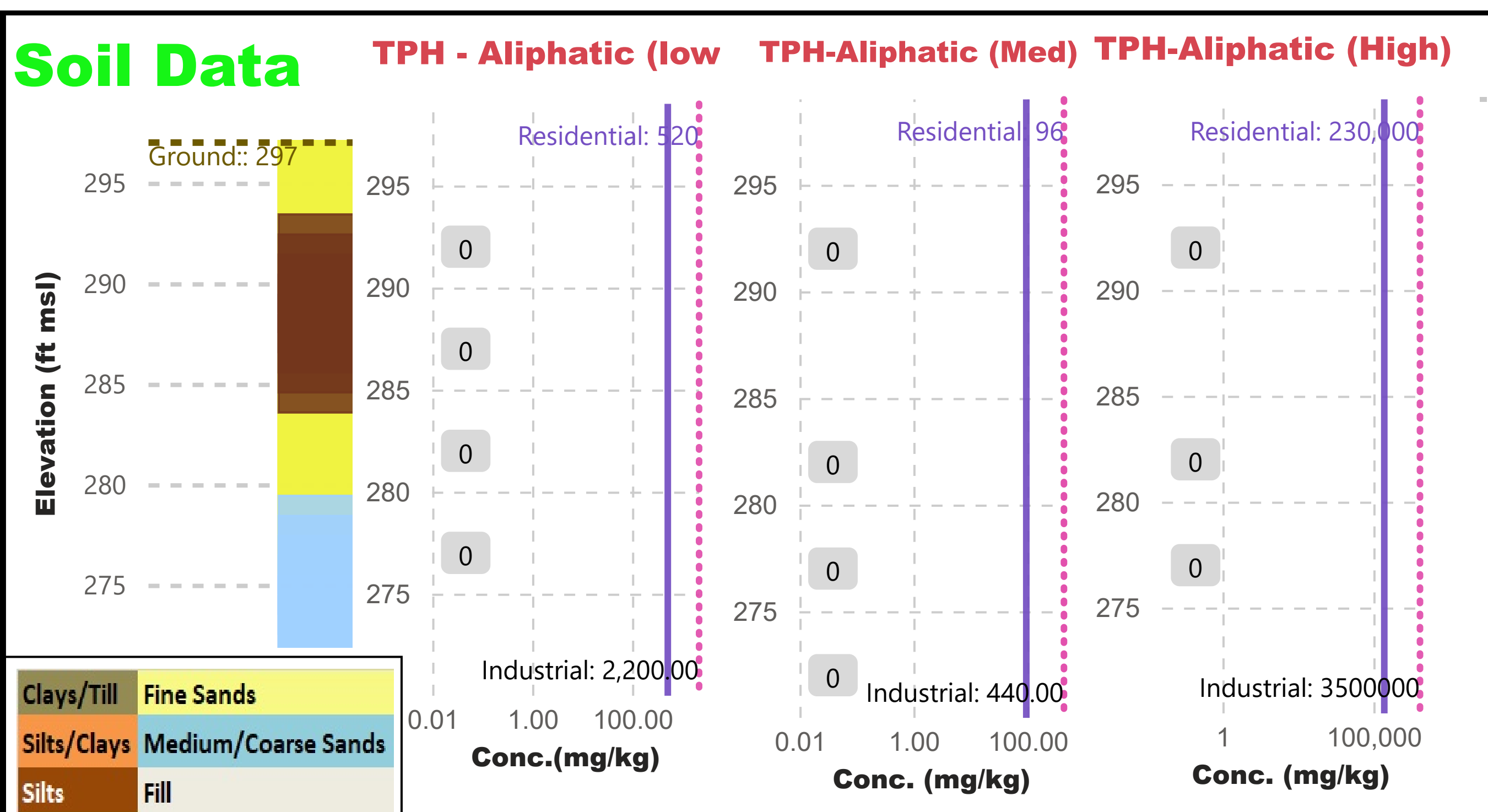
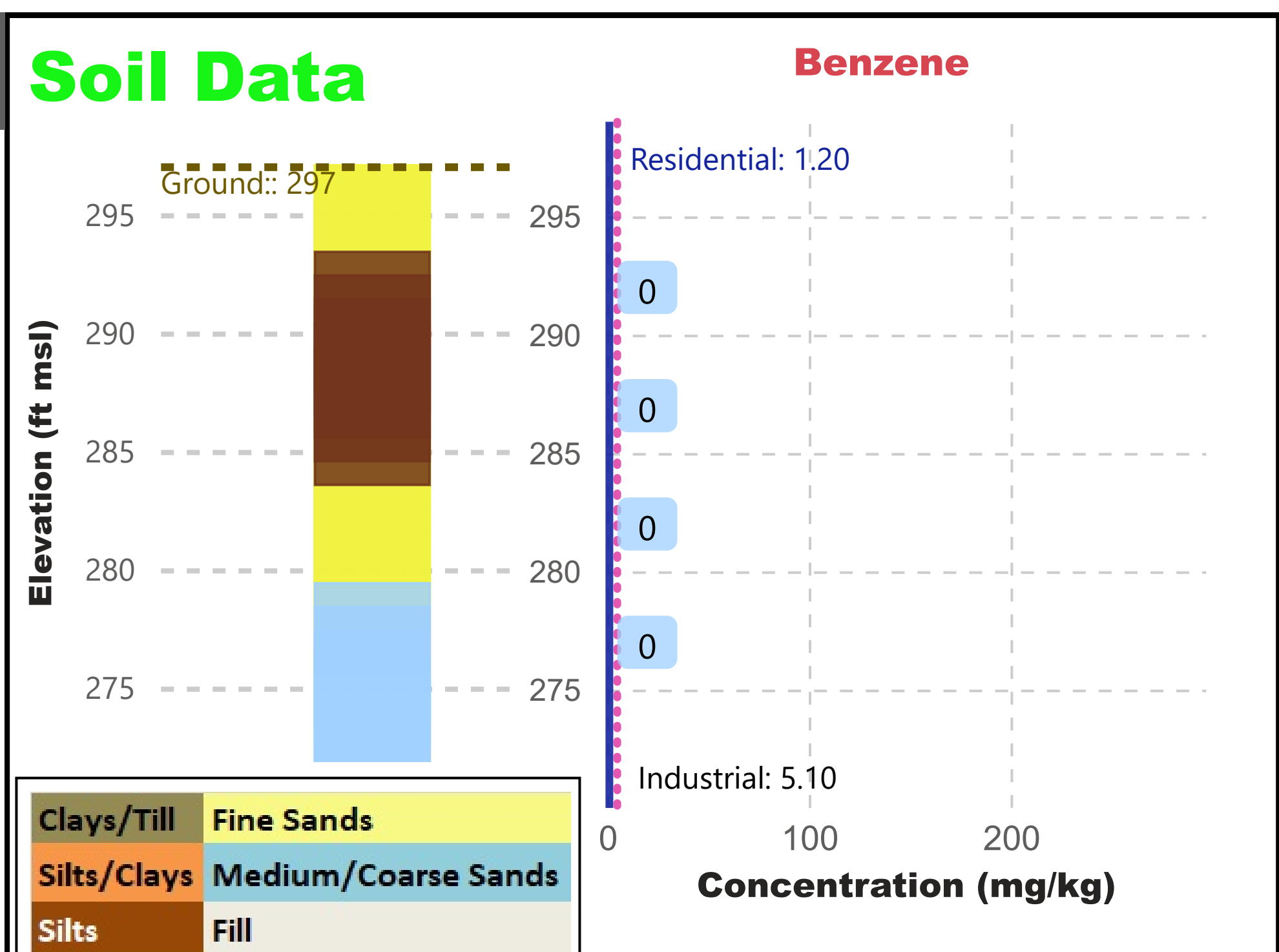
Molecular Structure	Aliphatic	Aromatic	EPA 6 Toxicity Fractions
Aliphatic	ECS-6	EC8-16	EC16-35 (High)
Aromatic	ECS-7	EC9-22	EC22-35 (High)
EC21-35 (same properties as EC16-21) -- not considered a transport fraction--			

Increasing Equivalent Carbon (EC) Number →

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

SI-7

Hydrograph & Dissolved Summary

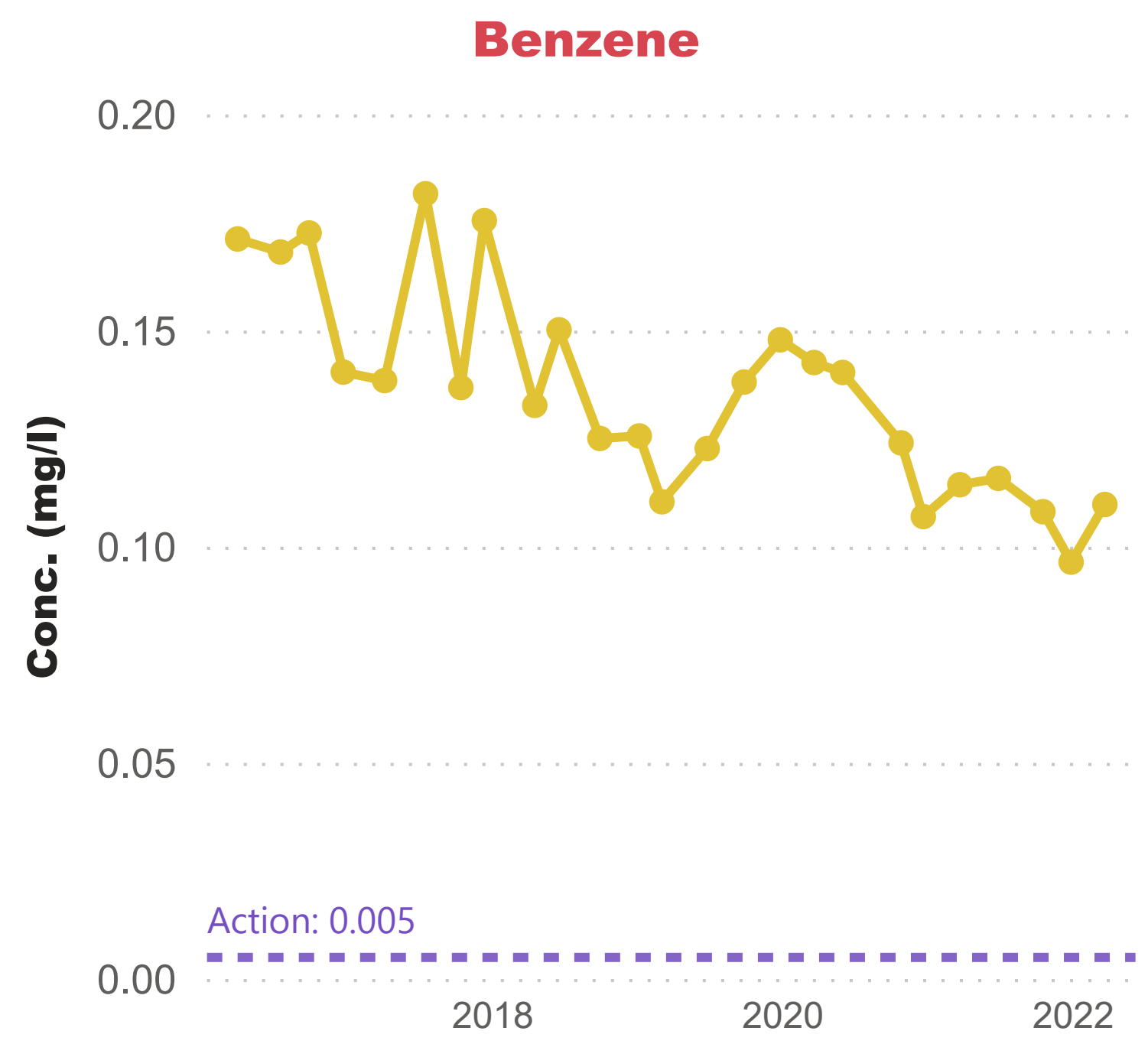


SI-8 Soil and Soil Gas Summary

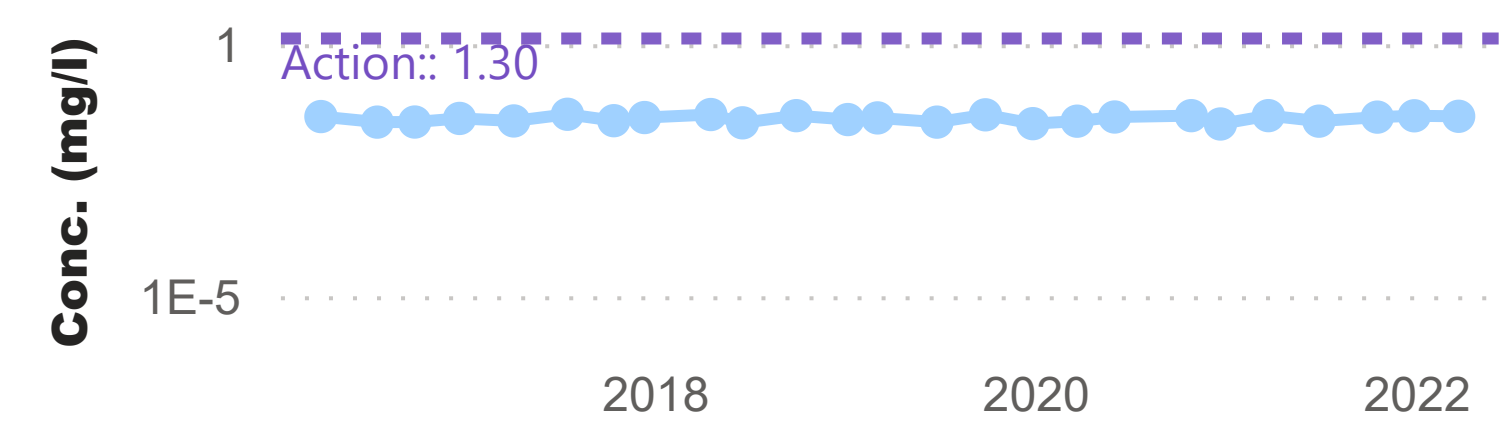
Clays/Till	Fine Sands	<table border="1"> <tr> <td>EC5-6</td> <td>EC8-16</td> <td>EC16-35</td> </tr> <tr> <td>EC7-7</td> <td>EC9-22</td> <td>EC21-35</td> </tr> <tr> <td>EC8-8</td> <td>EC12-16</td> <td>EC22-35</td> </tr> </table> <p>TPH Criteria Working Group 13 Transport Fractions</p> <p>EPA 6 Toxicity Fractions</p>	EC5-6	EC8-16	EC16-35	EC7-7	EC9-22	EC21-35	EC8-8	EC12-16	EC22-35
EC5-6	EC8-16		EC16-35								
EC7-7	EC9-22		EC21-35								
EC8-8	EC12-16	EC22-35									
Silts/Clays	Medium/Coarse Sands										
Silts	Fill										



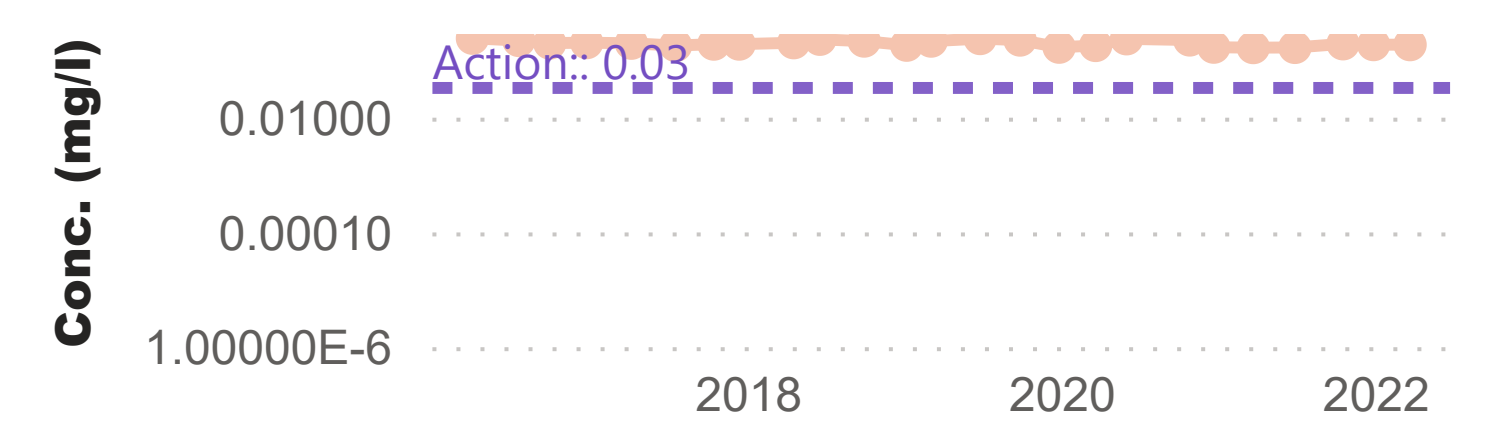
Dissolved Phase



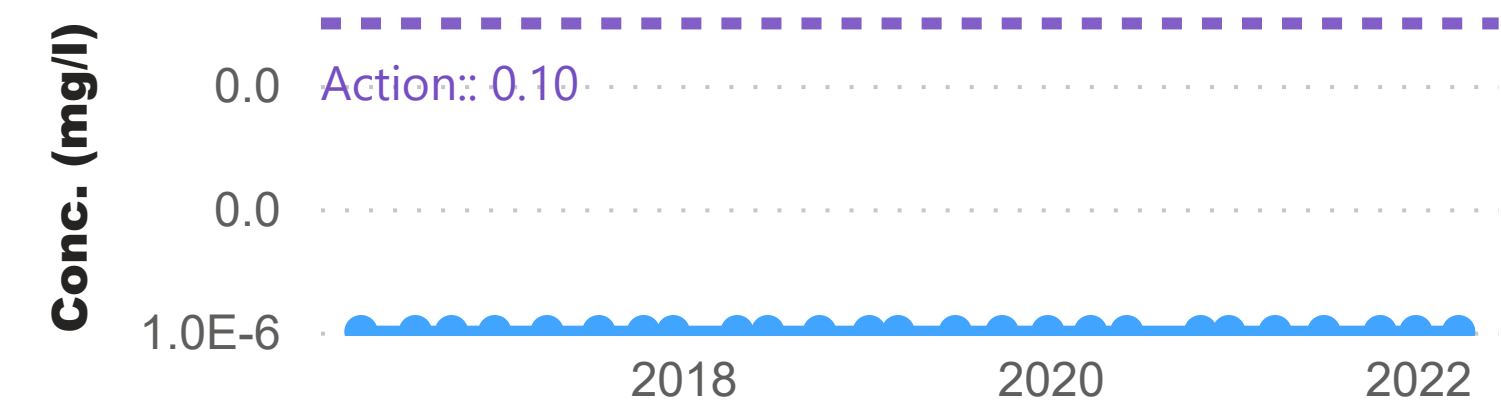
TPH-Aliphatic (Low)



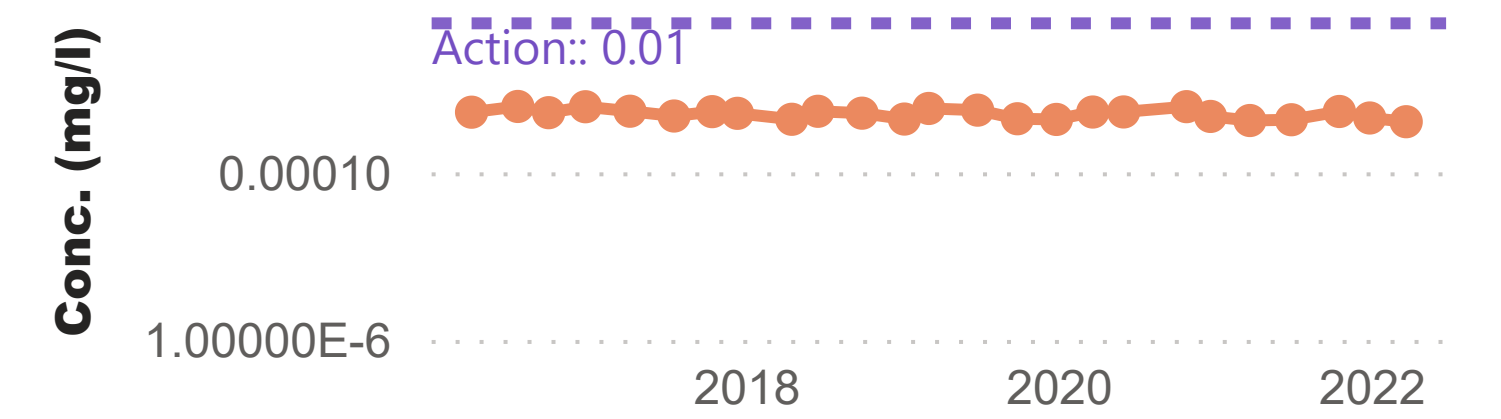
TPH-Aromatic (Low)



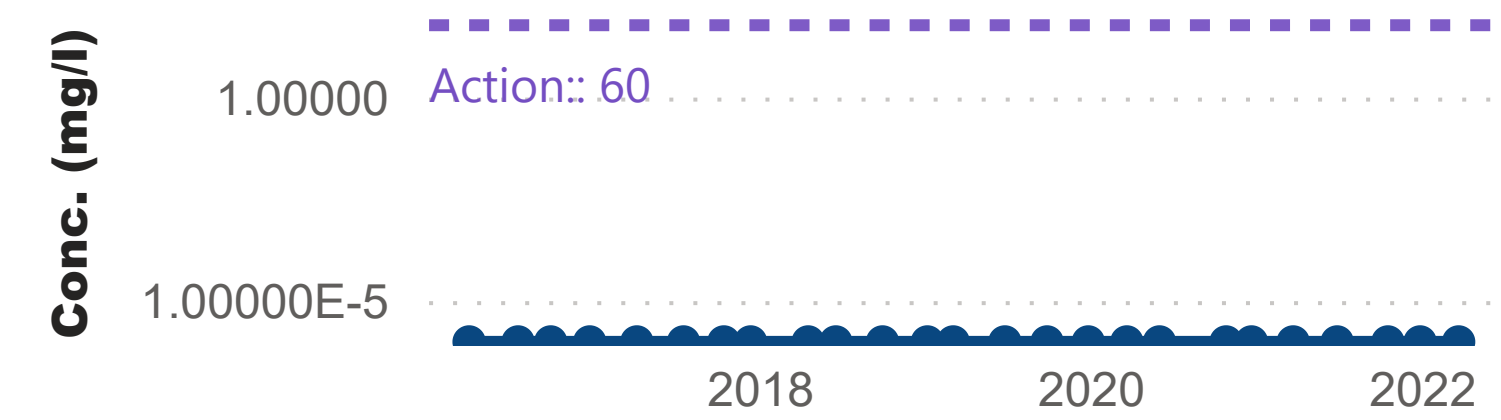
TPH-Aliphatic (Medium)



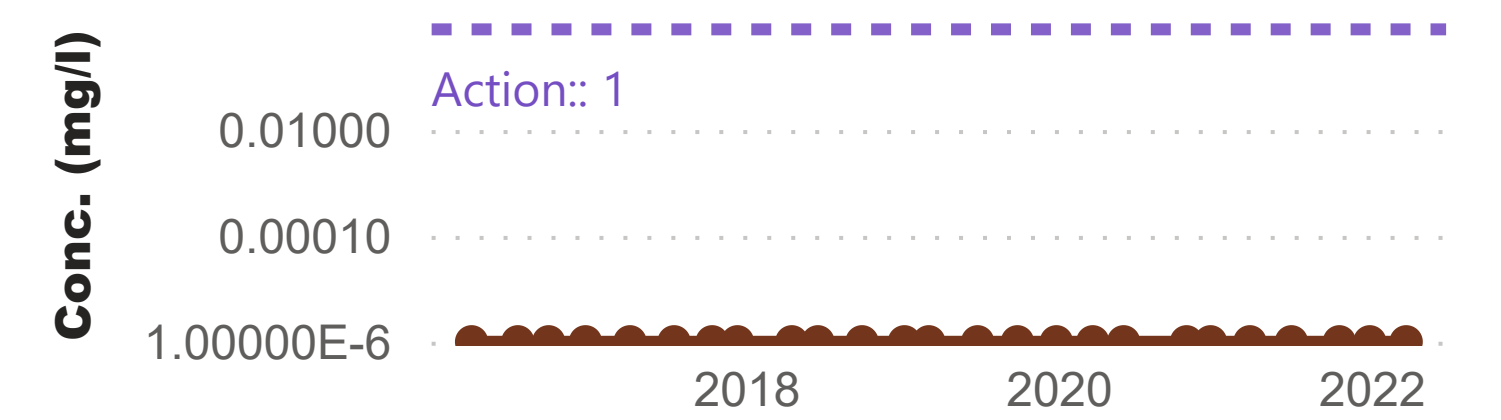
TPH-Aromatic (Medium)



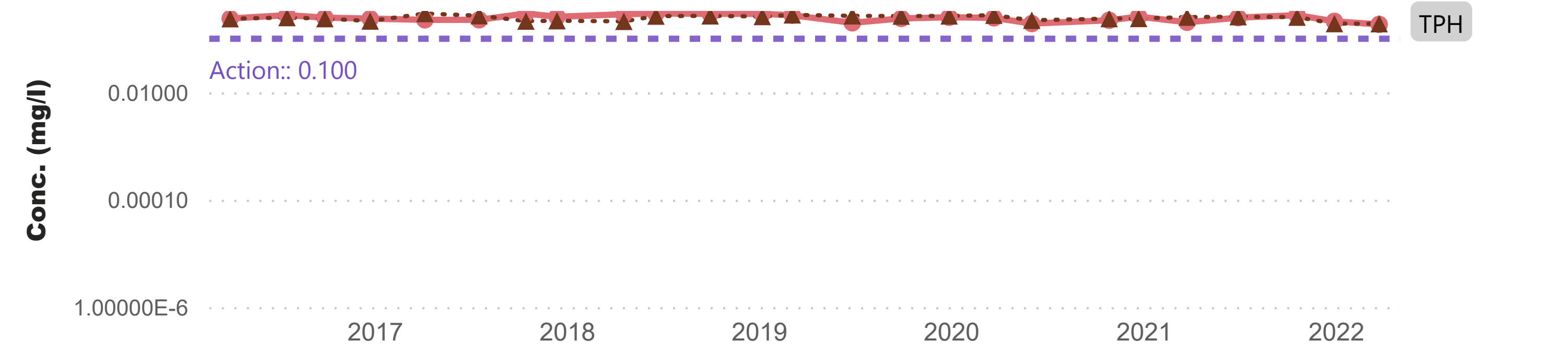
TPH-Aliphatic (High)



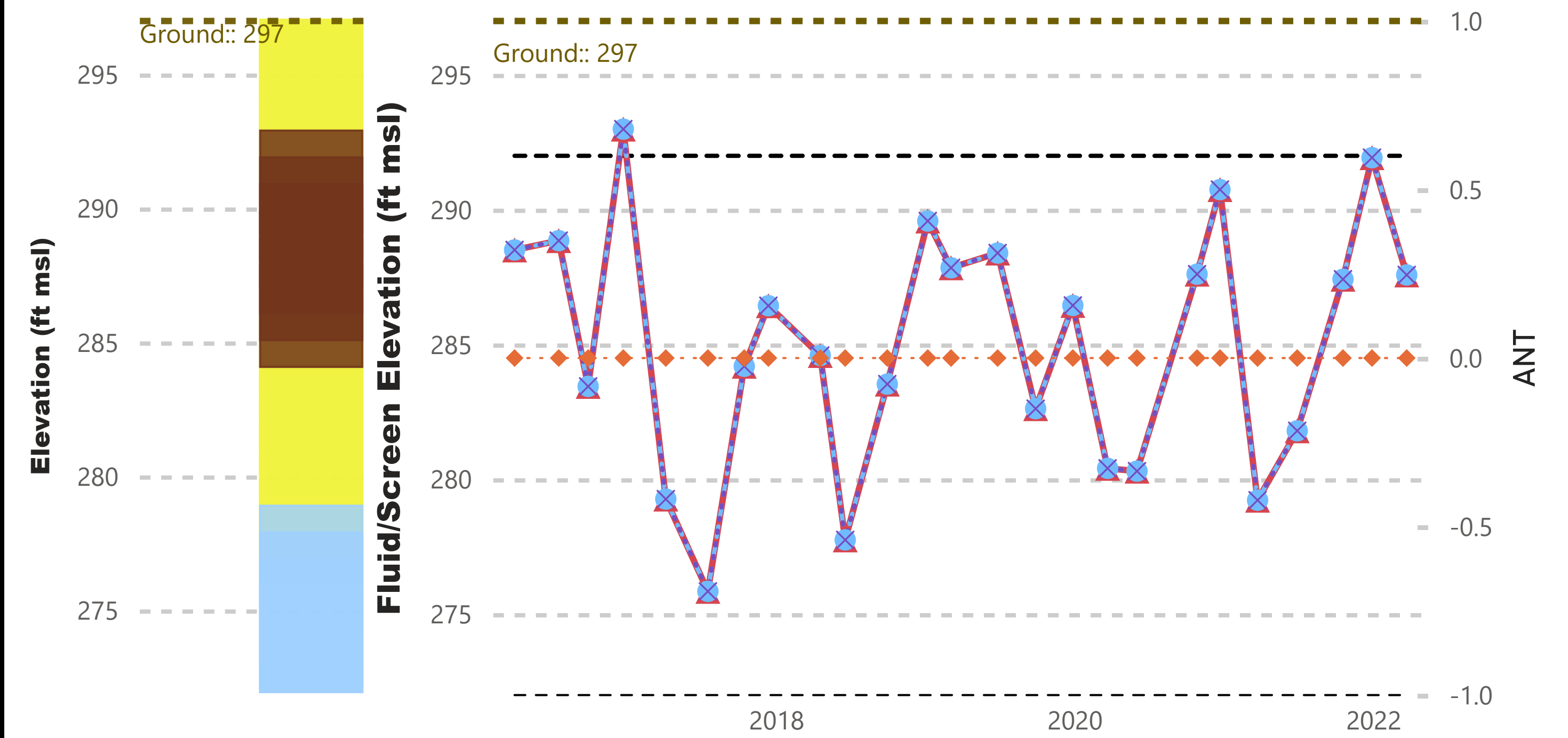
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



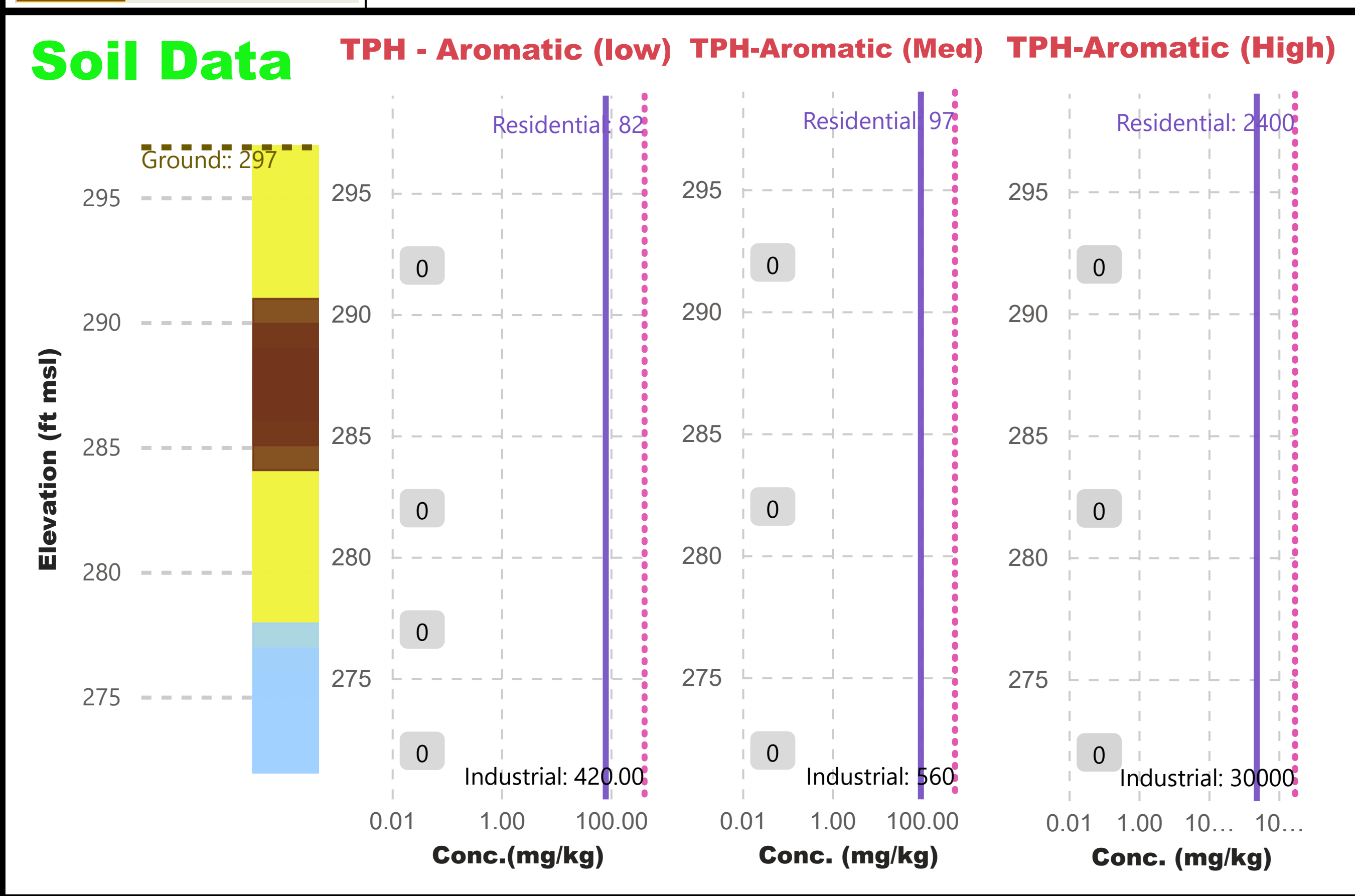
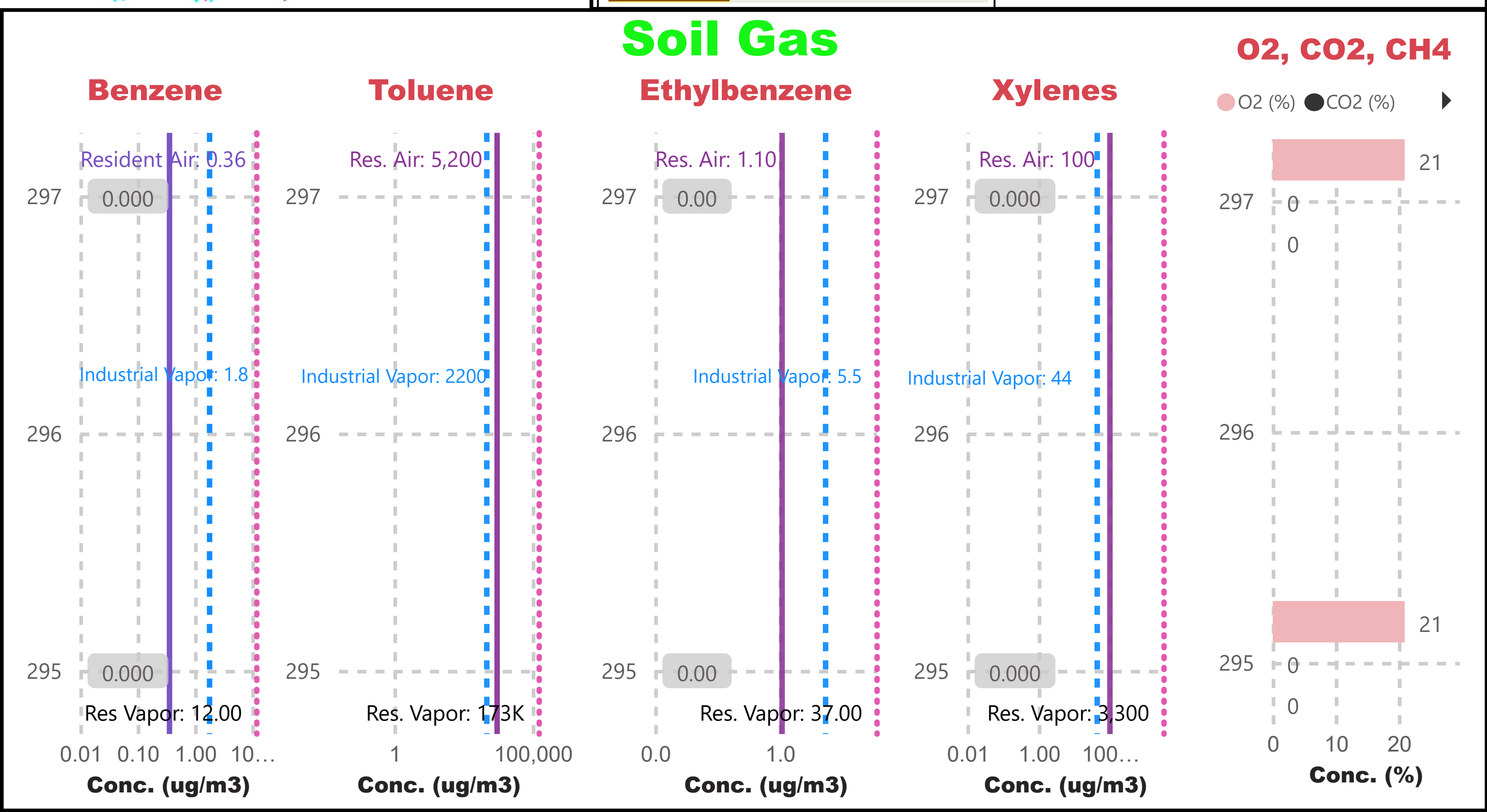
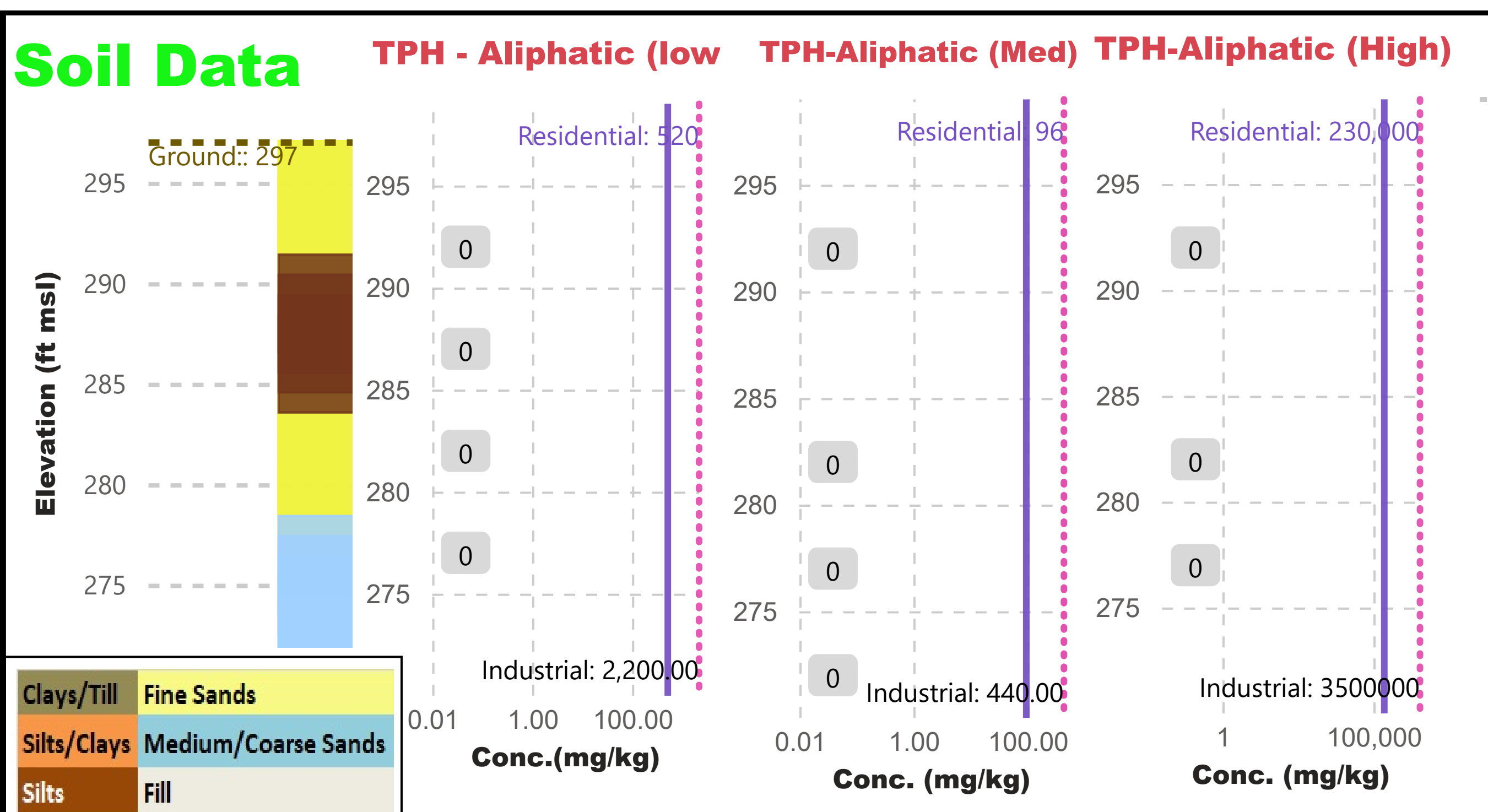
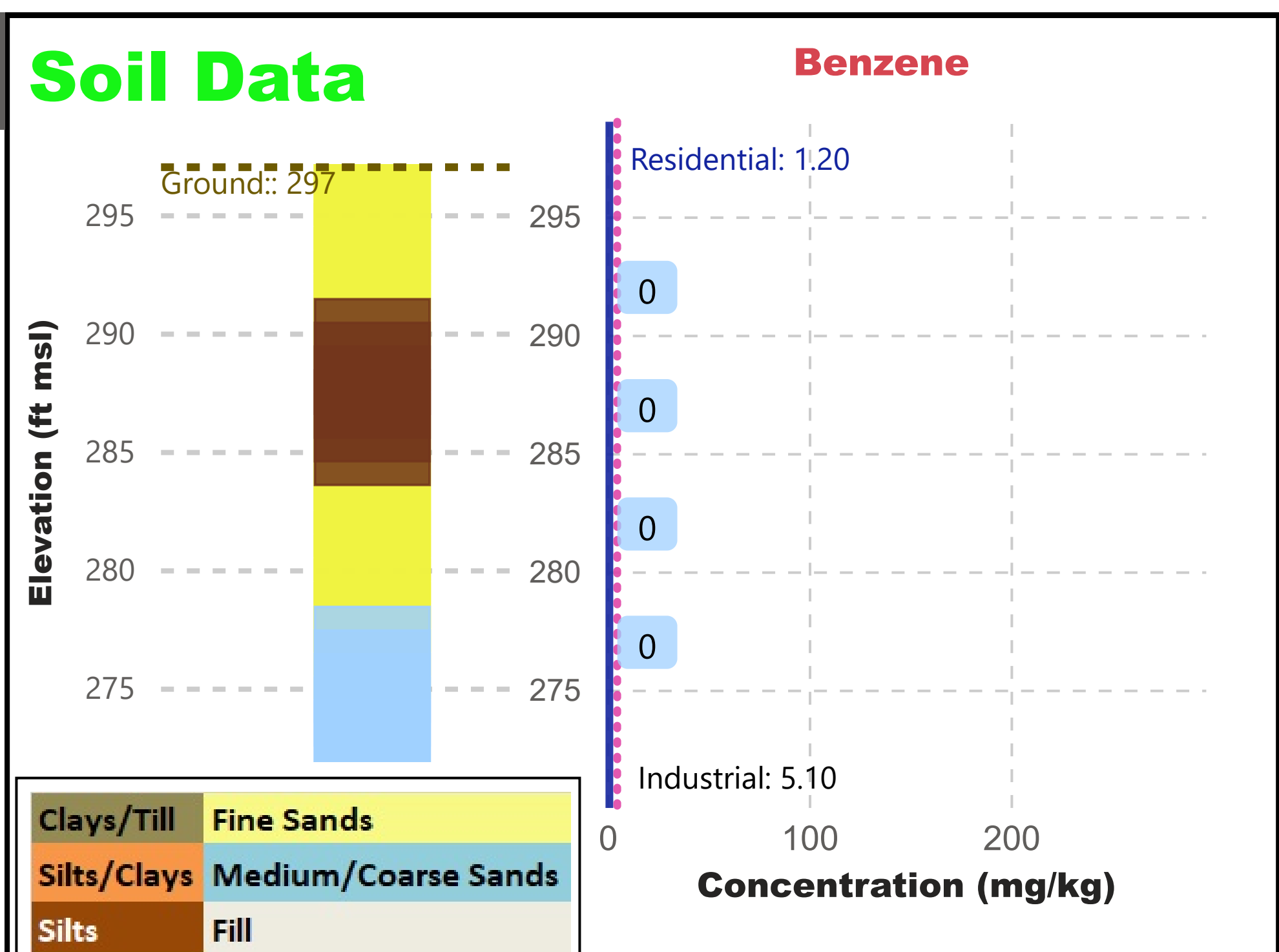
The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	EC5-6	EC7-10	Low	EC5-6	Low
Aliphatic	EC8-10	EC11-12	Medium	EC8-16	Medium
Aliphatic	EC12-16	EC16-21	High	EC16-35	High
Aromatic	EC12-16	EC16-21	High	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--	EC21-35
Aromatic	EC6-9	EC9-22	Low	EC9-22	Low
Aromatic	EC21-35	EC22-35	High	EC22-35	High

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

SI-8

Hydrograph & Dissolved Summary

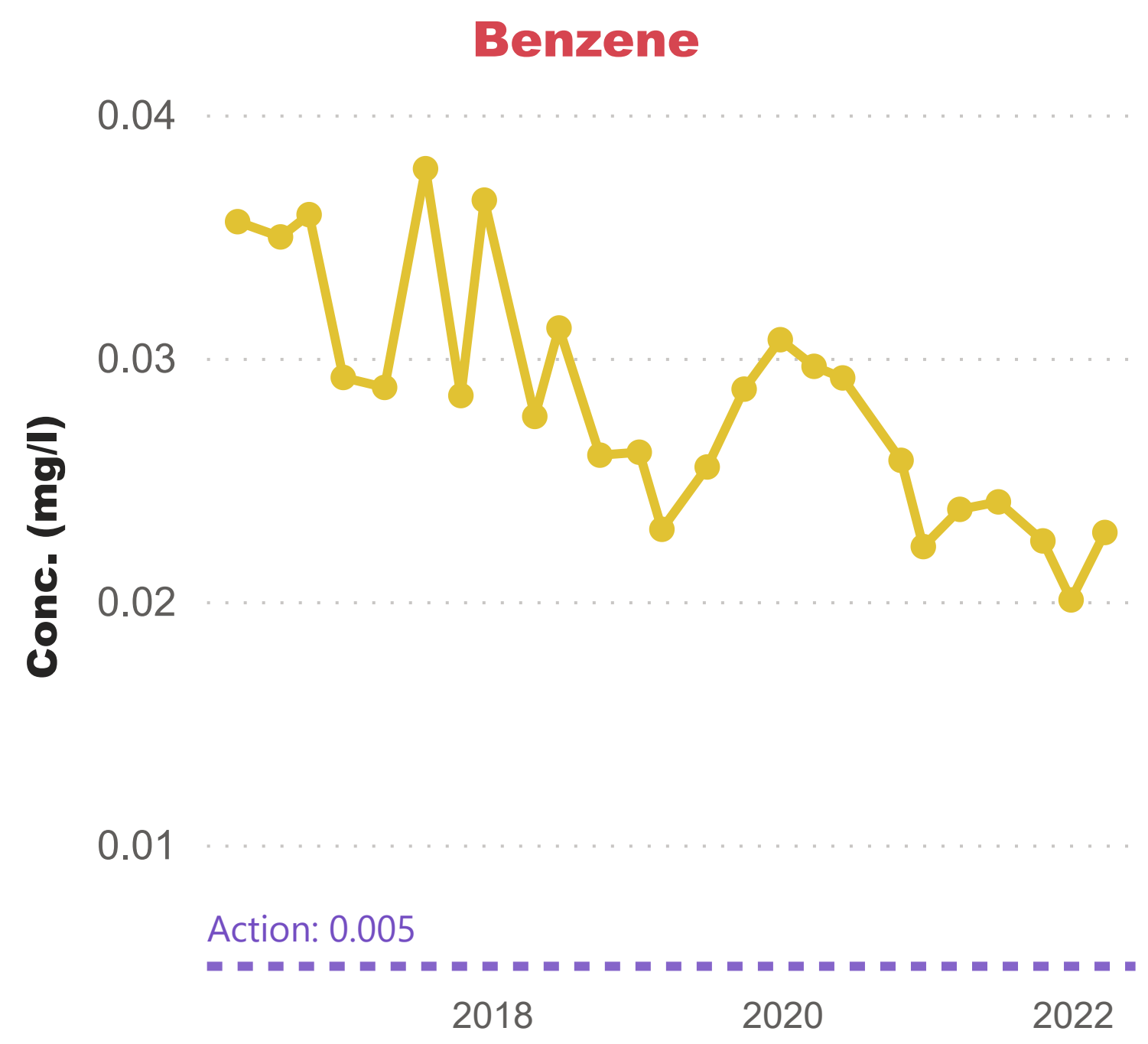


SI-9 Soil and Soil Gas Summary

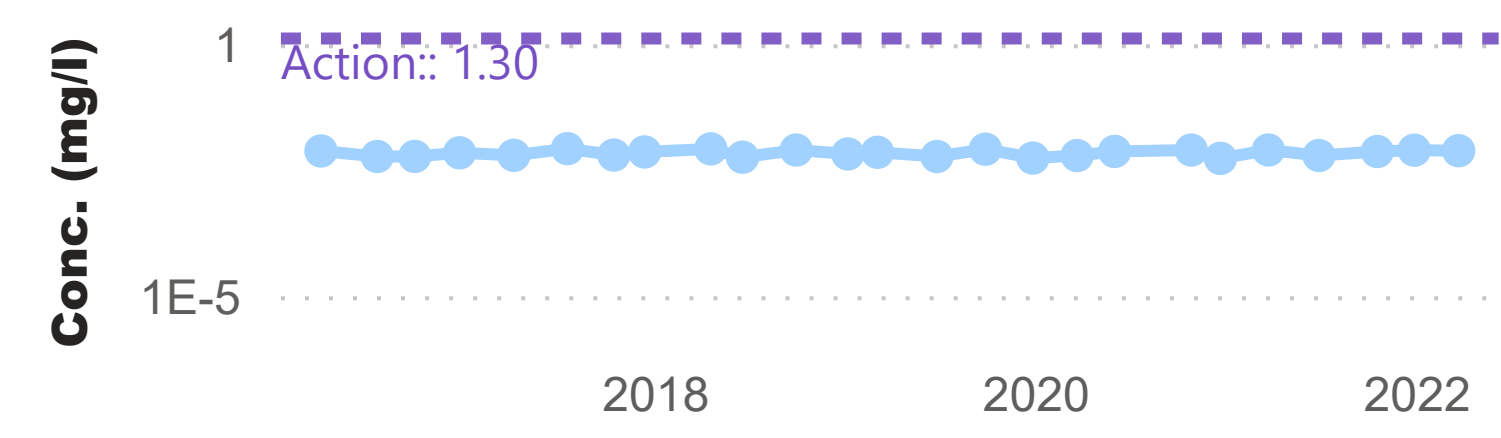
Clays/Till	Fine Sands	<table border="1"> <tr><td>EC5-6</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC5-7</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC5-8</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC5-9</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> </table>		EC5-6	EC12-16	EC16-21	EC21-35	EC5-7	EC12-16	EC16-21	EC21-35	EC5-8	EC12-16	EC16-21	EC21-35	EC5-9	EC12-16	EC16-21	EC21-35	<p>TPH Criteria Working Group 13 Transport Fractions</p>
EC5-6	EC12-16	EC16-21	EC21-35																	
EC5-7	EC12-16	EC16-21	EC21-35																	
EC5-8	EC12-16	EC16-21	EC21-35																	
EC5-9	EC12-16	EC16-21	EC21-35																	
Silts/Clays	Medium/Coarse Sands	<table border="1"> <tr><td>EC5-8</td><td>EC8-16</td><td>EC16-35</td></tr> <tr><td>EC5-9</td><td>EC9-22</td><td>EC22-35</td></tr> </table>		EC5-8	EC8-16	EC16-35	EC5-9	EC9-22	EC22-35	EPA 6 Toxicity Fractions										
EC5-8	EC8-16	EC16-35																		
EC5-9	EC9-22	EC22-35																		
Silts	Fill	<p>Increasing Equivalent Carbon (EC) Number</p>																		



Dissolved Phase



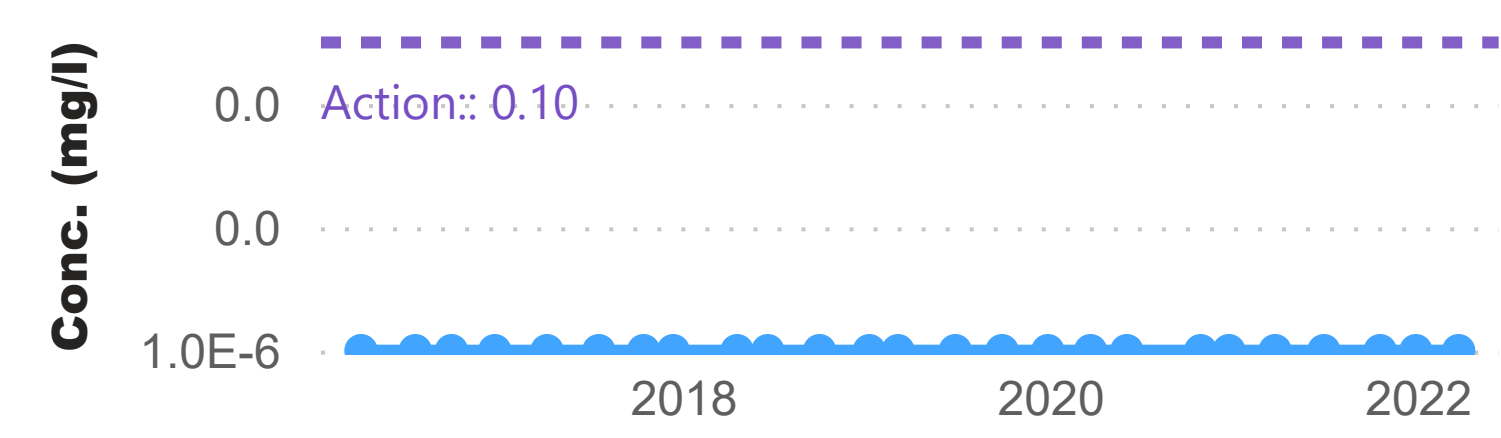
TPH-Aliphatic (Low)



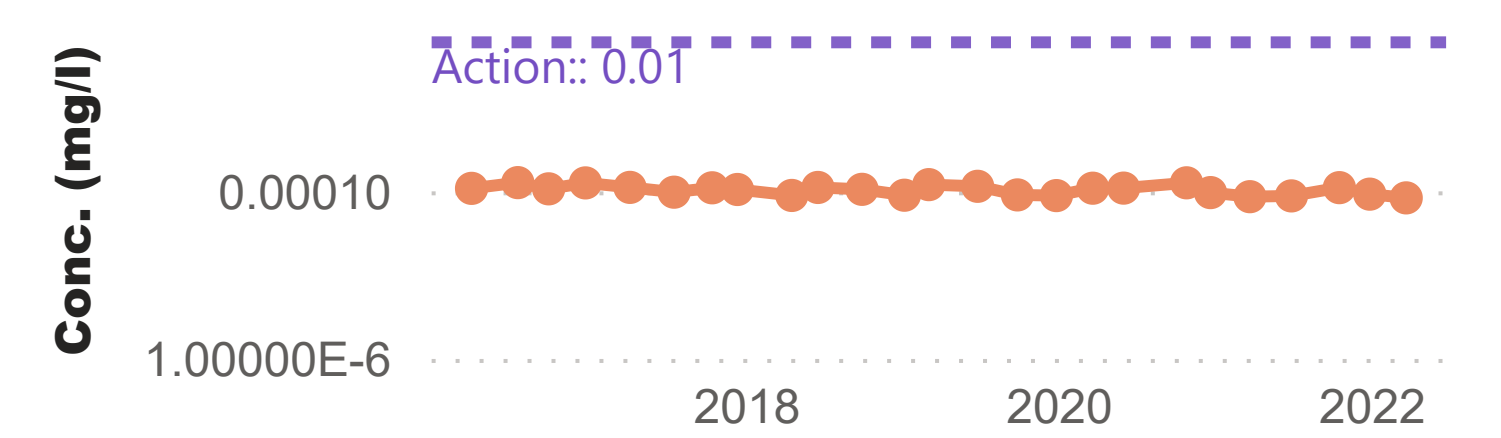
TPH-Aromatic (Low)



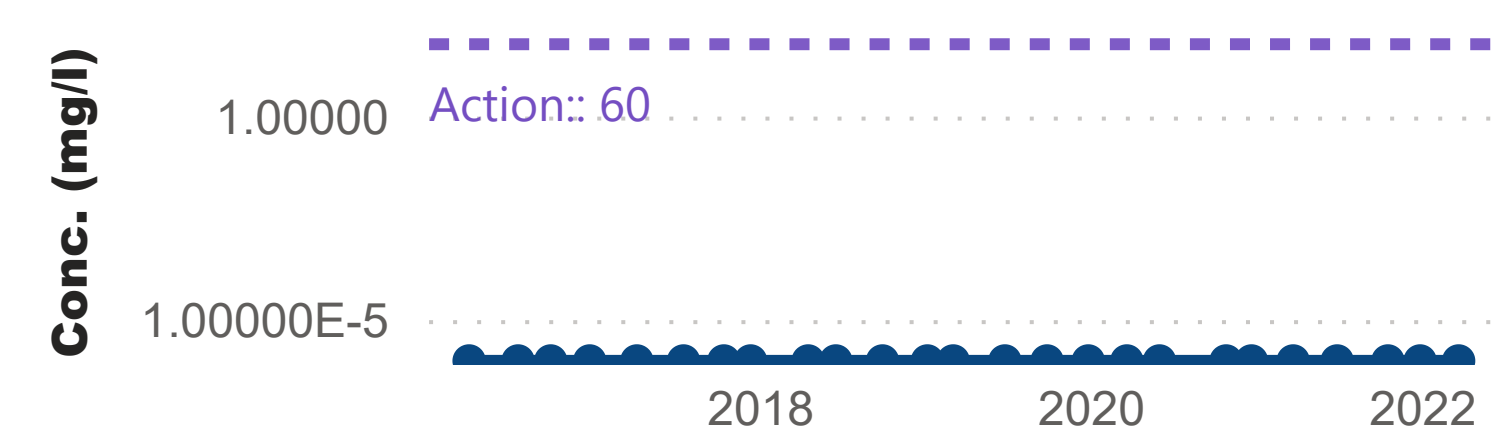
TPH-Aliphatic (Medium)



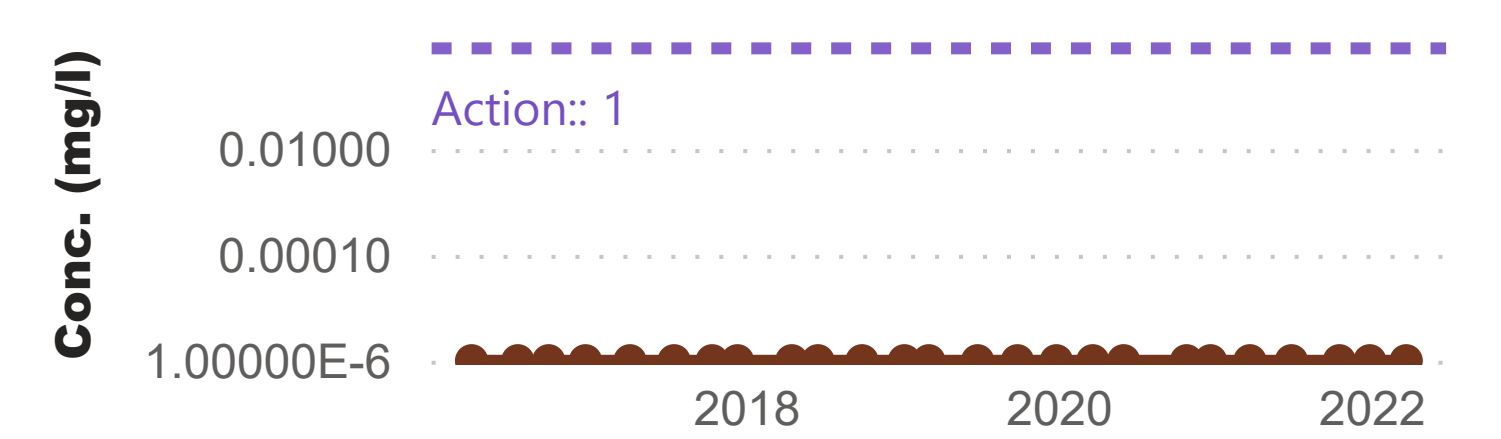
TPH-Aromatic (Medium)



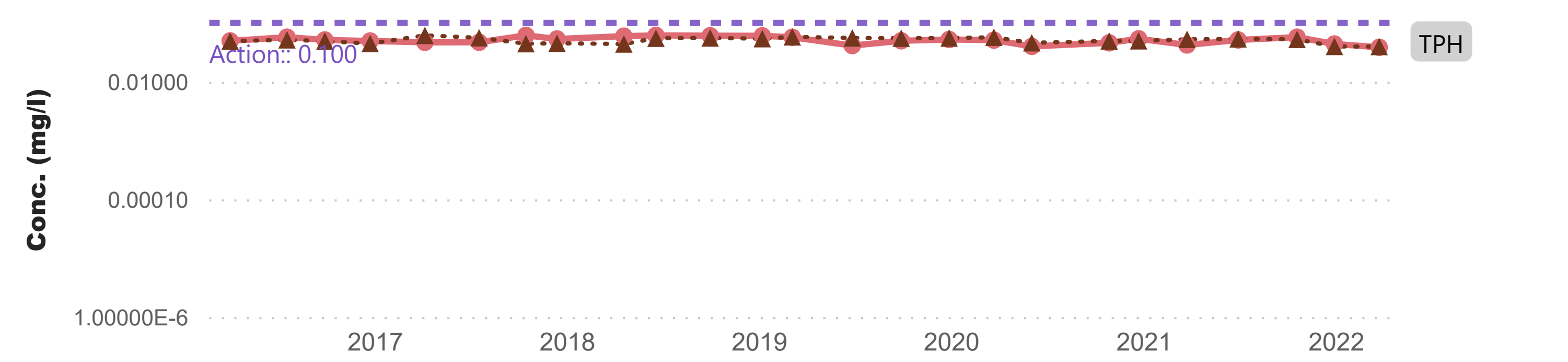
TPH-Aliphatic (High)



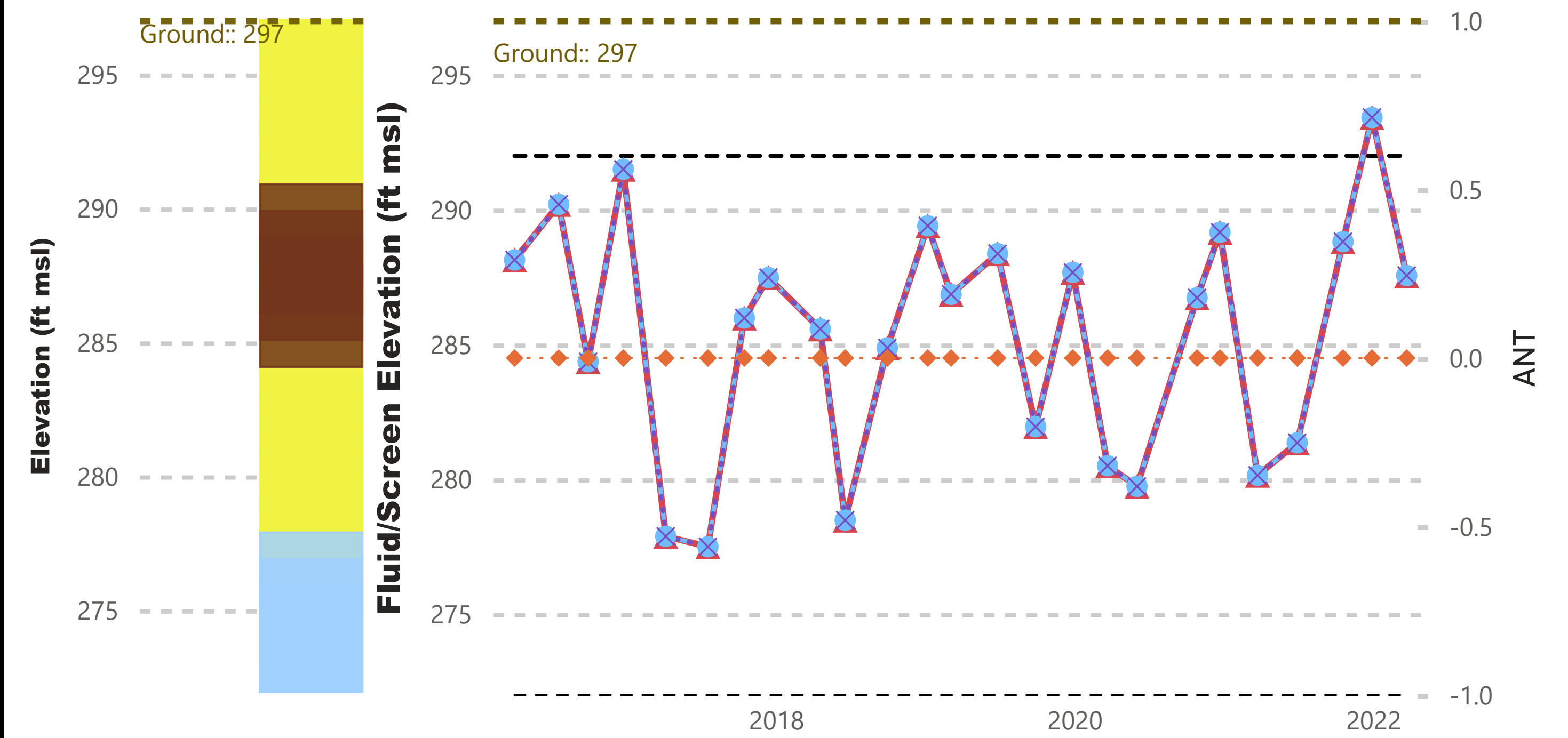
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



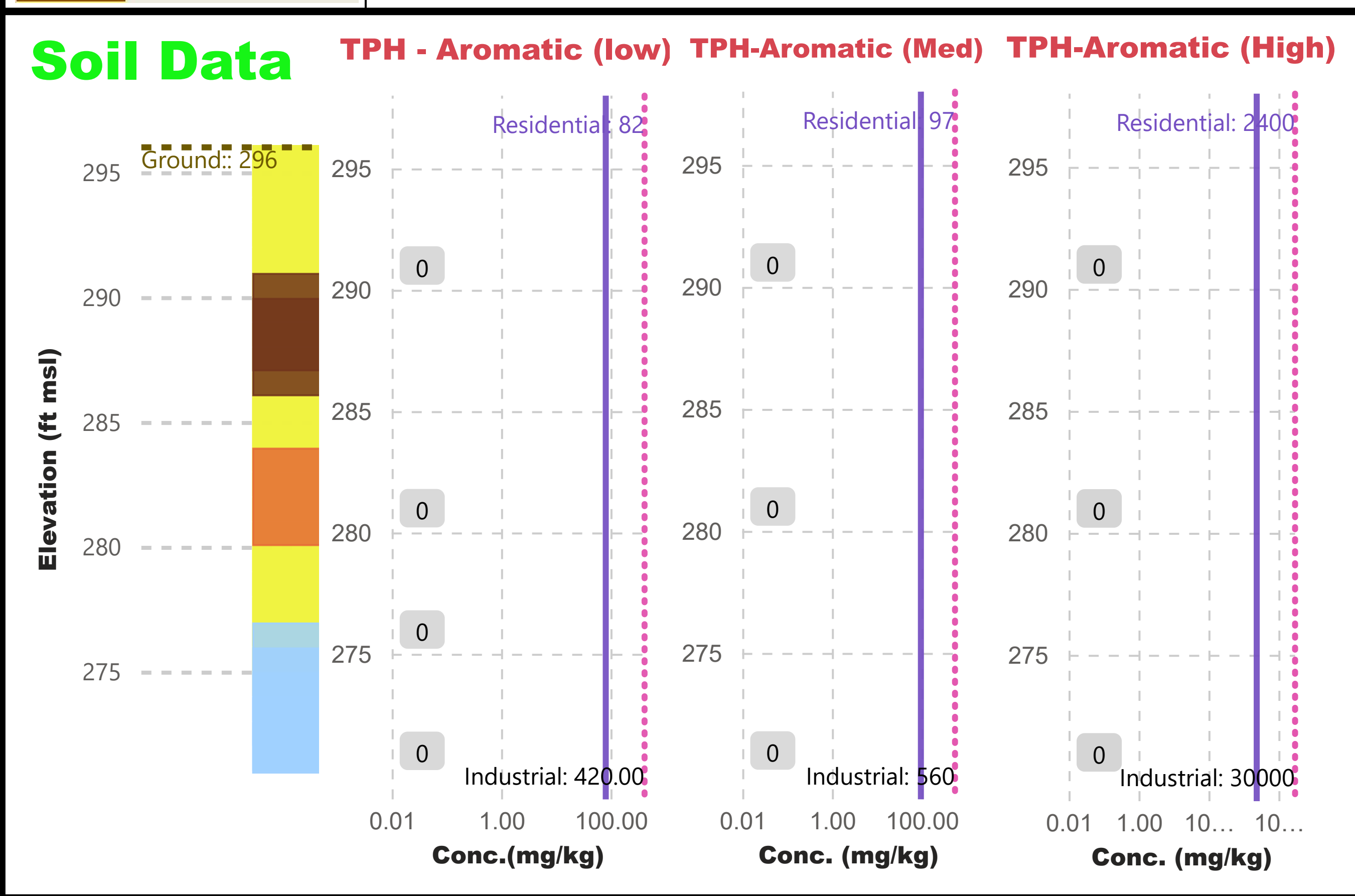
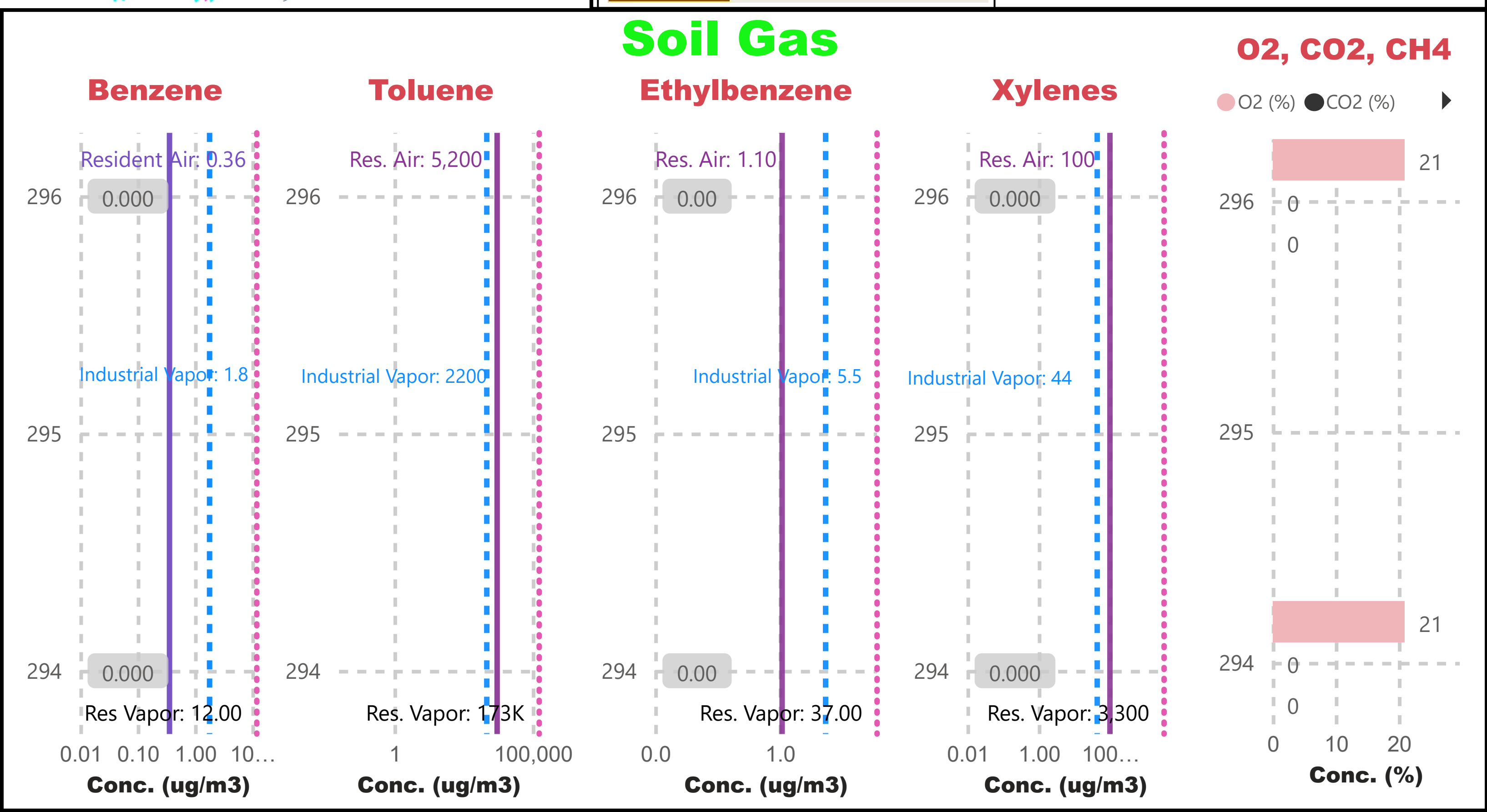
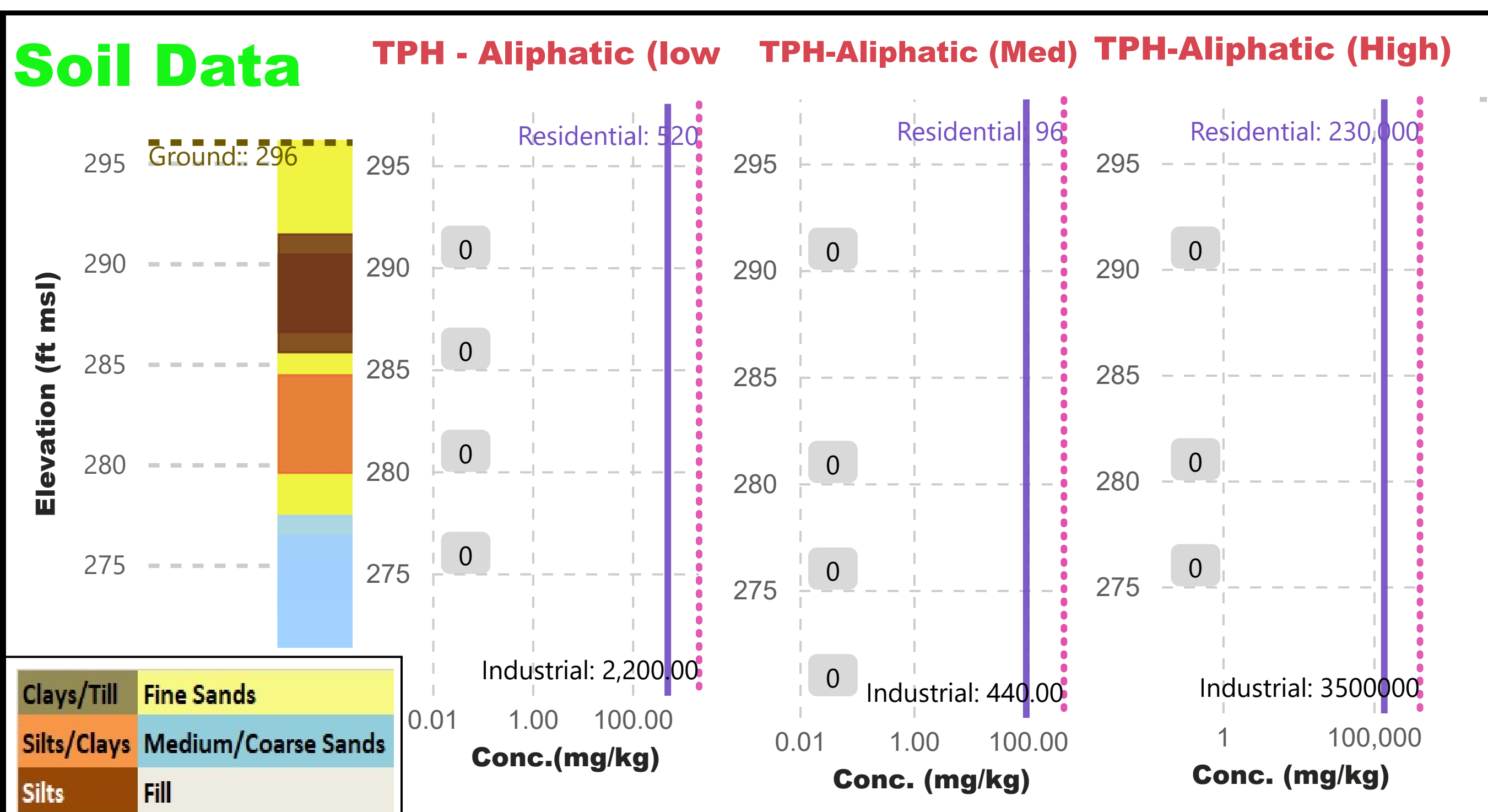
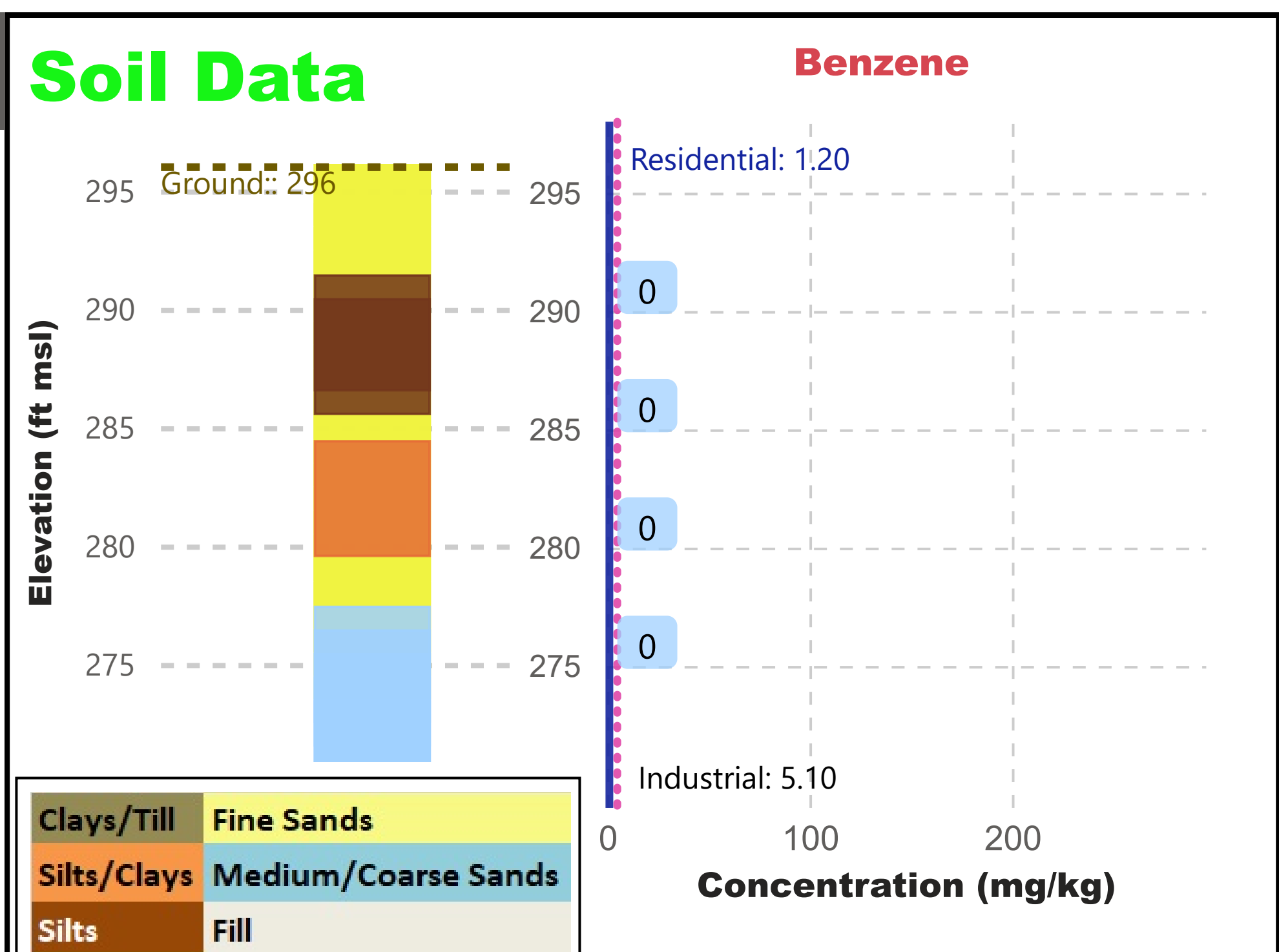
The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	ECS-6	EC8-16	Low	EC16-35	High
	ECS-7	EC9-22	Low	EC22-35	High
Aromatic	ECS-8	EC10-12	Low	EC21-35	High
	ECS-9	EC12-16	Low	EC16-21	High
Aromatic	ECS-10	EC12-16	Low	EC16-21	High
	ECS-11	EC12-16	Low	EC16-21	High
Aromatic	ECS-12	EC12-16	Low	EC16-21	High
	ECS-13	EC12-16	Low	EC16-21	High
Aromatic	ECS-14	EC12-16	Low	EC16-21	High
	ECS-15	EC12-16	Low	EC16-21	High
Aromatic	ECS-16	EC12-16	Low	EC16-21	High
	ECS-17	EC12-16	Low	EC16-21	High
Aromatic	ECS-18	EC12-16	Low	EC16-21	High
	ECS-19	EC12-16	Low	EC16-21	High
Aromatic	ECS-20	EC12-16	Low	EC16-21	High
	ECS-21	EC12-16	Low	EC16-21	High
Aromatic	ECS-22	EC12-16	Low	EC16-21	High
	ECS-23	EC12-16	Low	EC16-21	High
Aromatic	ECS-24	EC12-16	Low	EC16-21	High
	ECS-25	EC12-16	Low	EC16-21	High
Aromatic	ECS-26	EC12-16	Low	EC16-21	High
	ECS-27	EC12-16	Low	EC16-21	High
Aromatic	ECS-28	EC12-16	Low	EC16-21	High
	ECS-29	EC12-16	Low	EC16-21	High
Aromatic	ECS-30	EC12-16	Low	EC16-21	High
	ECS-31	EC12-16	Low	EC16-21	High
Aromatic	ECS-32	EC12-16	Low	EC16-21	High
	ECS-33	EC12-16	Low	EC16-21	High
Aromatic	ECS-34	EC12-16	Low	EC16-21	High
	ECS-35	EC12-16	Low	EC16-21	High

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

SI-9

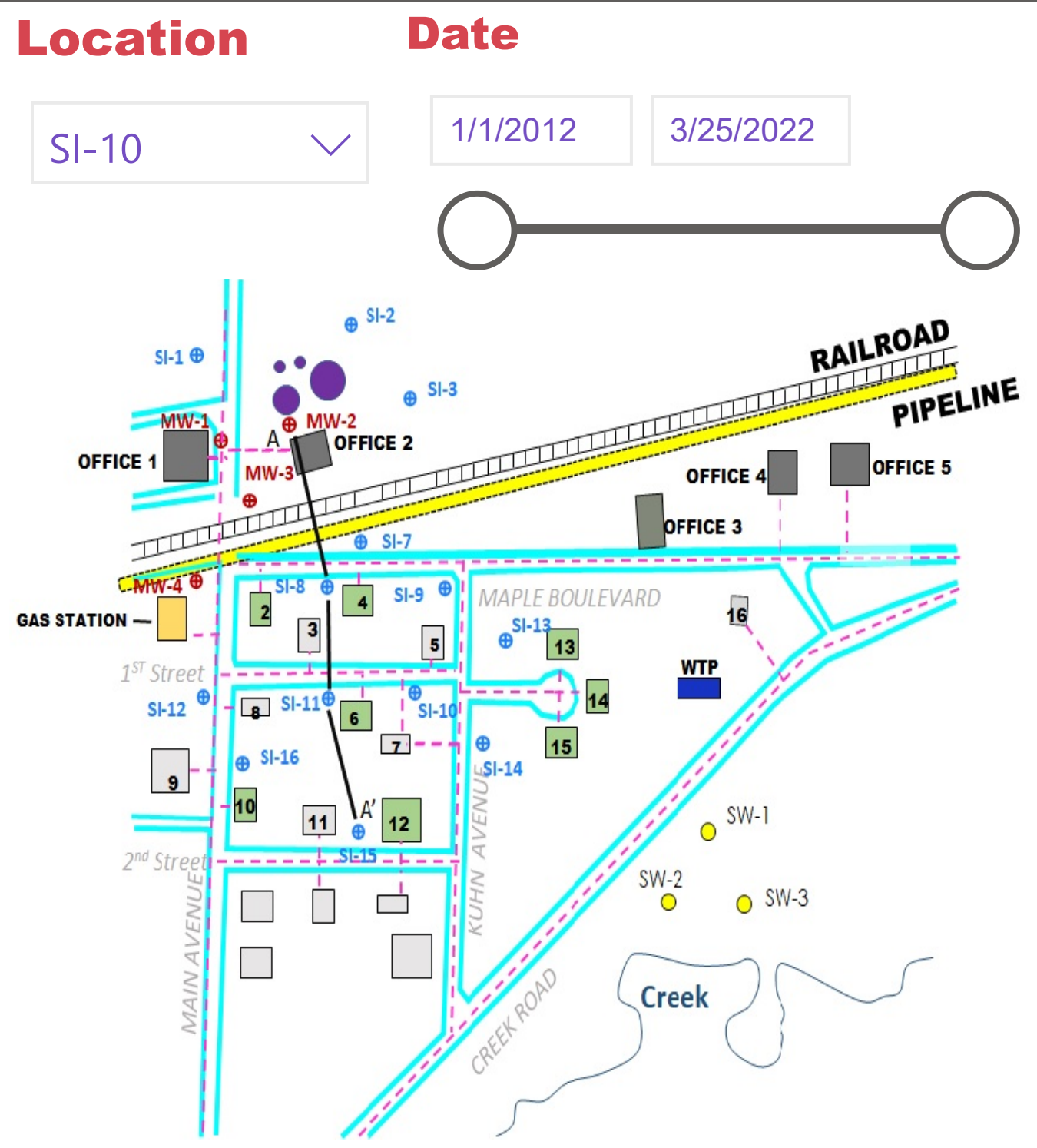
Hydrograph & Dissolved Summary



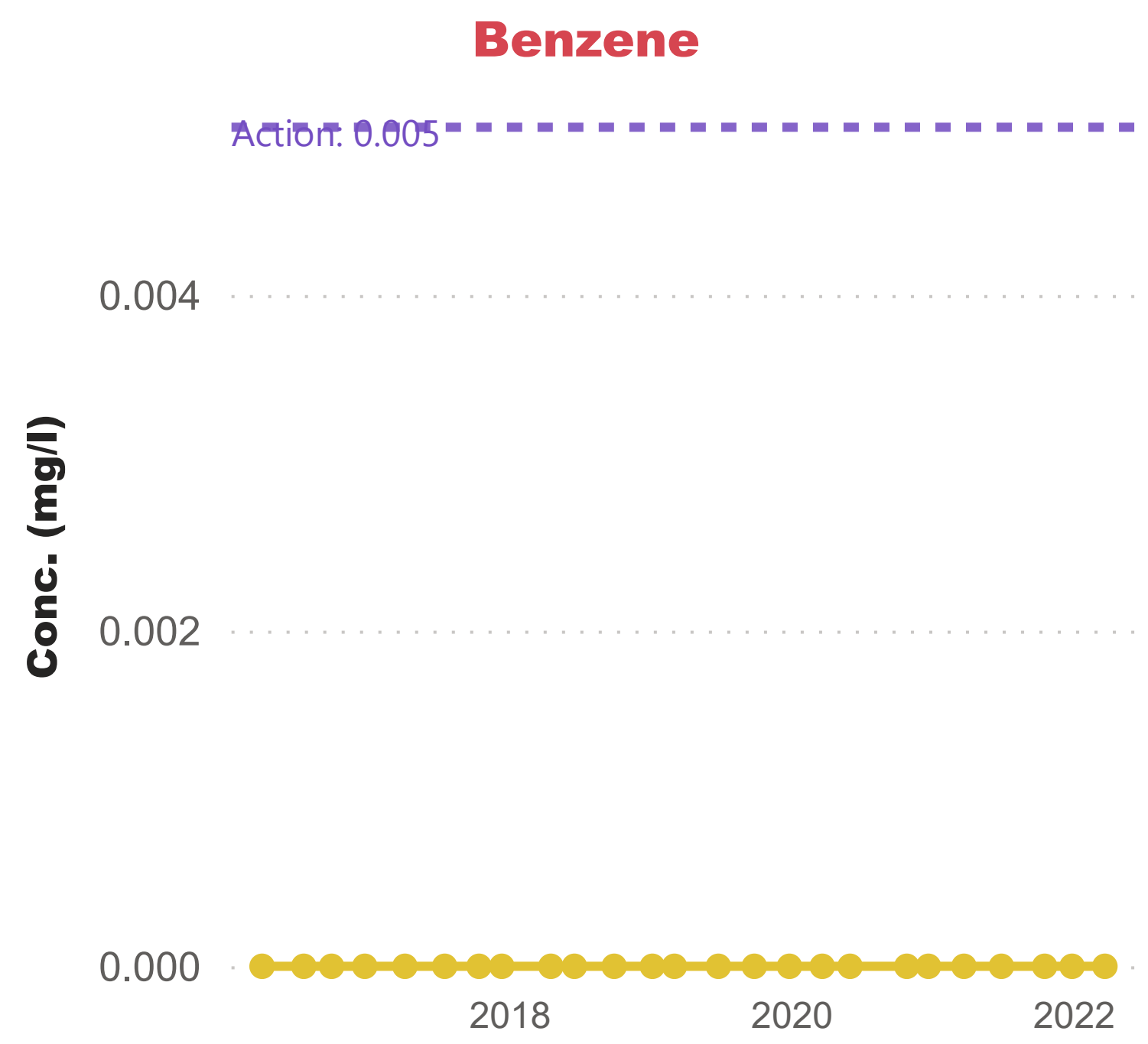
SI-10 Soil and Soil Gas Summary

Clays/Till	Fine Sands	<table border="1"> <tr><td>EC5-6</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC7-8</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC9-11</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC12-14</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC15-17</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> </table>		EC5-6	EC12-16	EC16-21	EC21-35	EC7-8	EC12-16	EC16-21	EC21-35	EC9-11	EC12-16	EC16-21	EC21-35	EC12-14	EC12-16	EC16-21	EC21-35	EC15-17	EC12-16	EC16-21	EC21-35	TPH Criteria Working Group 13 Transport Fractions	<table border="1"> <tr><td>EC5-8</td><td>EC8-16</td><td>EC16-35</td></tr> <tr><td>Low</td><td>Medium</td><td>High</td></tr> <tr><td>EC9-11</td><td>EC9-22</td><td>EC22-35</td></tr> <tr><td>Low</td><td>Medium</td><td>High</td></tr> </table>	EC5-8	EC8-16	EC16-35	Low	Medium	High	EC9-11	EC9-22	EC22-35	Low	Medium	High	EPA 6 Toxicity Fractions
EC5-6	EC12-16	EC16-21	EC21-35																																			
EC7-8	EC12-16	EC16-21	EC21-35																																			
EC9-11	EC12-16	EC16-21	EC21-35																																			
EC12-14	EC12-16	EC16-21	EC21-35																																			
EC15-17	EC12-16	EC16-21	EC21-35																																			
EC5-8	EC8-16	EC16-35																																				
Low	Medium	High																																				
EC9-11	EC9-22	EC22-35																																				
Low	Medium	High																																				

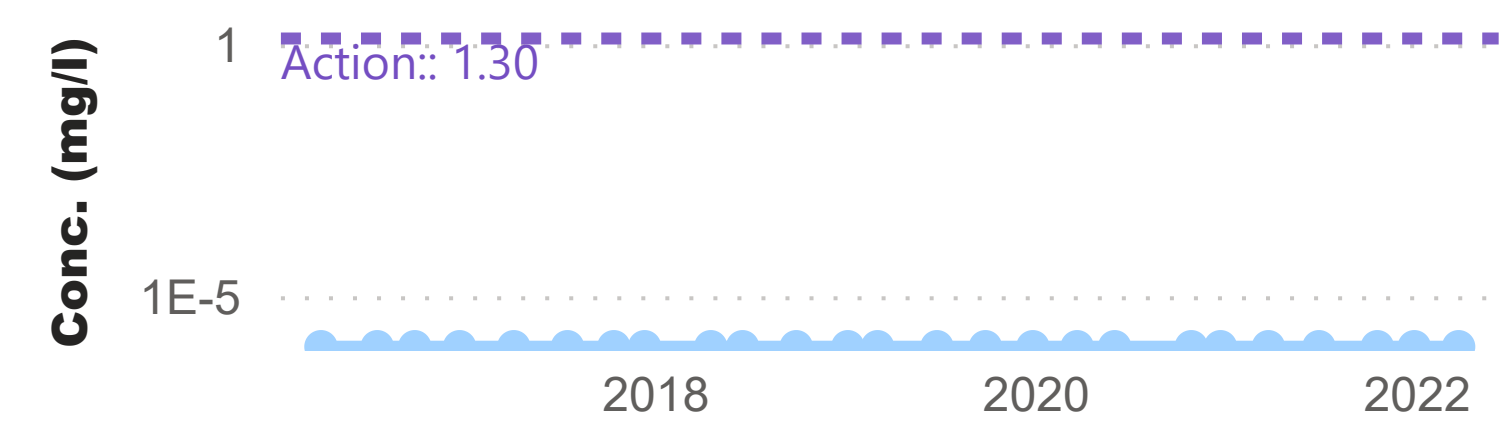
Increasing Equivalent Carbon (EC) Number →



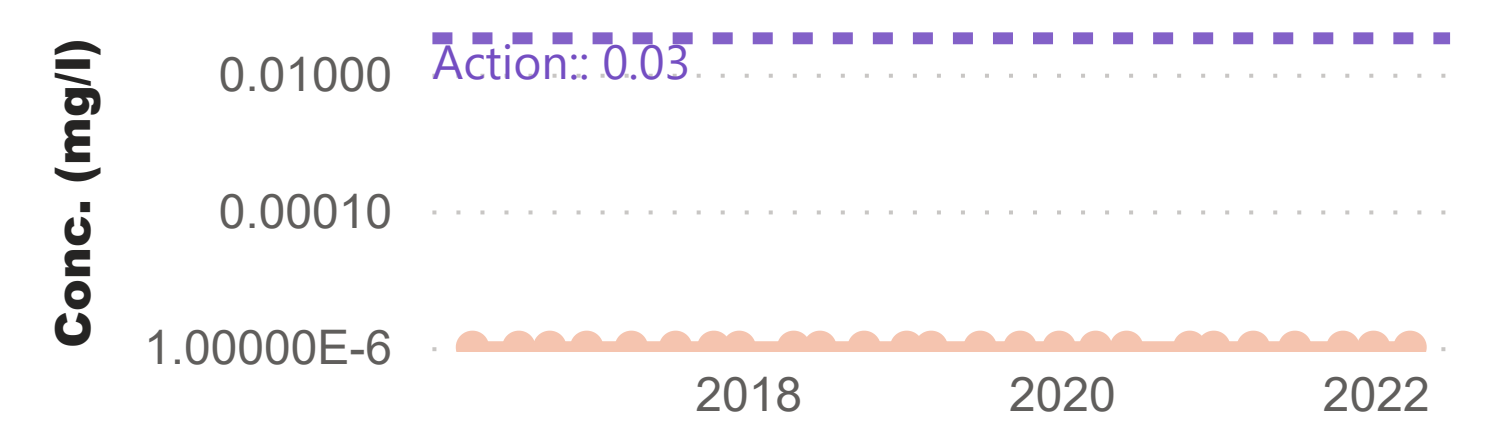
Dissolved Phase



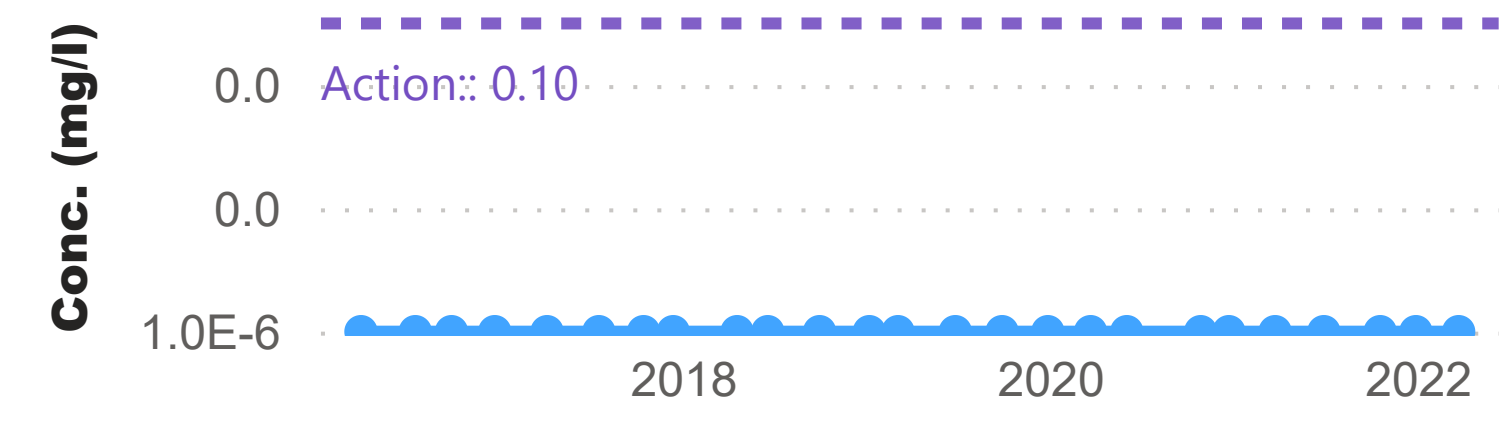
TPH-Aliphatic (Low)



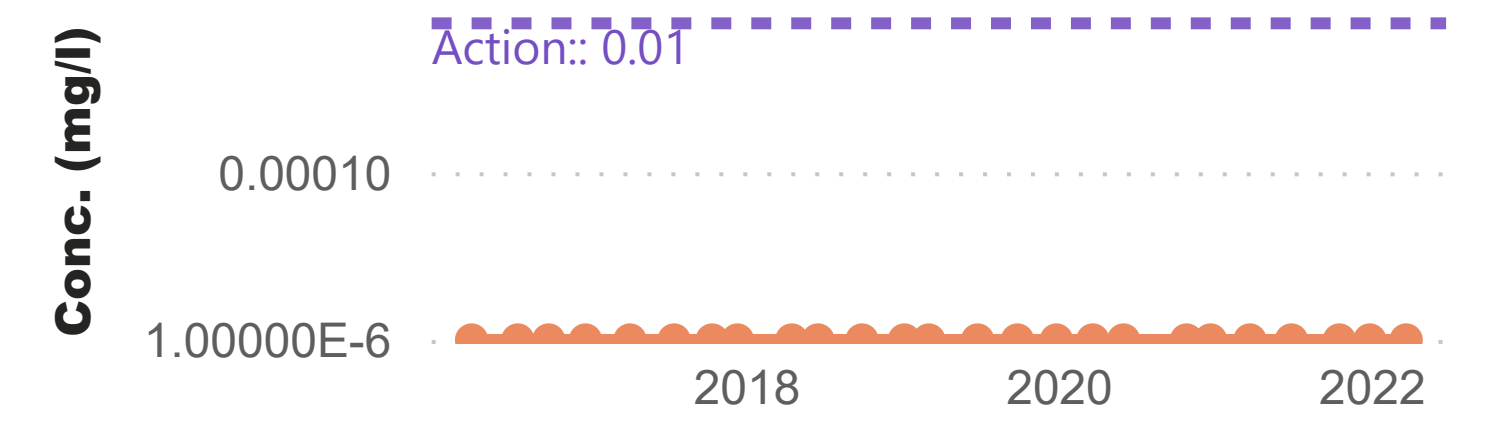
TPH-Aromatic (Low)



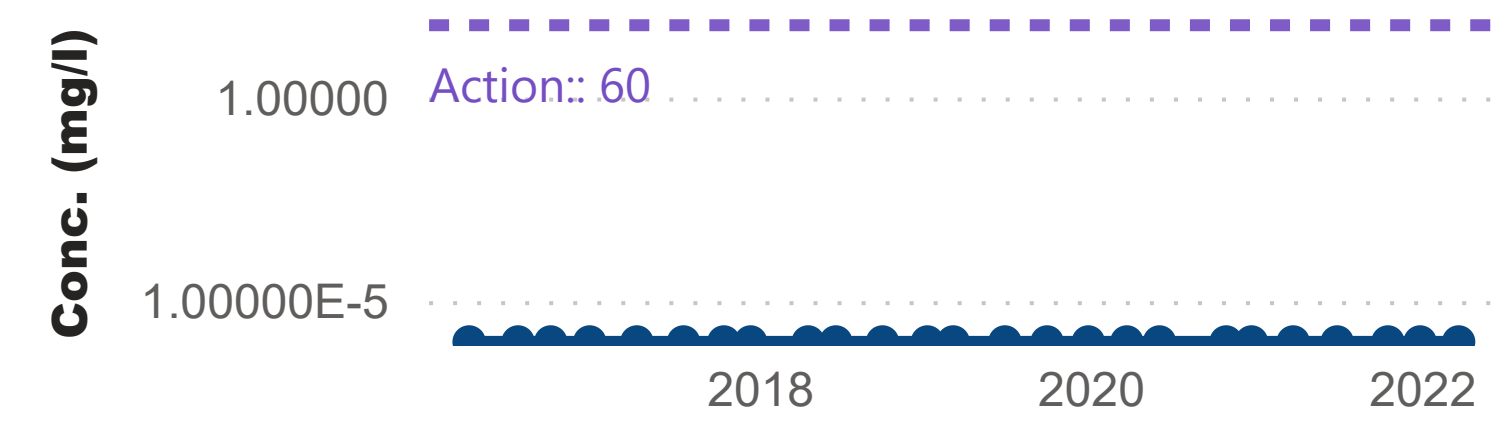
TPH-Aliphatic (Medium)



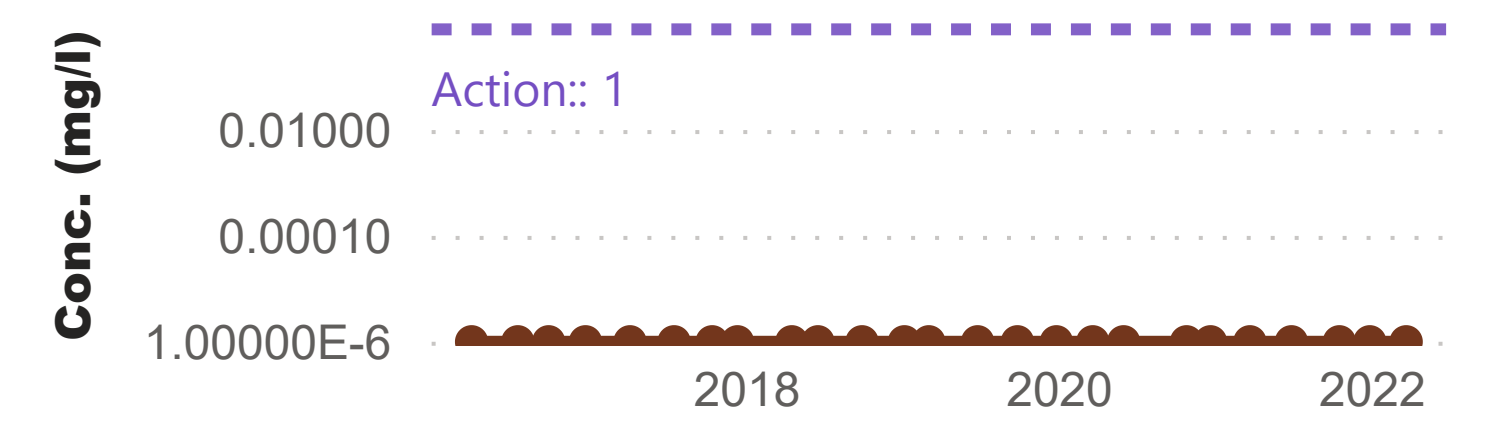
TPH-Aromatic (Medium)



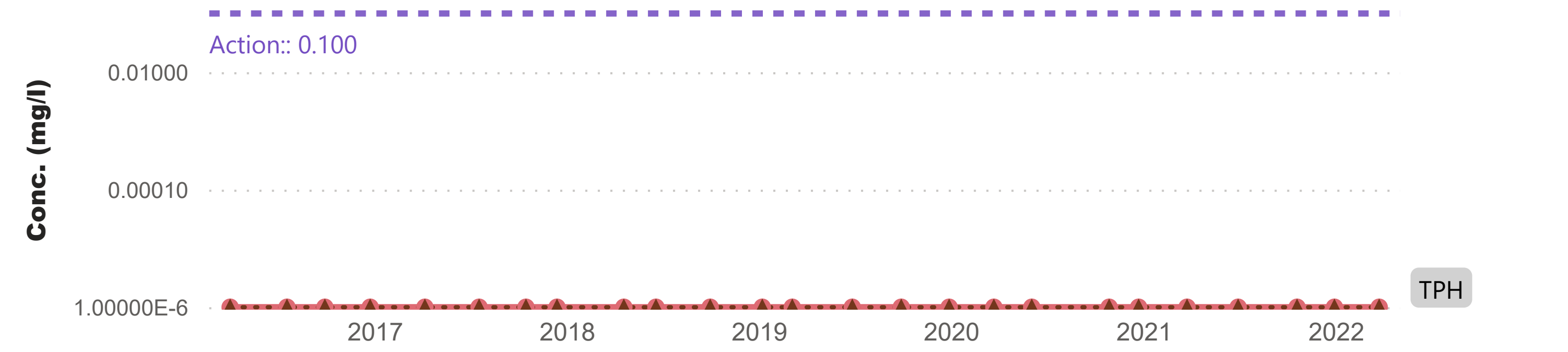
TPH-Aliphatic (High)



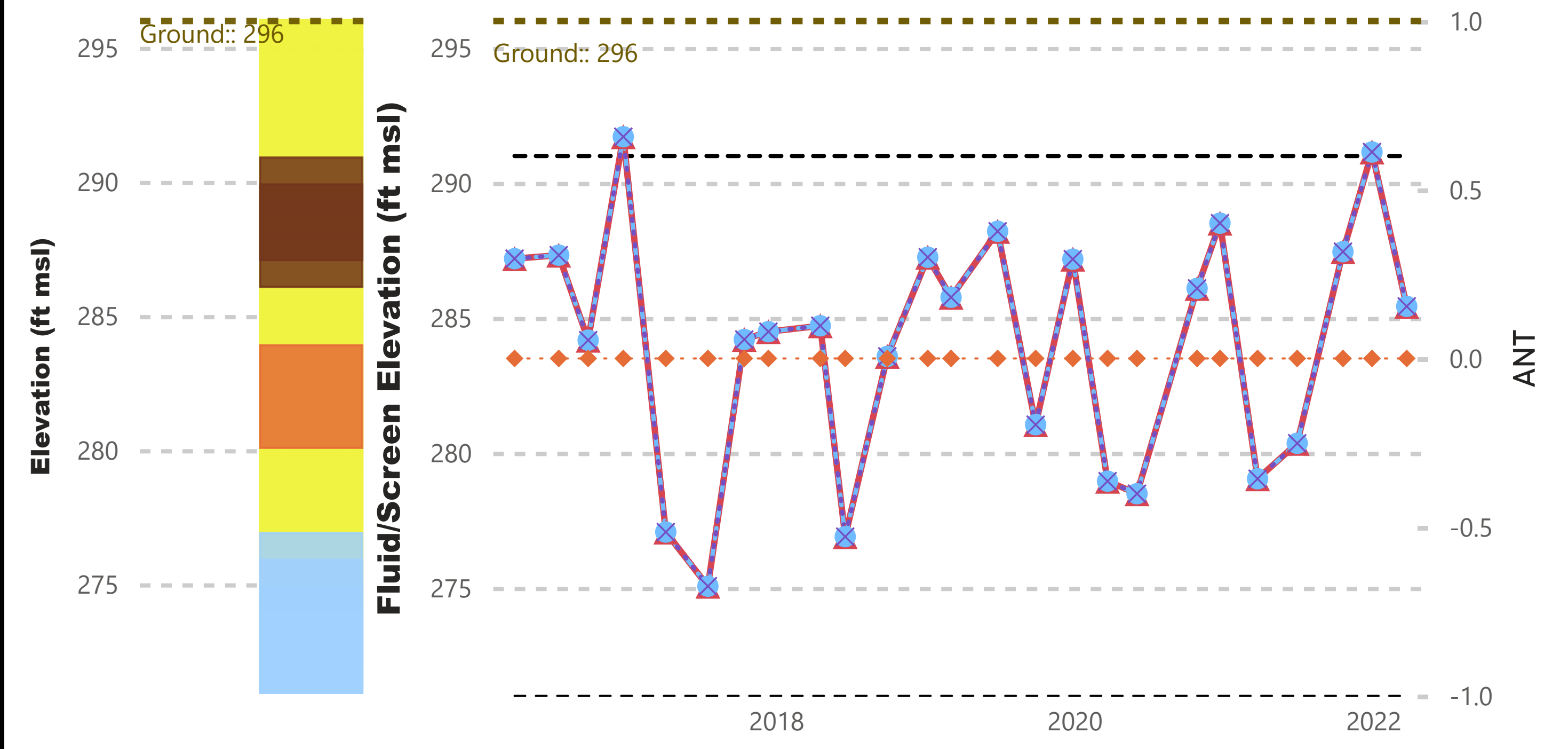
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



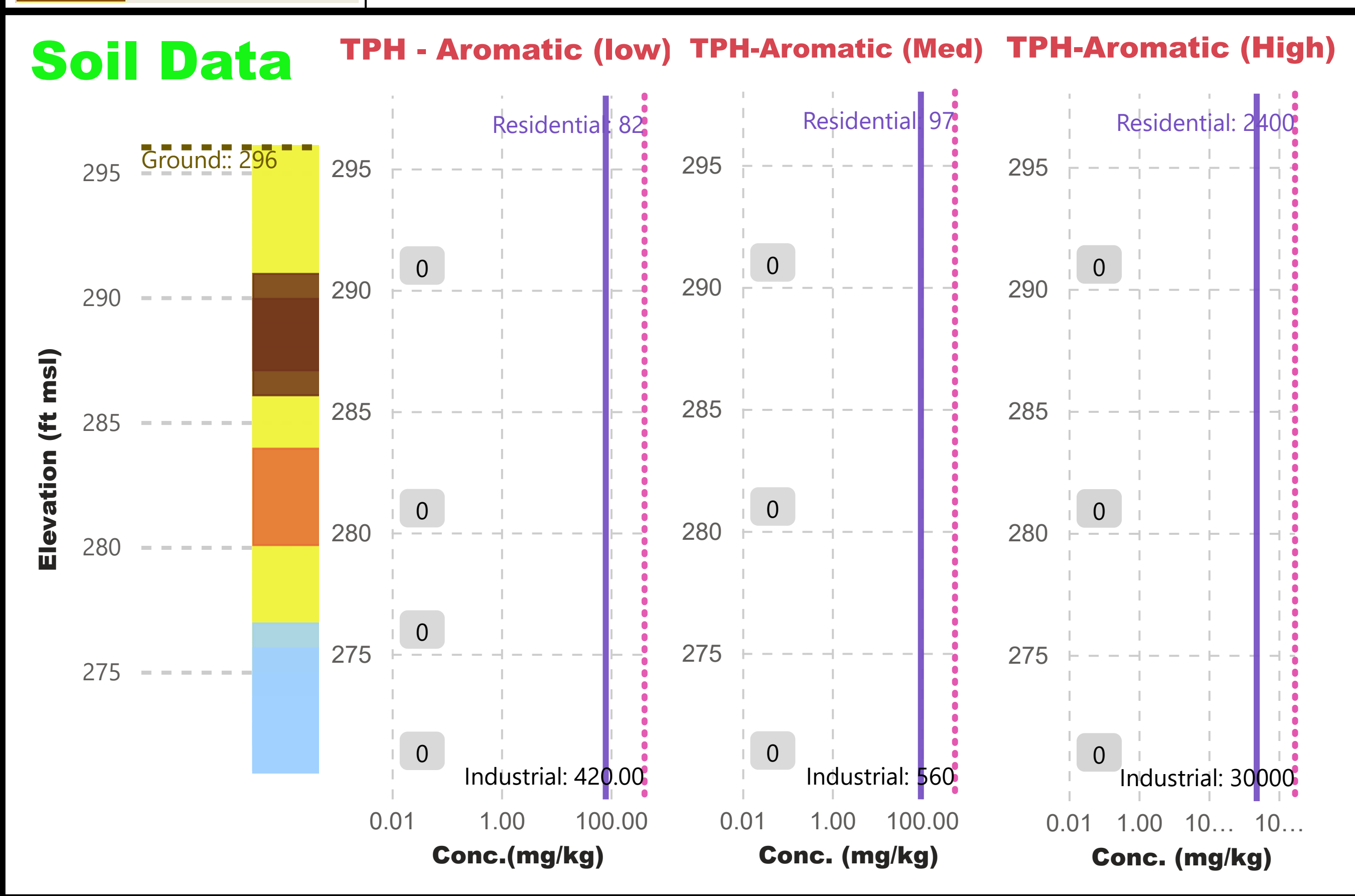
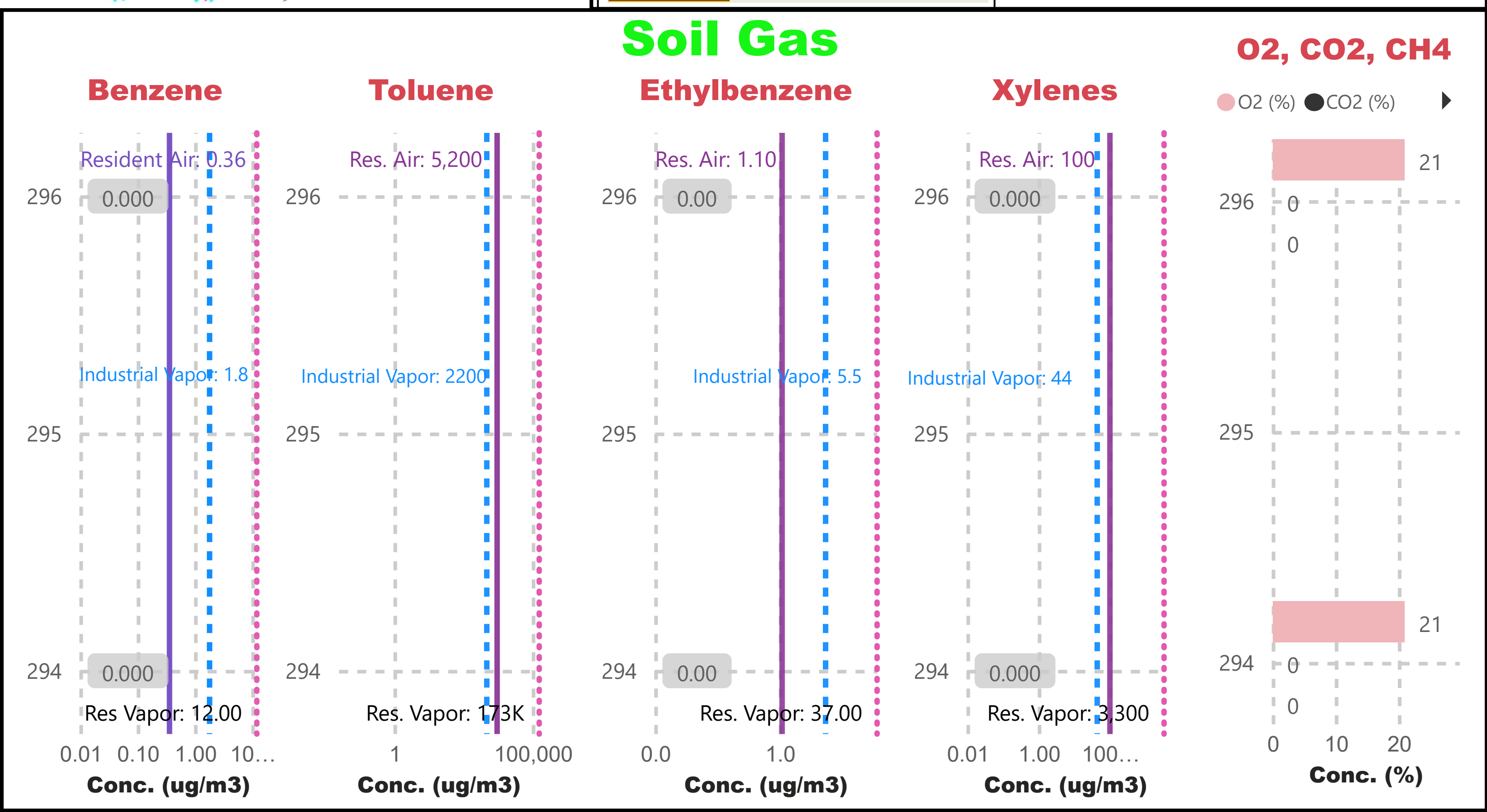
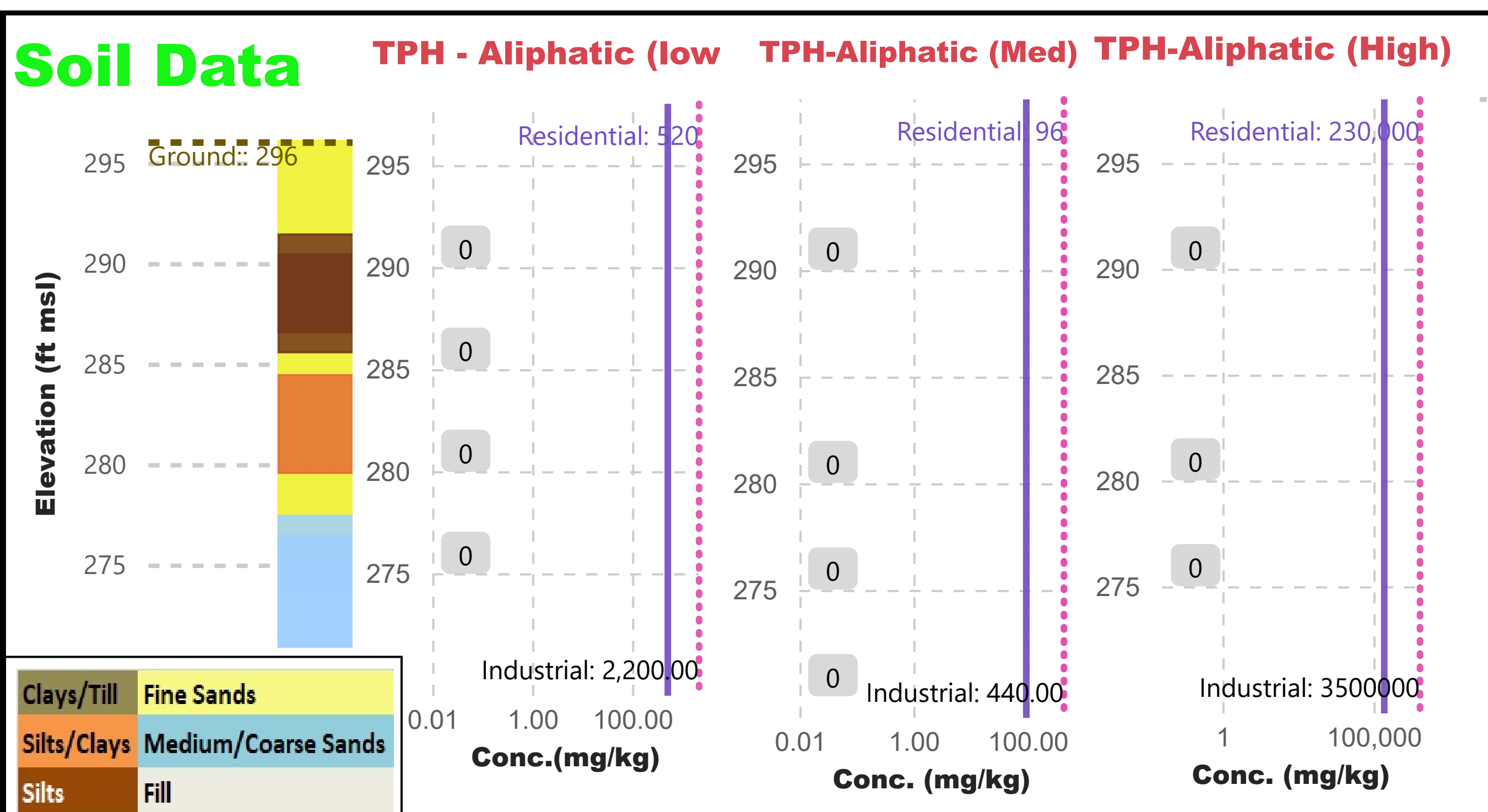
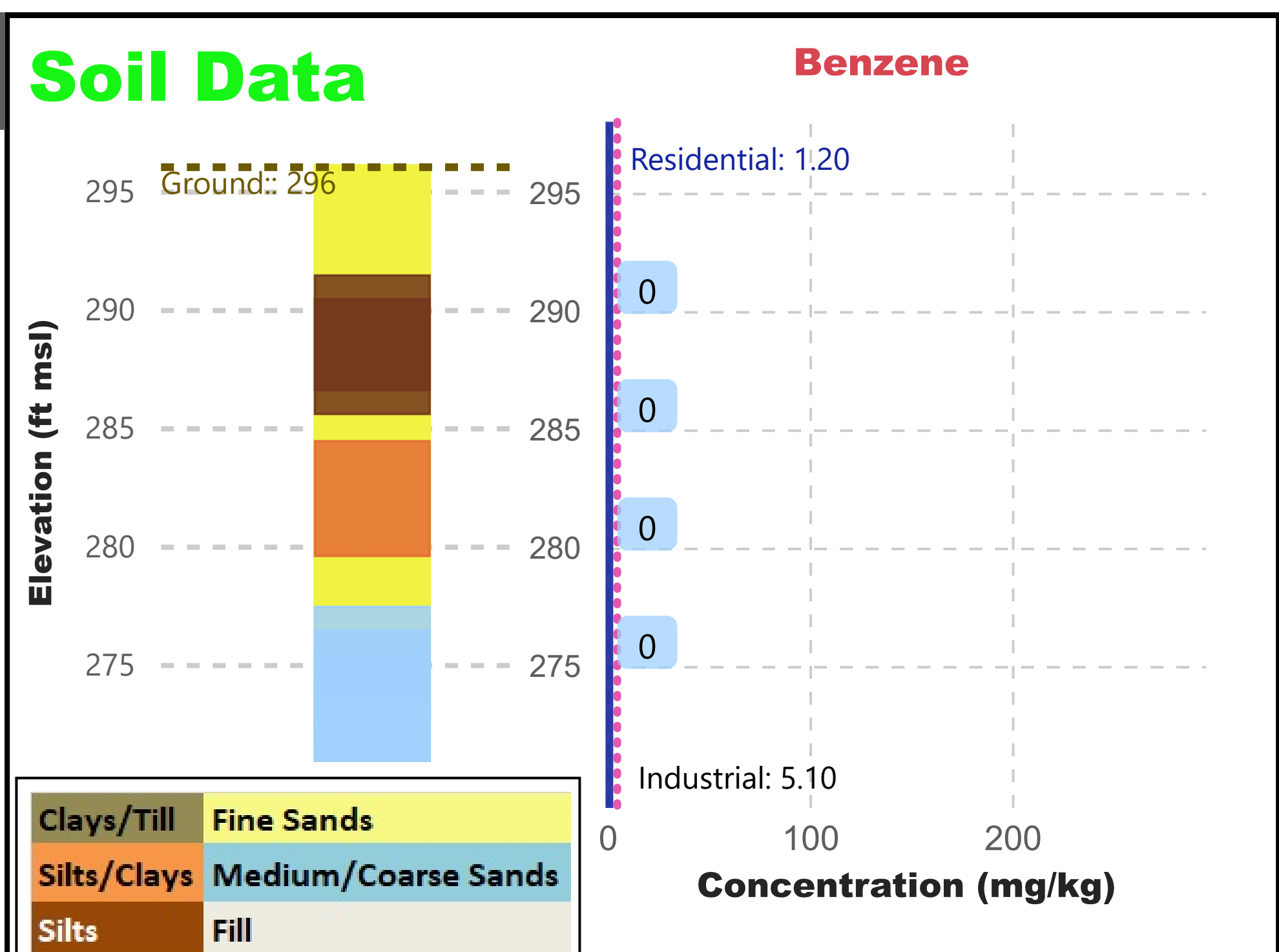
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Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group 13 Transport Fractions	EPA 6 Toxicity Fractions
EC5-7	EC5-6	EC8-9	EC5-7	EC5-7
EC8-10	EC8-10	EC11-12	EC8-10	EC8-10
EC12-16	EC12-16	EC16-21	EC12-16	EC12-16
EC16-21	EC16-21	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--	EC16-21	EC16-21
EC21-35	EC21-35	EC22-35	EC21-35	EC22-35

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

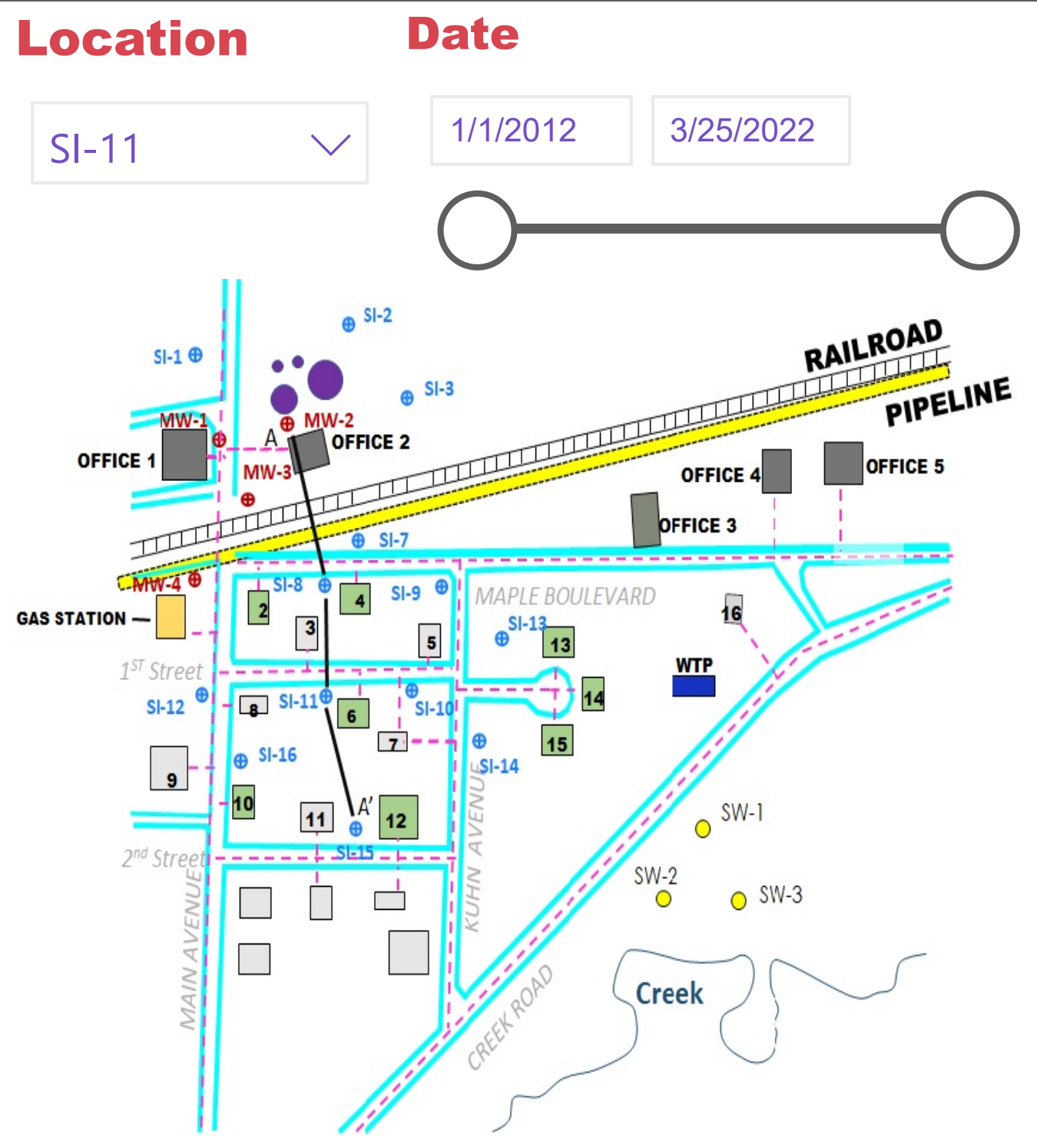
SI-10

Hydrograph & Dissolved Summary

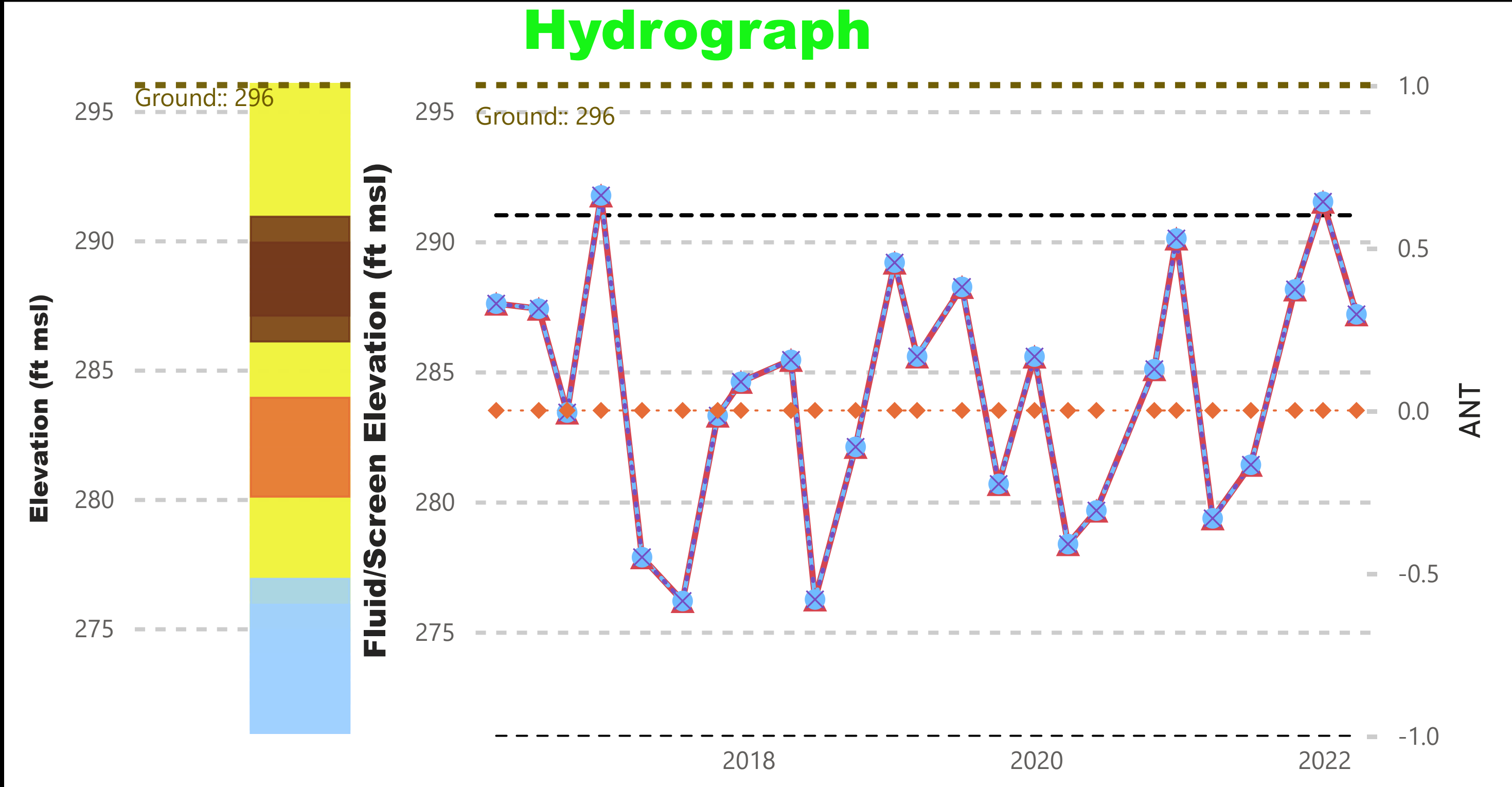
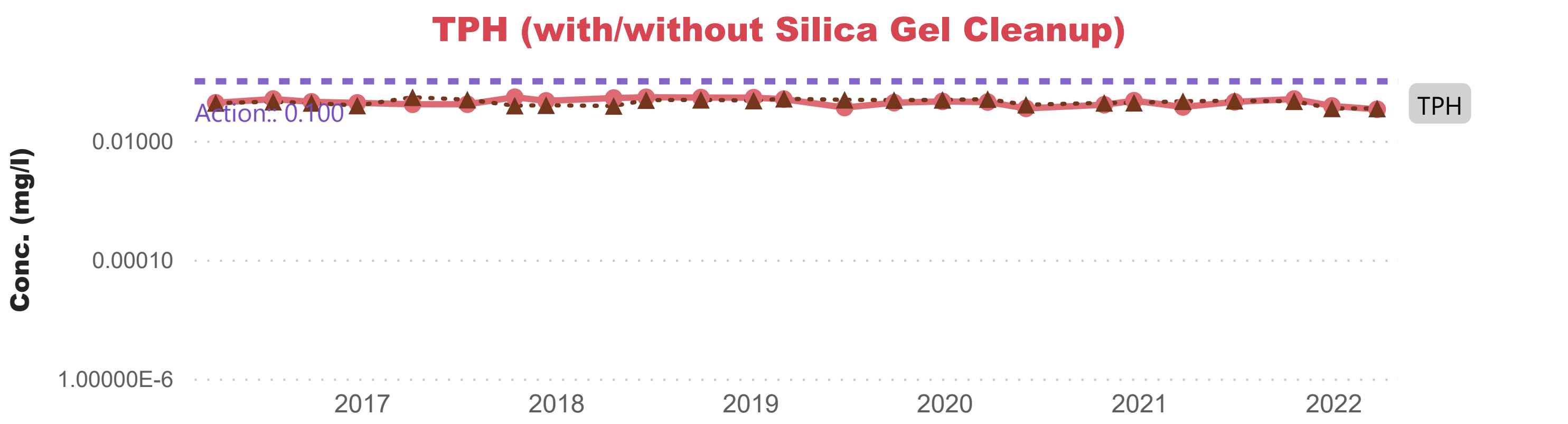
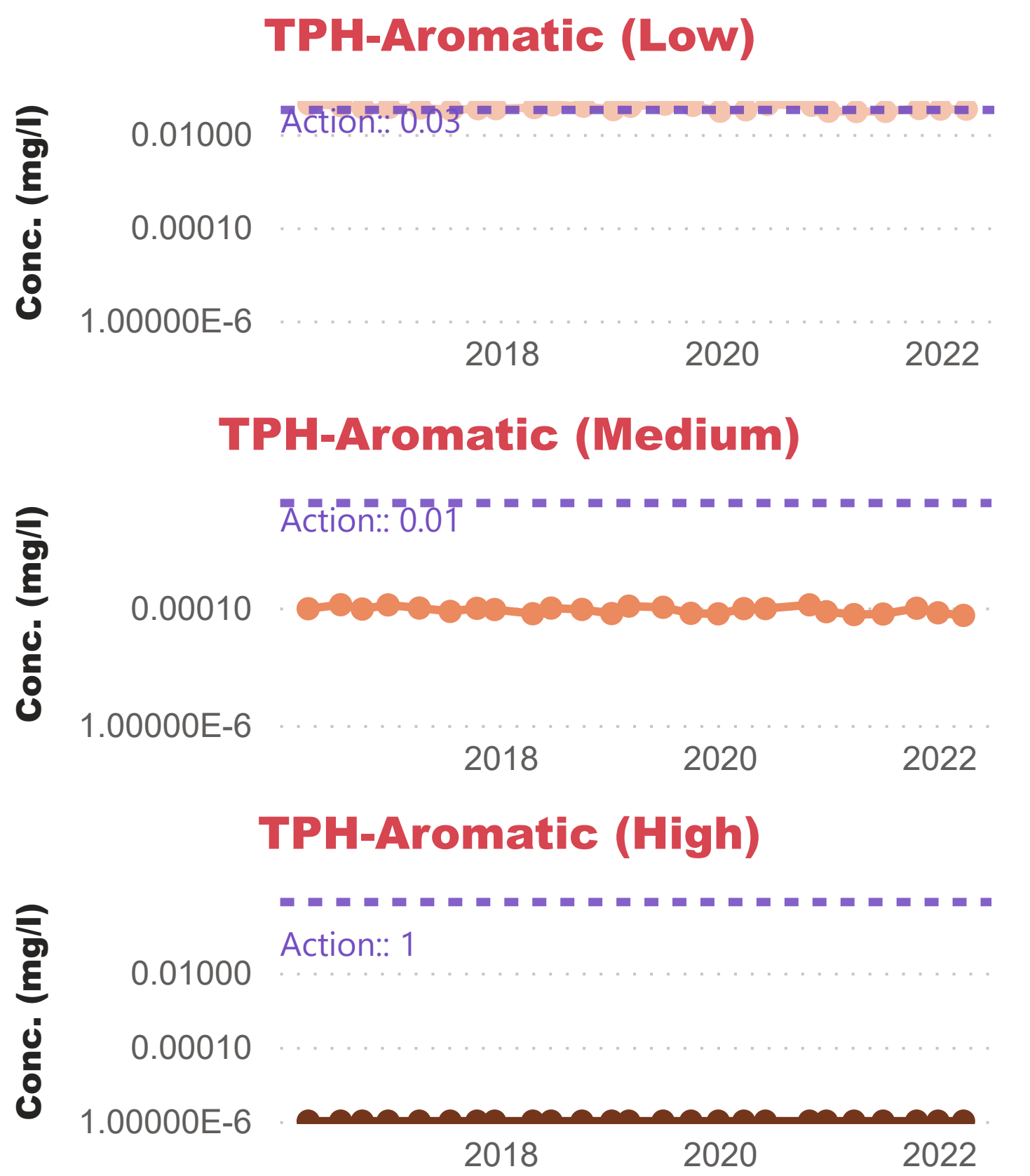
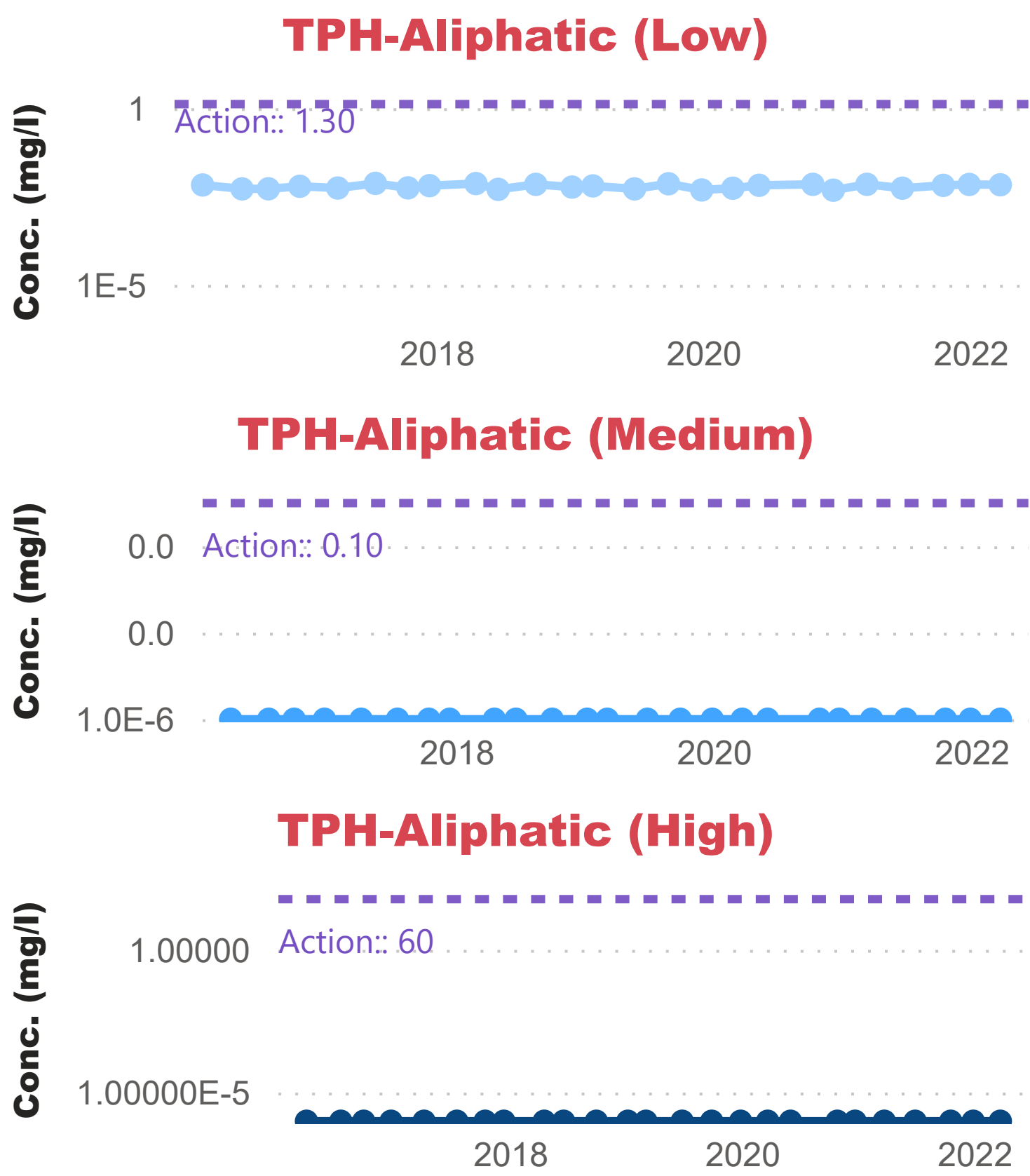
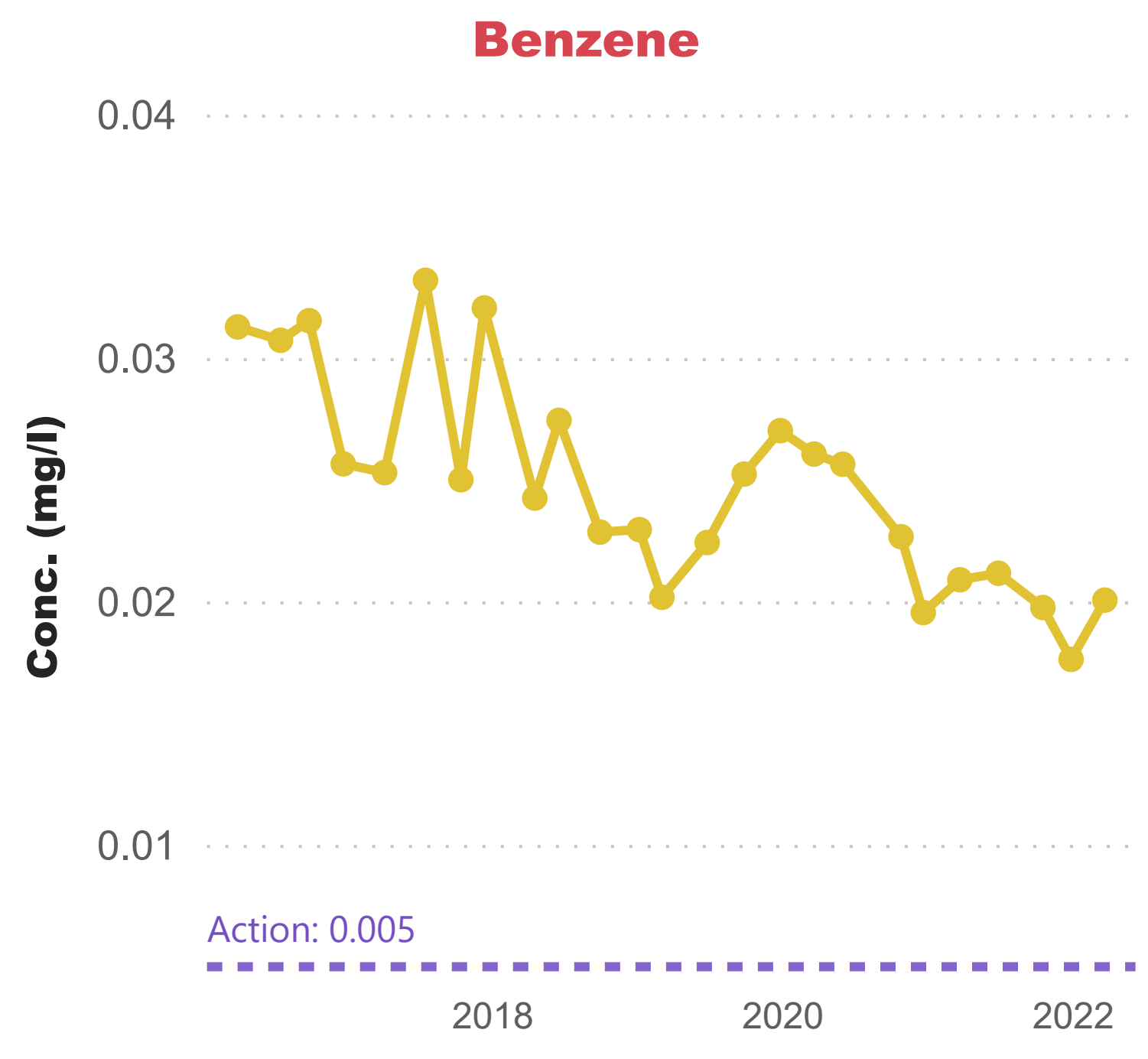


SI-11 Soil and Soil Gas Summary

Clays/Till	Fine Sands	<table border="1"> <tr><td>EC5-6</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC7-8</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC9-11</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC12-14</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC15-17</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> </table>		EC5-6	EC12-16	EC16-21	EC21-35	EC7-8	EC12-16	EC16-21	EC21-35	EC9-11	EC12-16	EC16-21	EC21-35	EC12-14	EC12-16	EC16-21	EC21-35	EC15-17	EC12-16	EC16-21	EC21-35	TPH Criteria Working Group 13 Transport Fractions	<table border="1"> <tr><td>EC5-8</td><td>EC8-16</td><td>EC16-35</td></tr> <tr><td>EC9-11</td><td>EC9-22</td><td>EC22-35</td></tr> </table>	EC5-8	EC8-16	EC16-35	EC9-11	EC9-22	EC22-35	EPA 6 Toxicity Fractions
EC5-6	EC12-16	EC16-21	EC21-35																													
EC7-8	EC12-16	EC16-21	EC21-35																													
EC9-11	EC12-16	EC16-21	EC21-35																													
EC12-14	EC12-16	EC16-21	EC21-35																													
EC15-17	EC12-16	EC16-21	EC21-35																													
EC5-8	EC8-16	EC16-35																														
EC9-11	EC9-22	EC22-35																														
Silts/Clays	Medium/Coarse Sands	<p>Increasing Equivalent Carbon (EC) Number →</p>																														
Silts	Fill	<p>Increasing Equivalent Carbon (EC) Number →</p>																														



Dissolved Phase



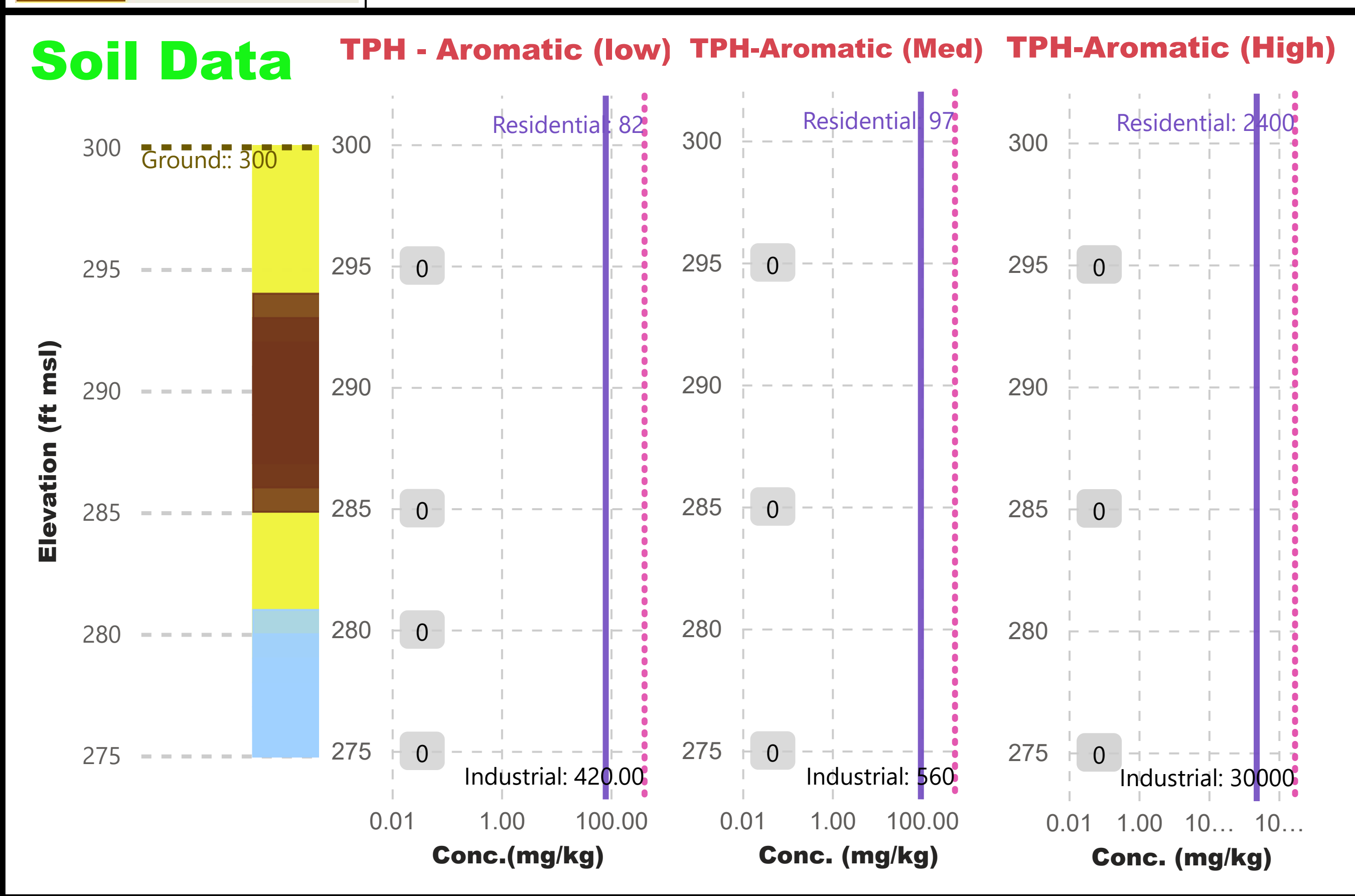
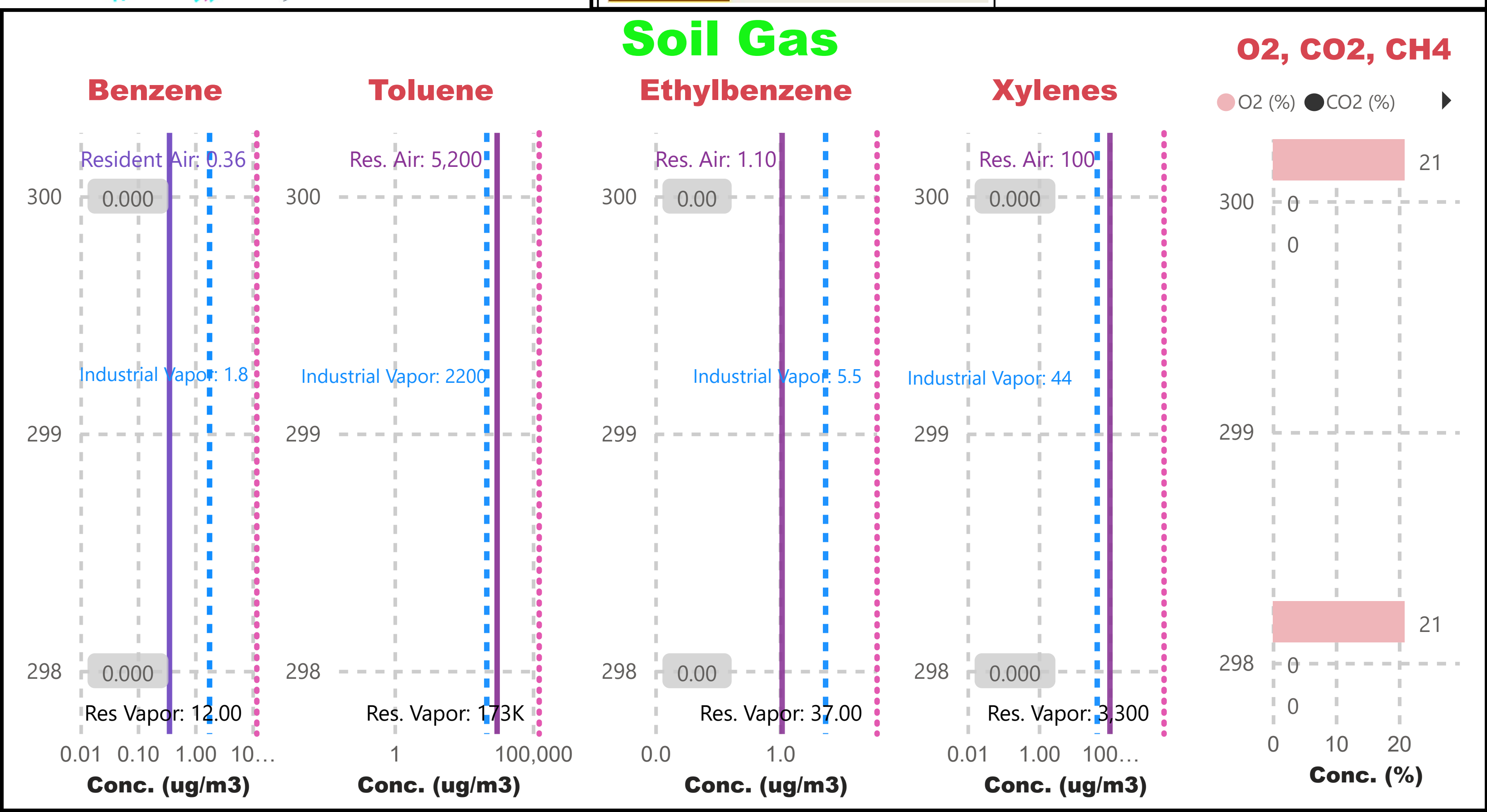
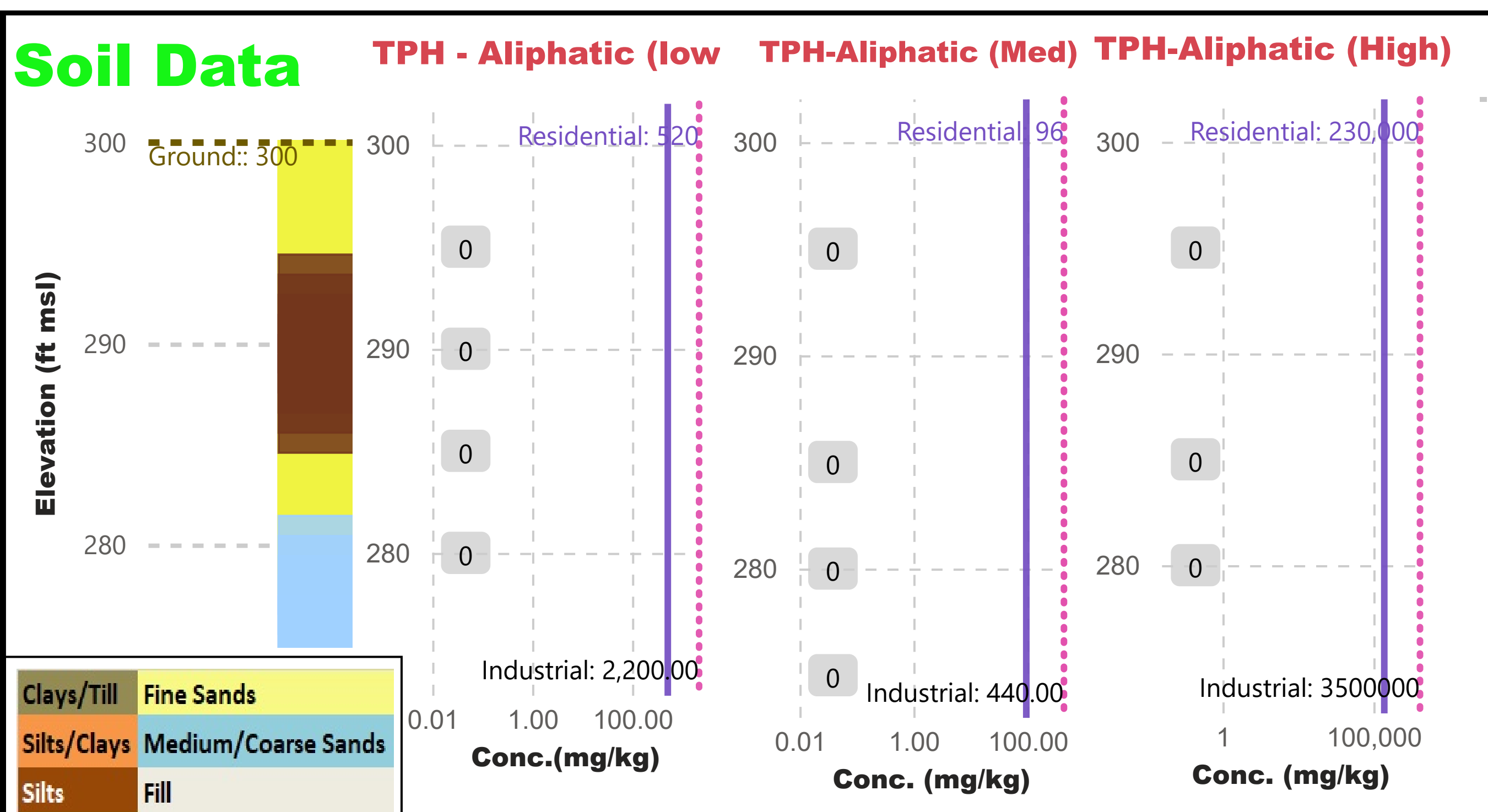
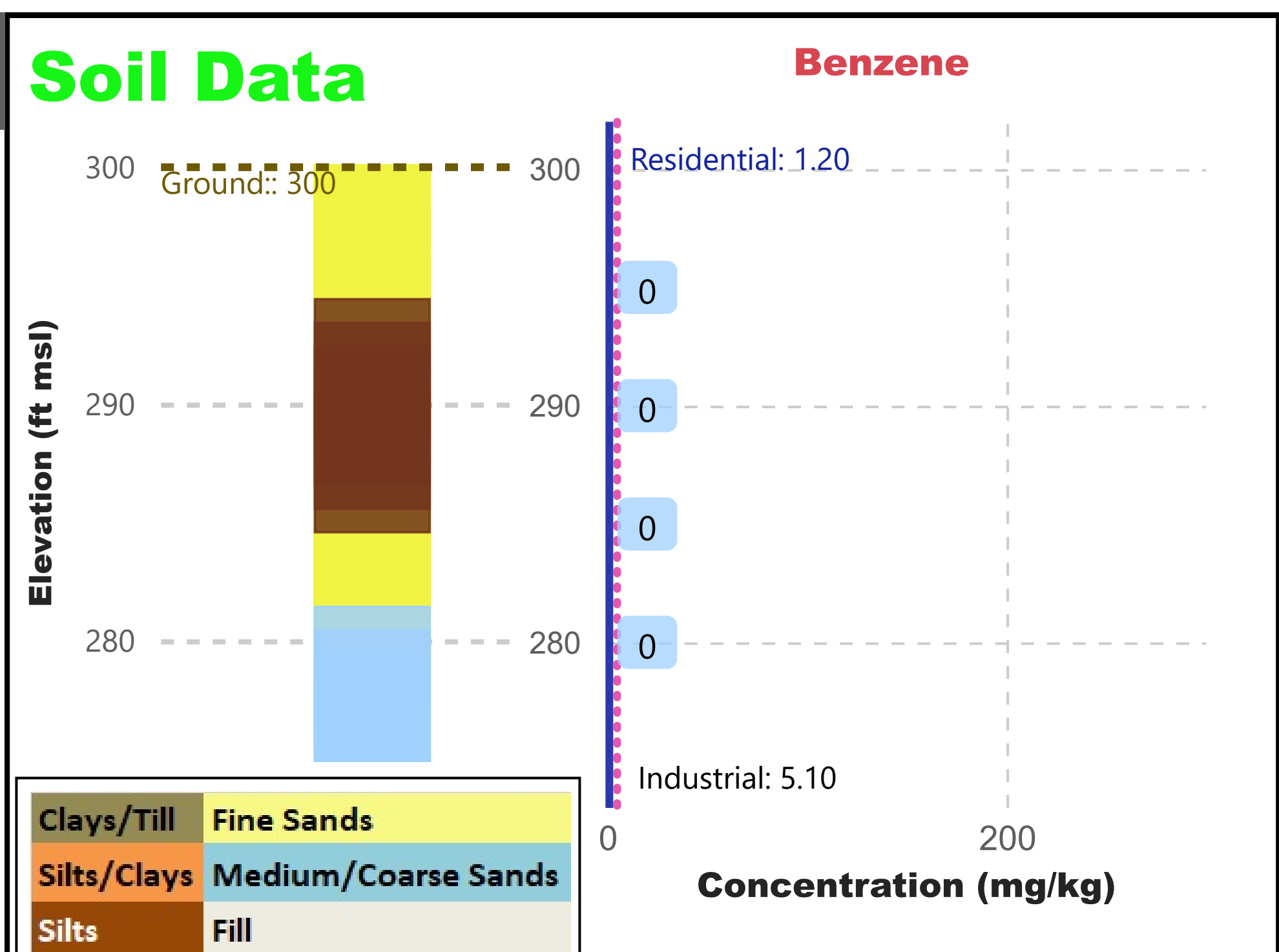
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Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	EC5-6	EC7-10	Low	EC5-6	Low
Aliphatic	EC8-10	EC11-12	Medium	EC8-10	Medium
Aliphatic	EC12-16	EC16-21	High	EC12-16	High
Aliphatic	EC21-35	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--	High	EC21-35	High

Increasing Equivalent Carbon (EC) Number →

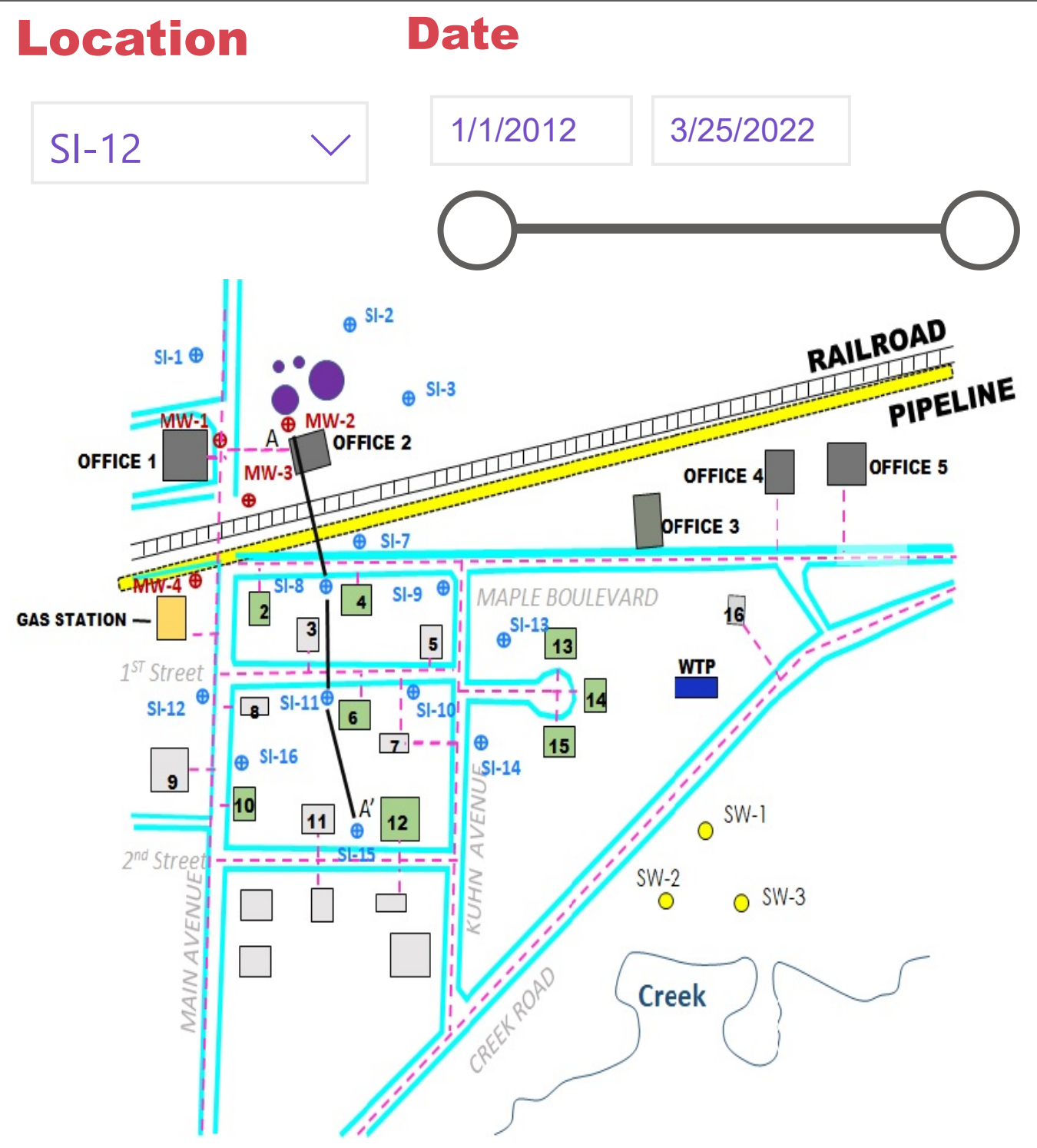
Clays/Till	Fine Sands	---	Screen	TOS/BOS	X	Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲	Air/NAPL Interface	ANI	◆	Apparent NAPL Thickness ANT
Silts	Fill	●	NAPL/Water Interface	NWI		

SI-11 Hydrograph & Dissolved Summary

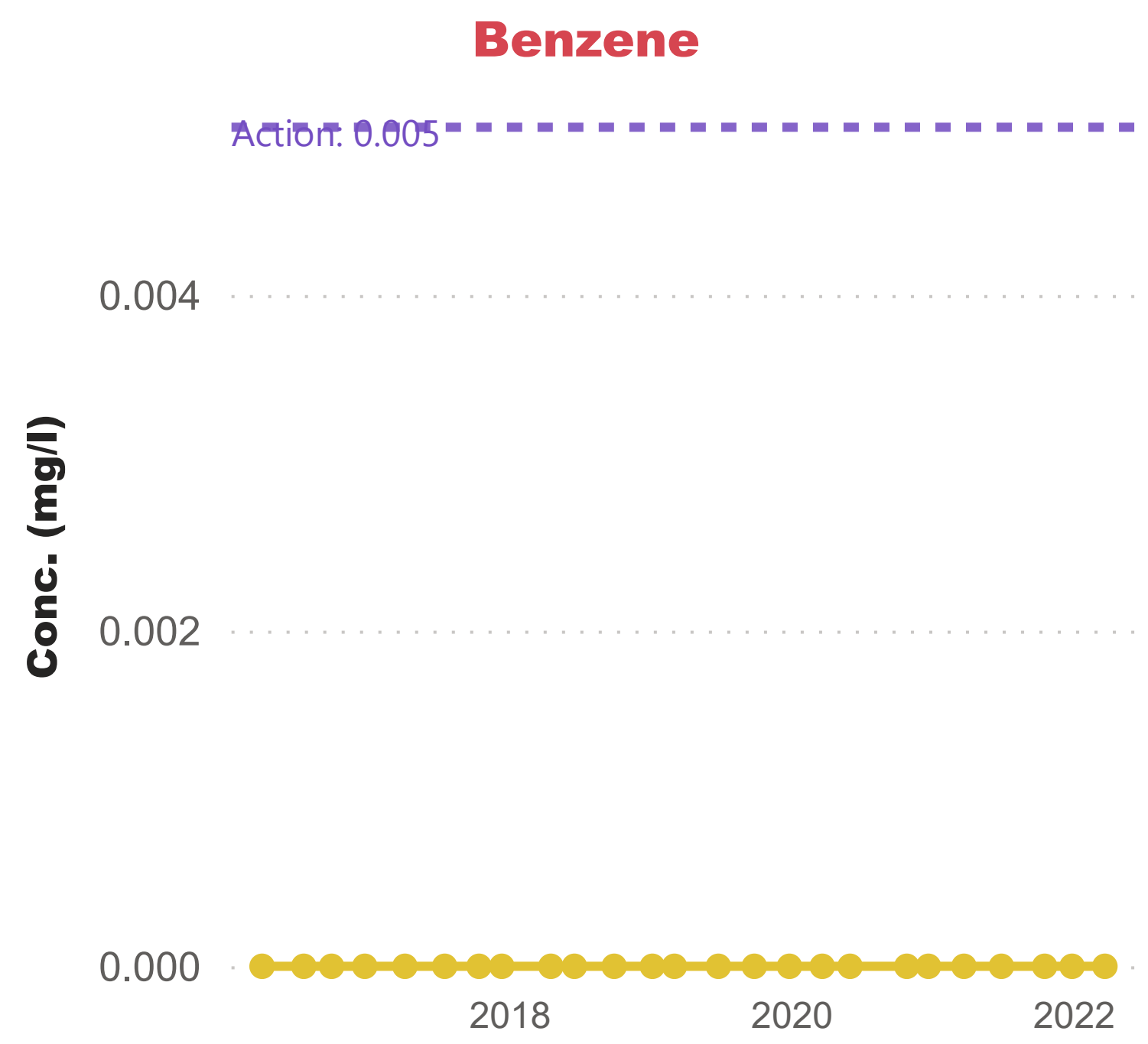


SI-12 Soil and Soil Gas Summary

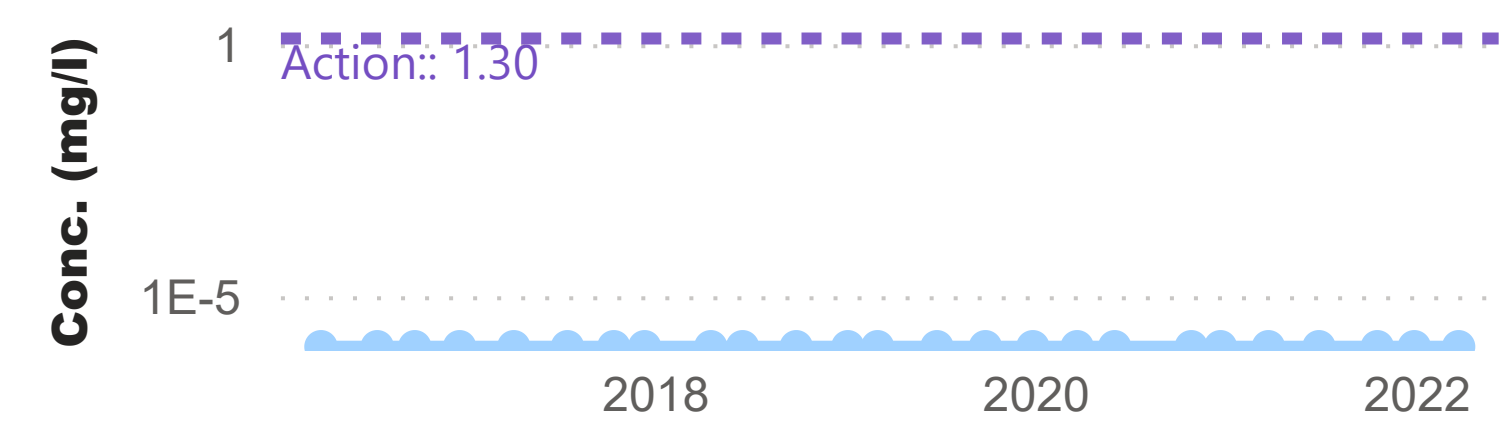
Clays/Till	Fine Sands	<table border="1"> <tr><td>EC5-6</td><td>EC6-8</td><td>EC9-12</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35 (same properties as EC16-21) -- not considered a transport fraction--</td></tr> <tr><td>EC7-9</td><td>EC10-12</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td><td></td></tr> </table>	EC5-6	EC6-8	EC9-12	EC12-16	EC16-21	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--	EC7-9	EC10-12	EC12-16	EC16-21	EC21-35		TPH Criteria Working Group 13 Transport Fractions Increasing Equivalent Carbon (EC) Number →
EC5-6	EC6-8		EC9-12	EC12-16	EC16-21	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--									
EC7-9	EC10-12		EC12-16	EC16-21	EC21-35										
Silts/Clays	Medium/Coarse Sands	<table border="1"> <tr><td>EC8-9</td><td>EC8-16</td><td>EC16-35</td></tr> <tr><td>Low</td><td>Medium</td><td>High</td></tr> </table>	EC8-9	EC8-16	EC16-35	Low	Medium	High	EPA 6 Toxicity Fractions Increasing Equivalent Carbon (EC) Number →						
EC8-9	EC8-16	EC16-35													
Low	Medium	High													
Silts	Fill	<table border="1"> <tr><td>EC9-22</td><td>EC22-35</td></tr> <tr><td>Medium</td><td>High</td></tr> </table>	EC9-22	EC22-35	Medium	High									
EC9-22	EC22-35														
Medium	High														



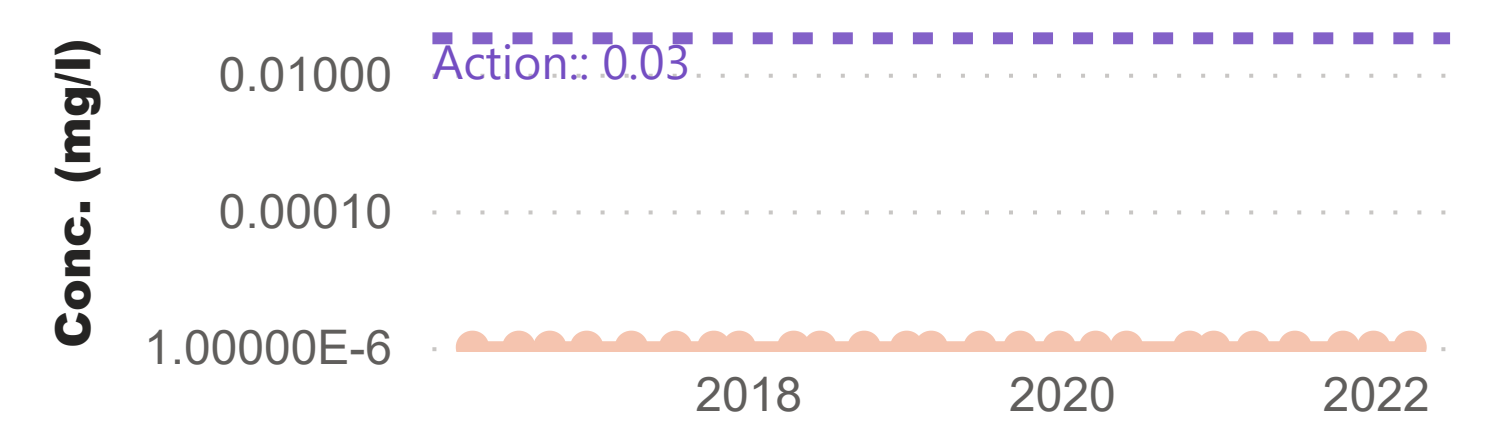
Dissolved Phase



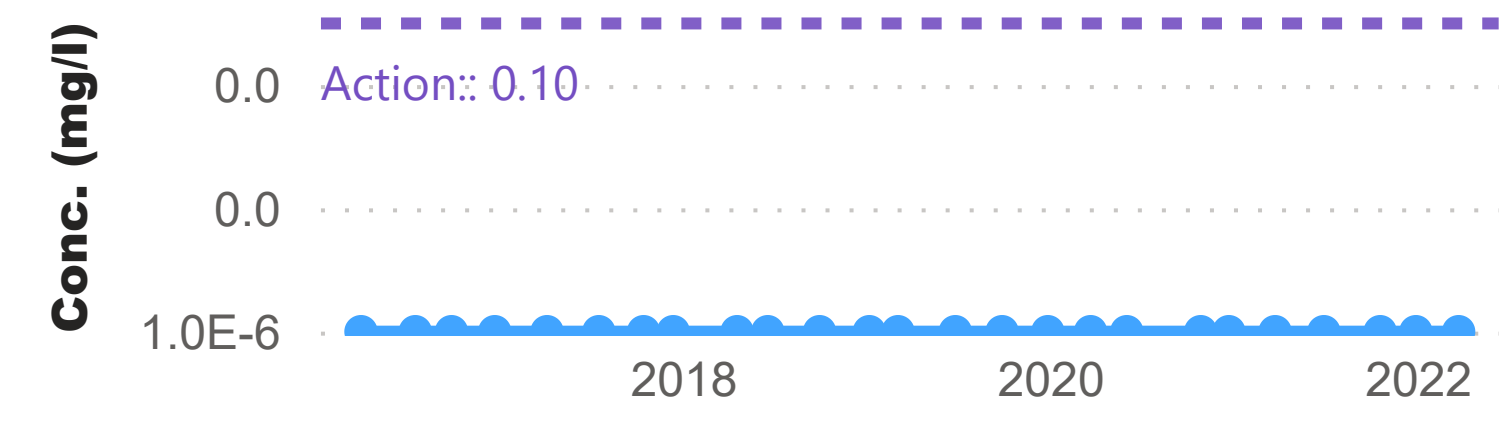
TPH-Aliphatic (Low)



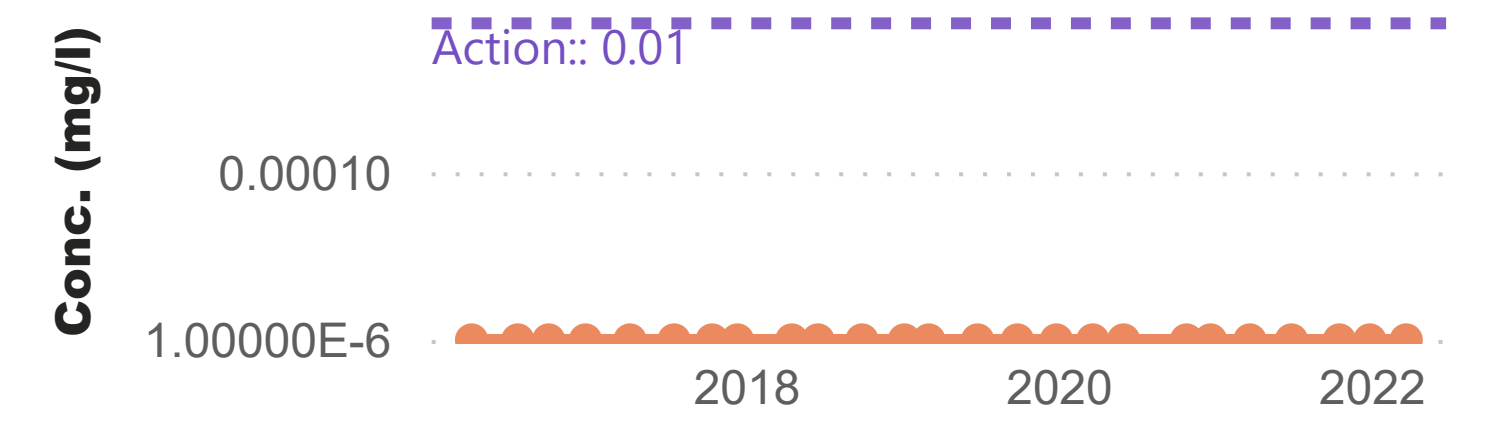
TPH-Aromatic (Low)



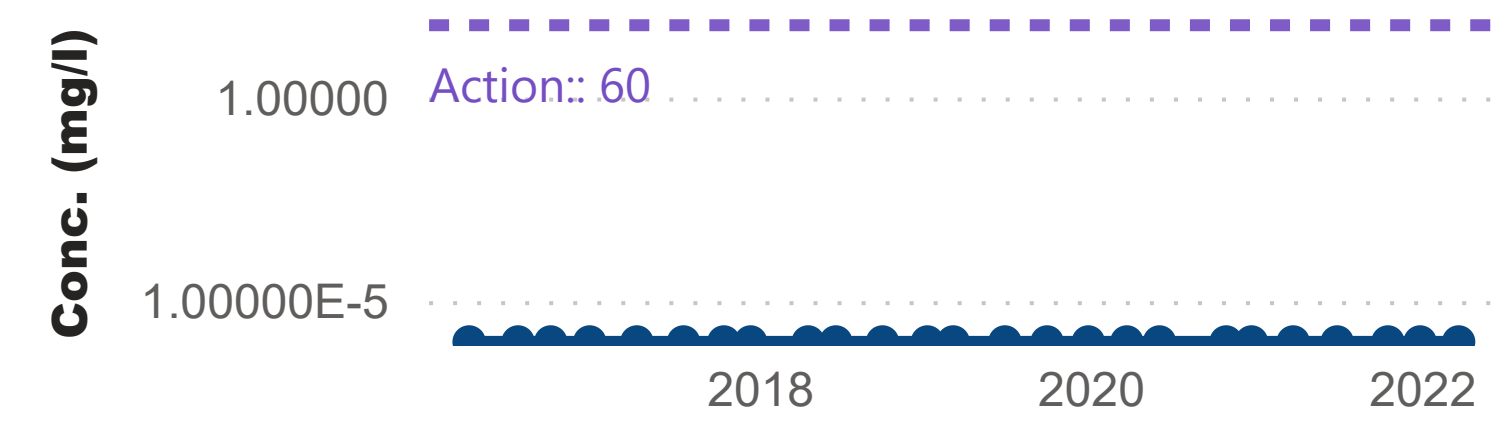
TPH-Aliphatic (Medium)



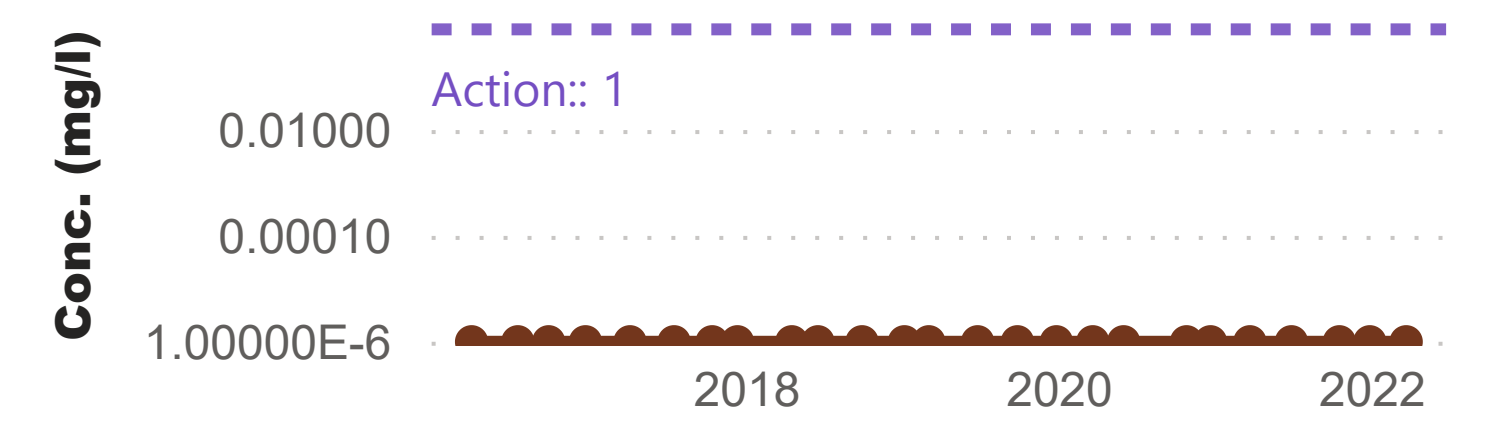
TPH-Aromatic (Medium)



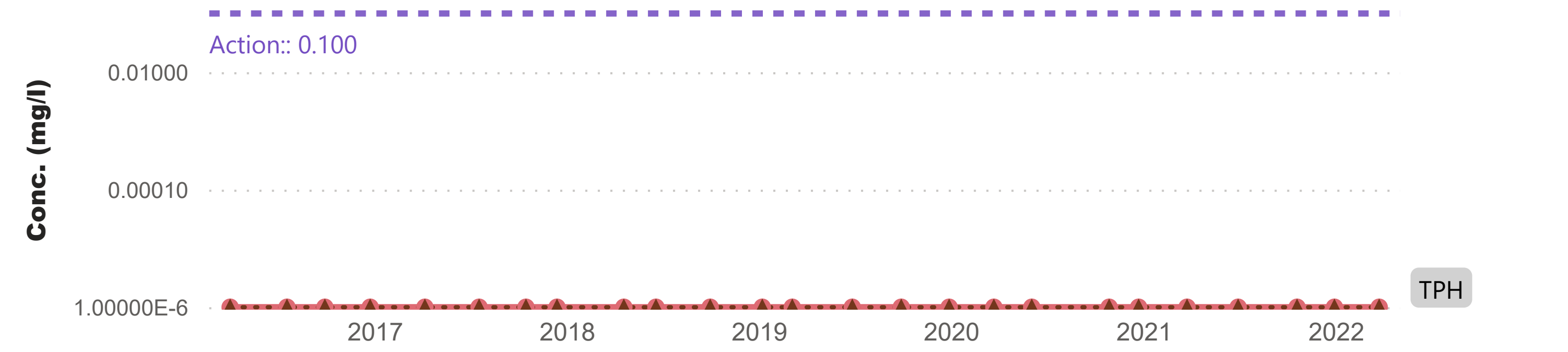
TPH-Aliphatic (High)



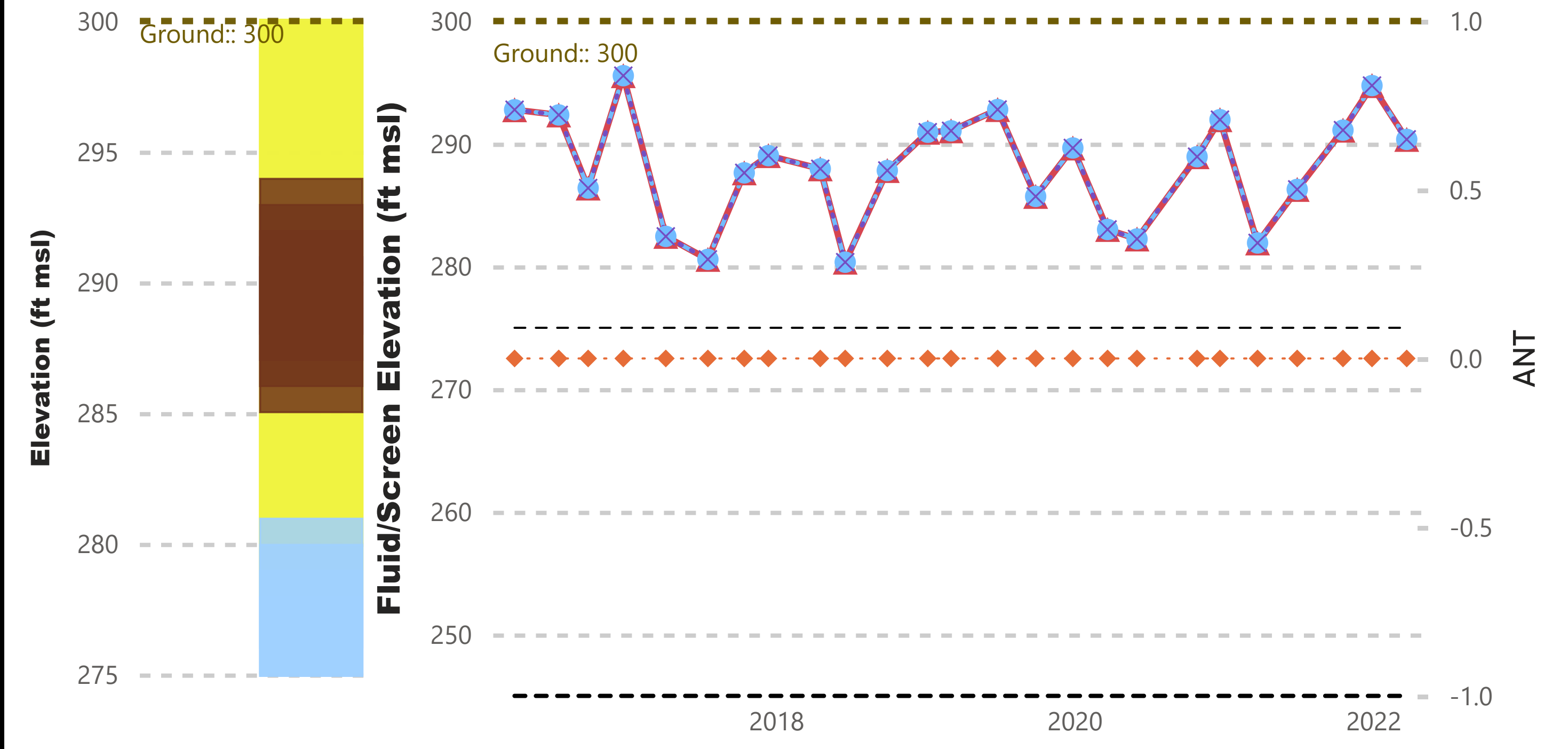
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

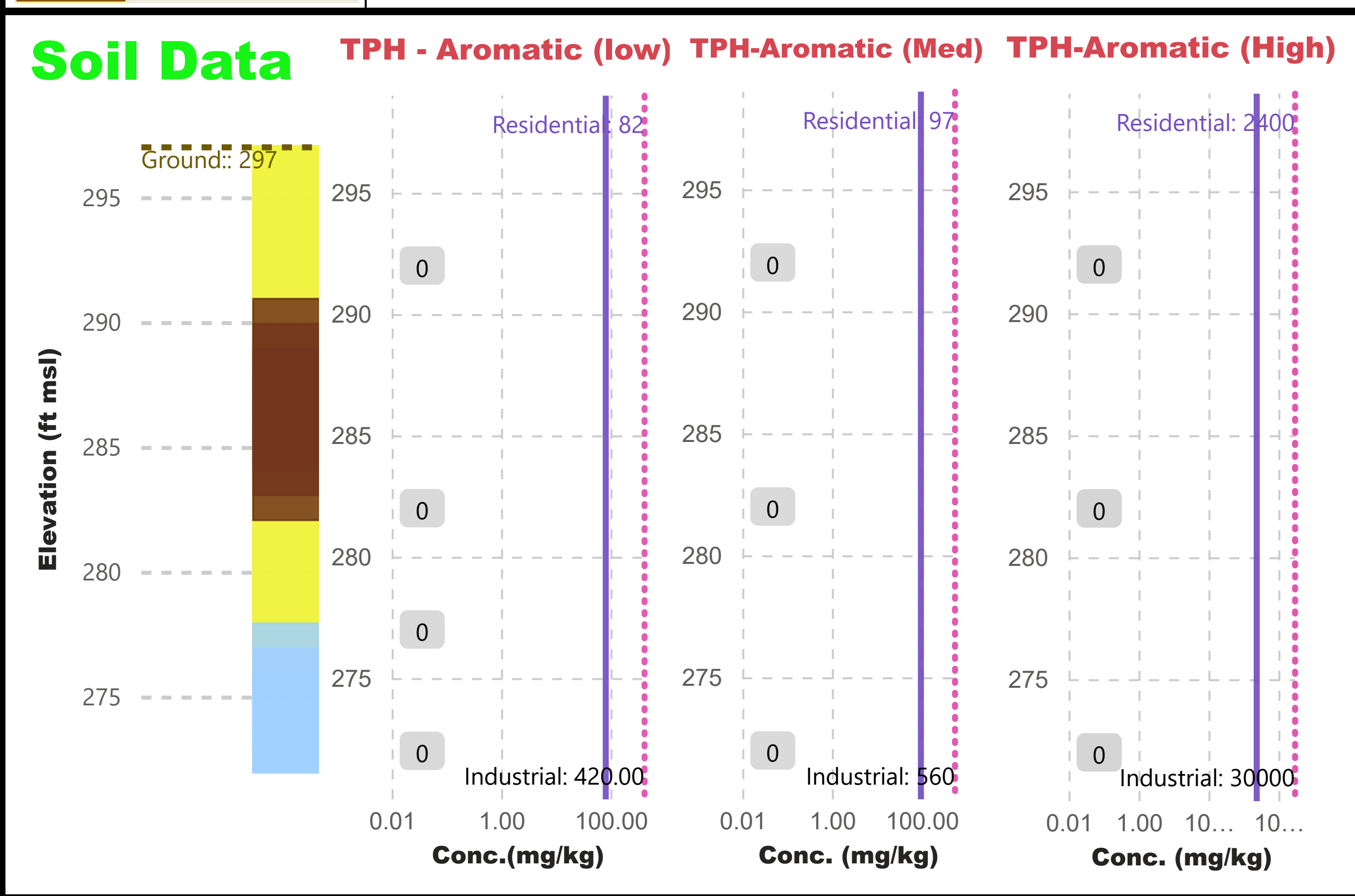
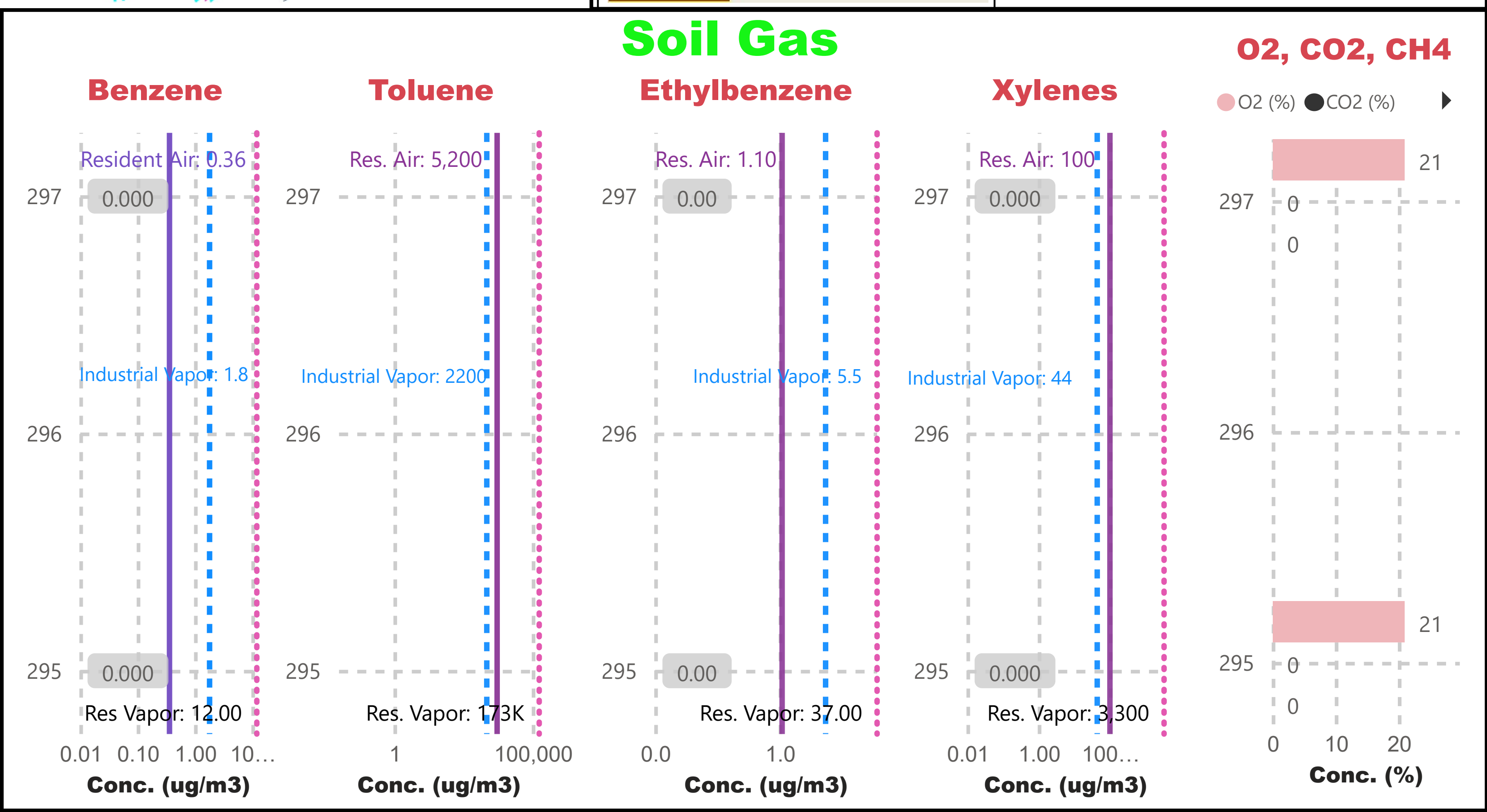
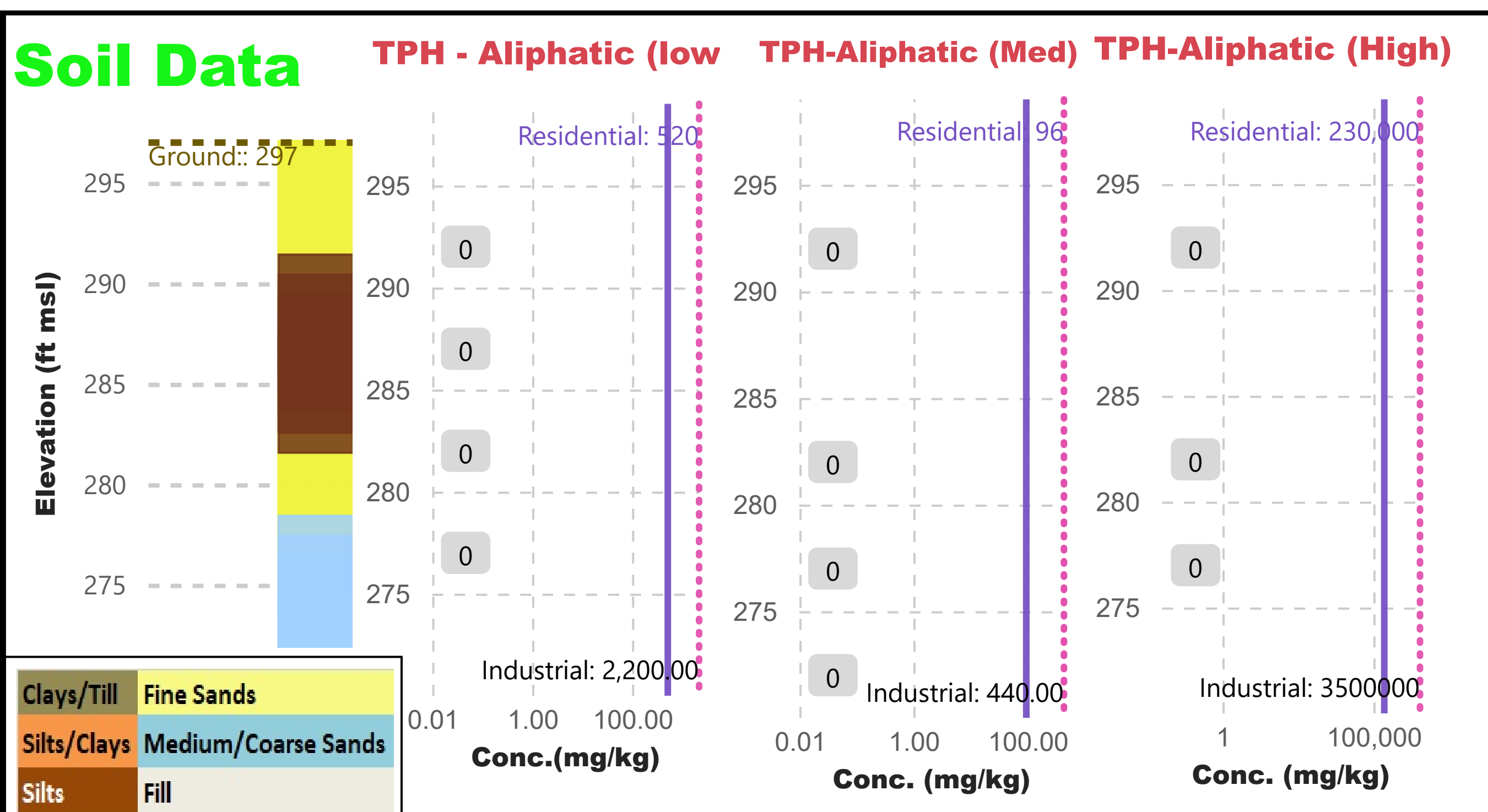
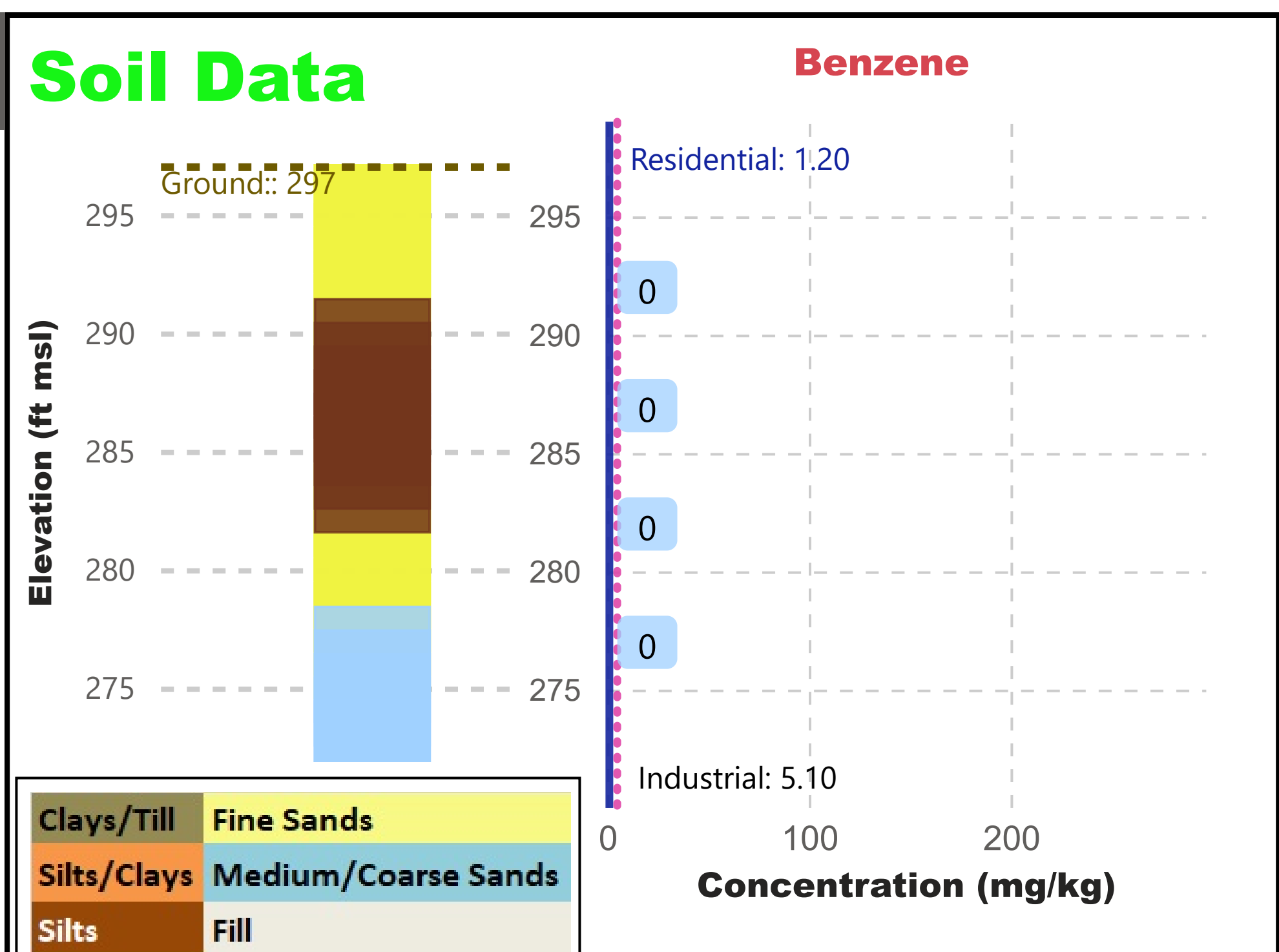
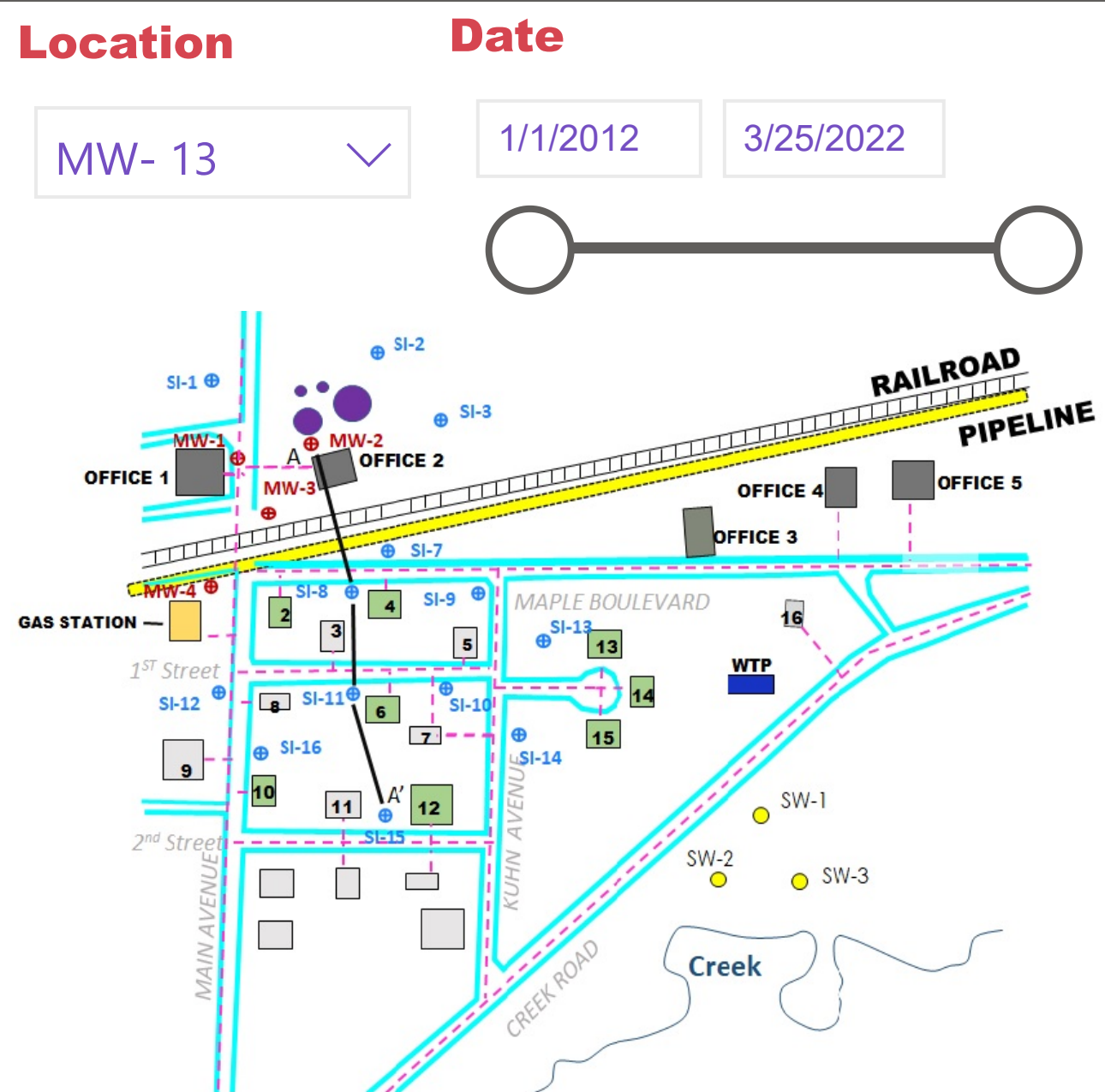
Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group 13 Transport Fractions	EPA 6 Toxicity Fractions
EC5-7	EC5-6	EC8-10	EC8-16	EC6-9
EC8-10	EC8-10	EC10-12	EC8-16	EC9-22
EC12-16	EC12-16	EC12-16	EC16-21	EC22-35
EC16-21	EC16-21	EC16-21	EC16-35	EC22-35
EC21-35	EC21-35	EC21-35	EC16-35	EC22-35

Increasing Equivalent Carbon (EC) Number →

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

SI-12

Hydrograph & Dissolved Summary



MW-13 Soil and Soil Gas Summary

Clays/Till	Fine Sands
Silts/Clays	Medium/Coarse Sands
Silts	Fill

Molecular Structure

EC5-6	EC6-8	EC9-10	EC10-12	EC12-16	EC16-21	EC21-35
EC5-7	EC8-9	EC11-12	EC13-14	EC15-16	EC17-21	EC22-35

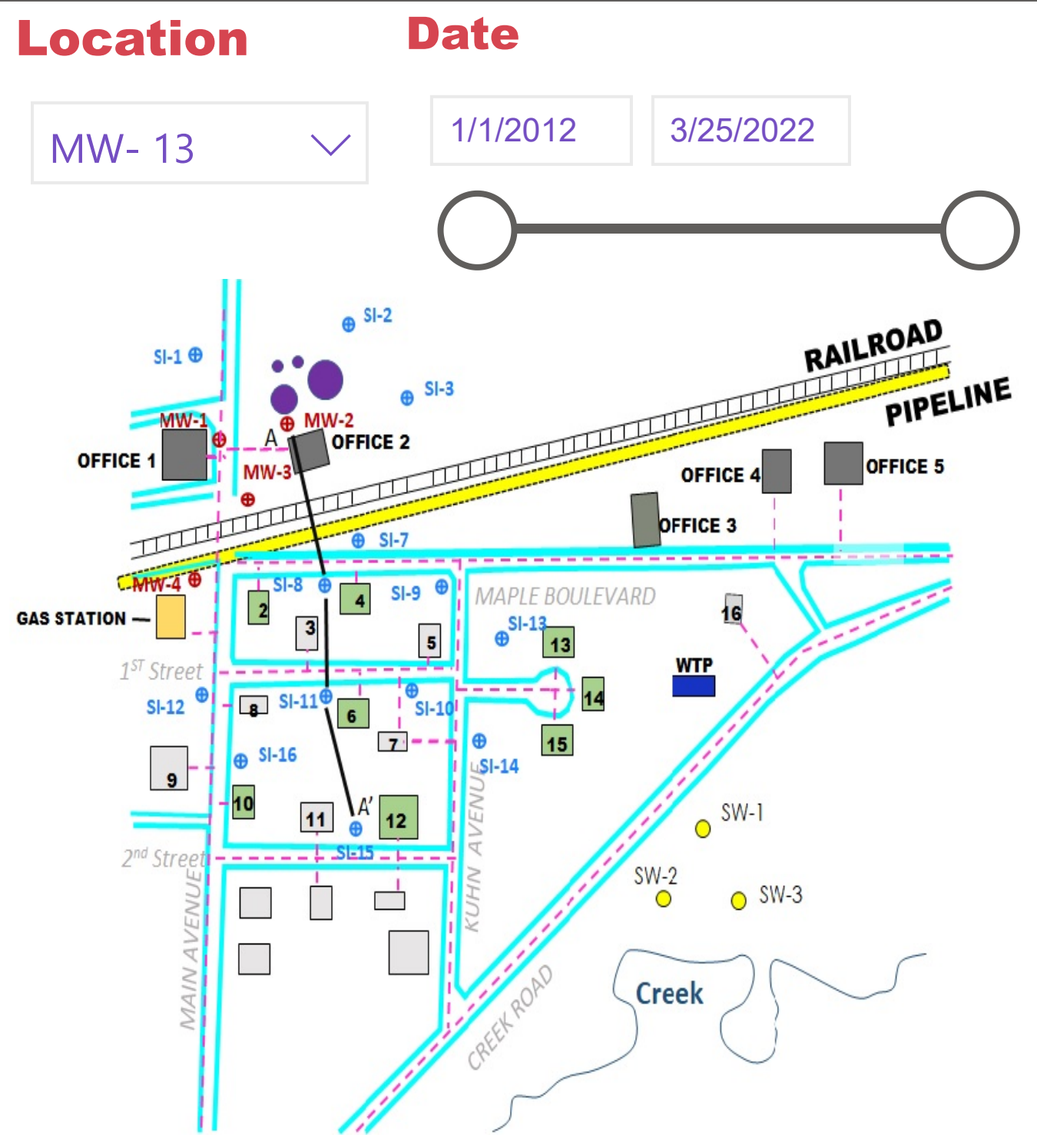
Increasing Equivalent Carbon (EC) Number

TPH Criteria Working Group 13 Transport Fractions

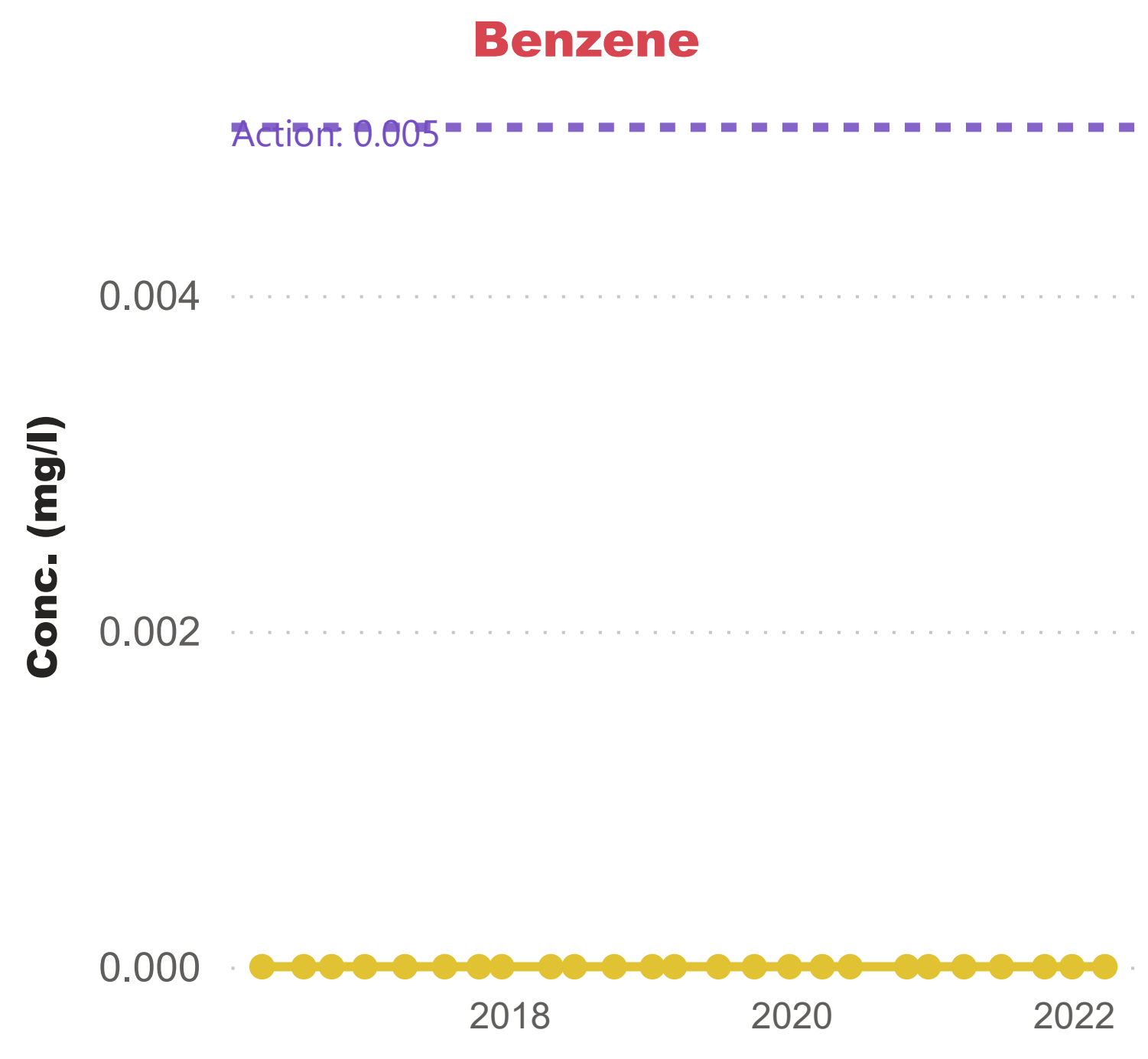
EC5-8	EC8-16	EC16-35
Low	Medium	High
EC6-9	EC9-22	EC22-35
Low	Medium	High

Increasing Equivalent Carbon (EC) Number

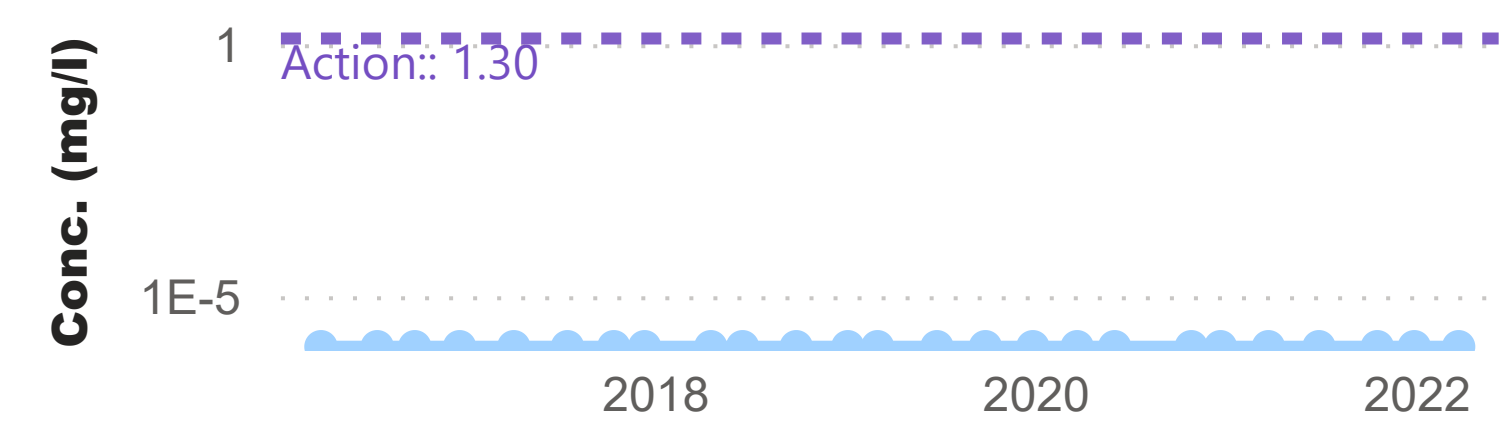
EPA 6 Toxicity Fractions



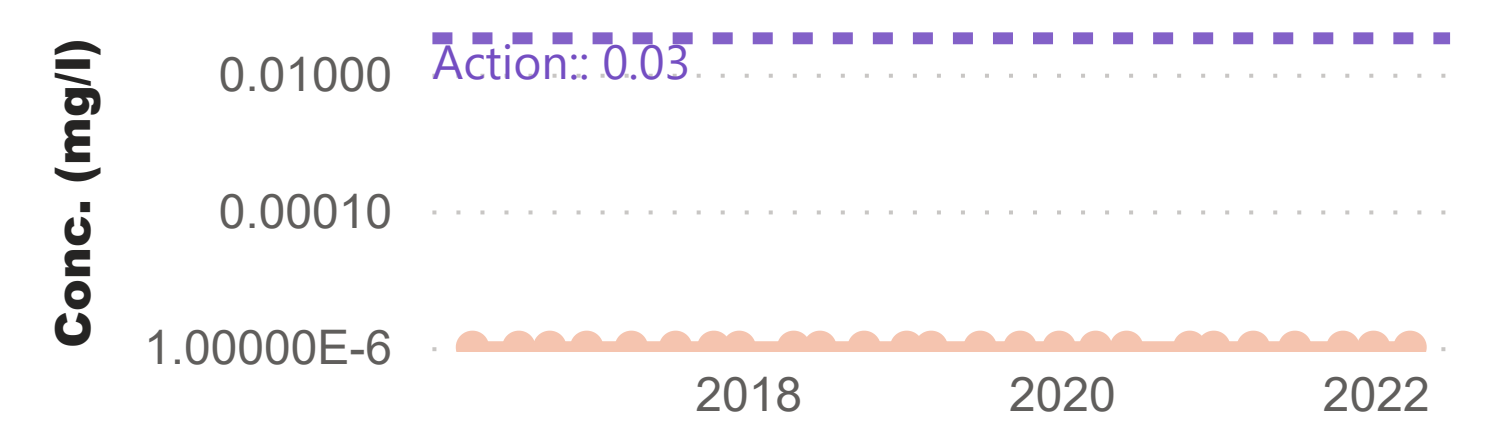
Dissolved Phase



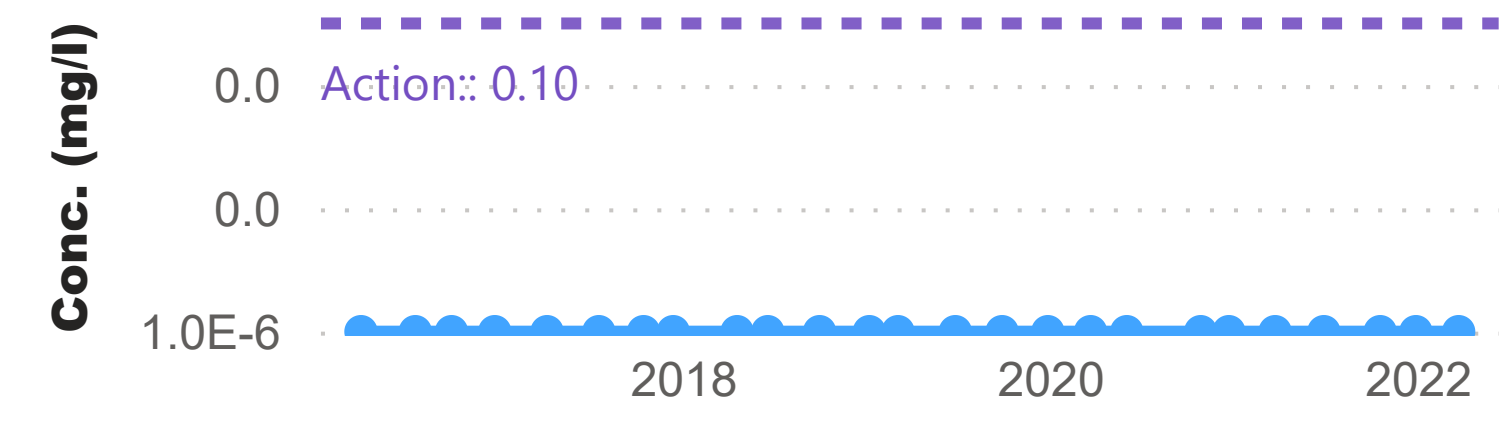
TPH-Aliphatic (Low)



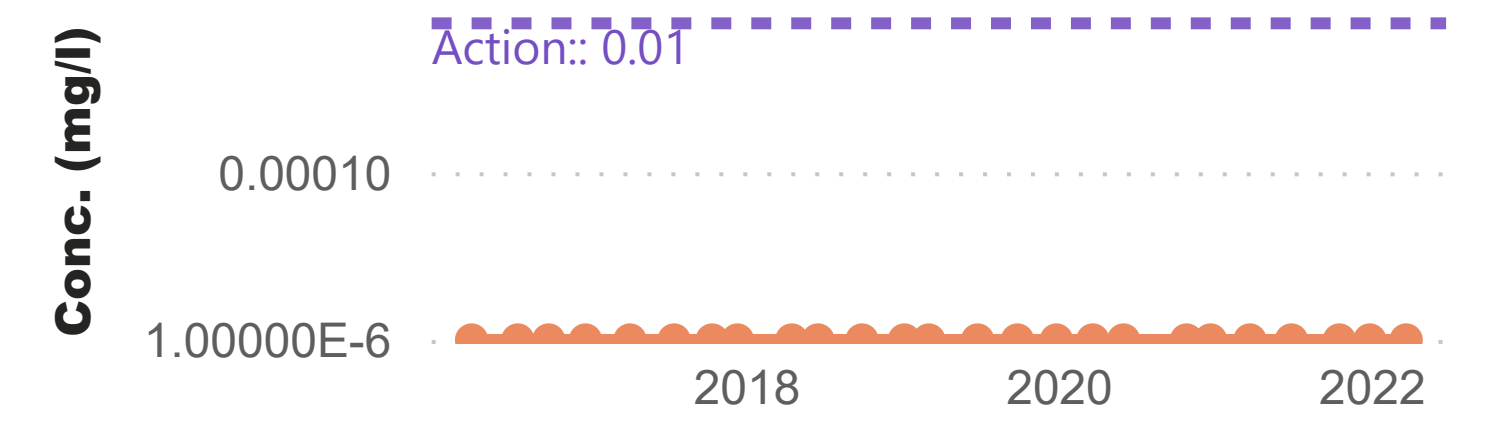
TPH-Aromatic (Low)



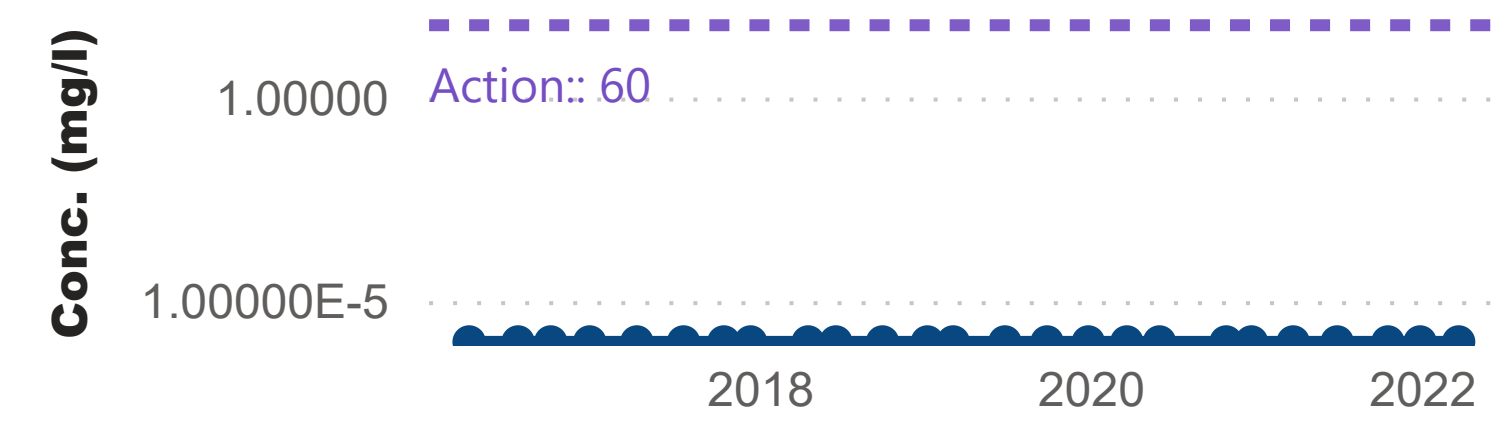
TPH-Aliphatic (Medium)



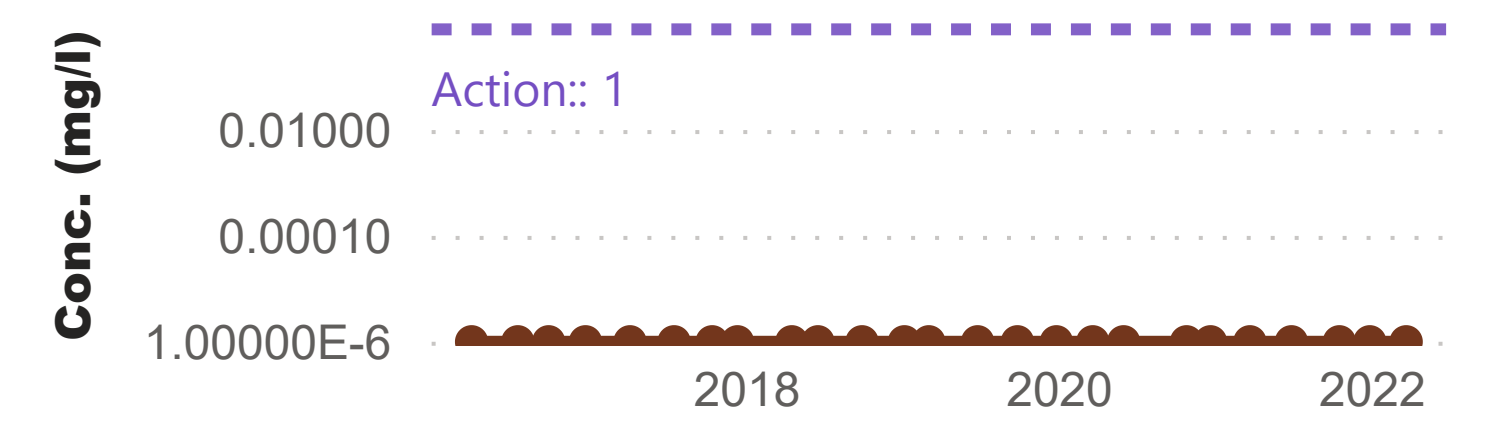
TPH-Aromatic (Medium)



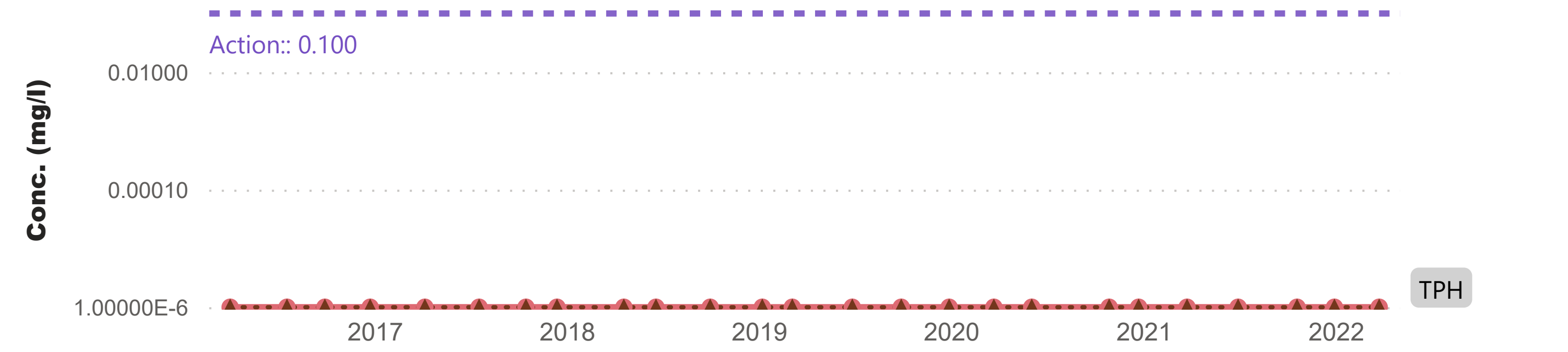
TPH-Aliphatic (High)



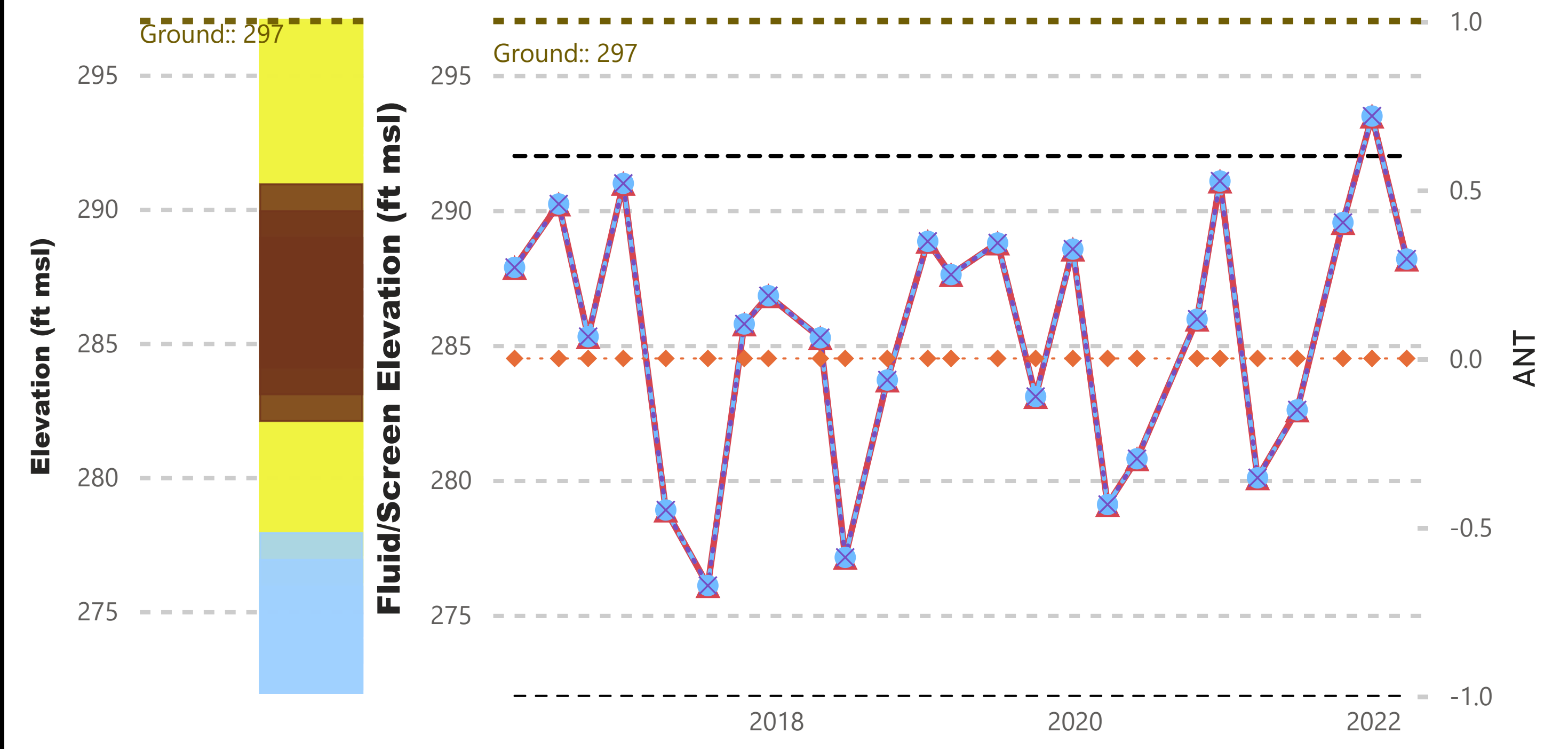
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph

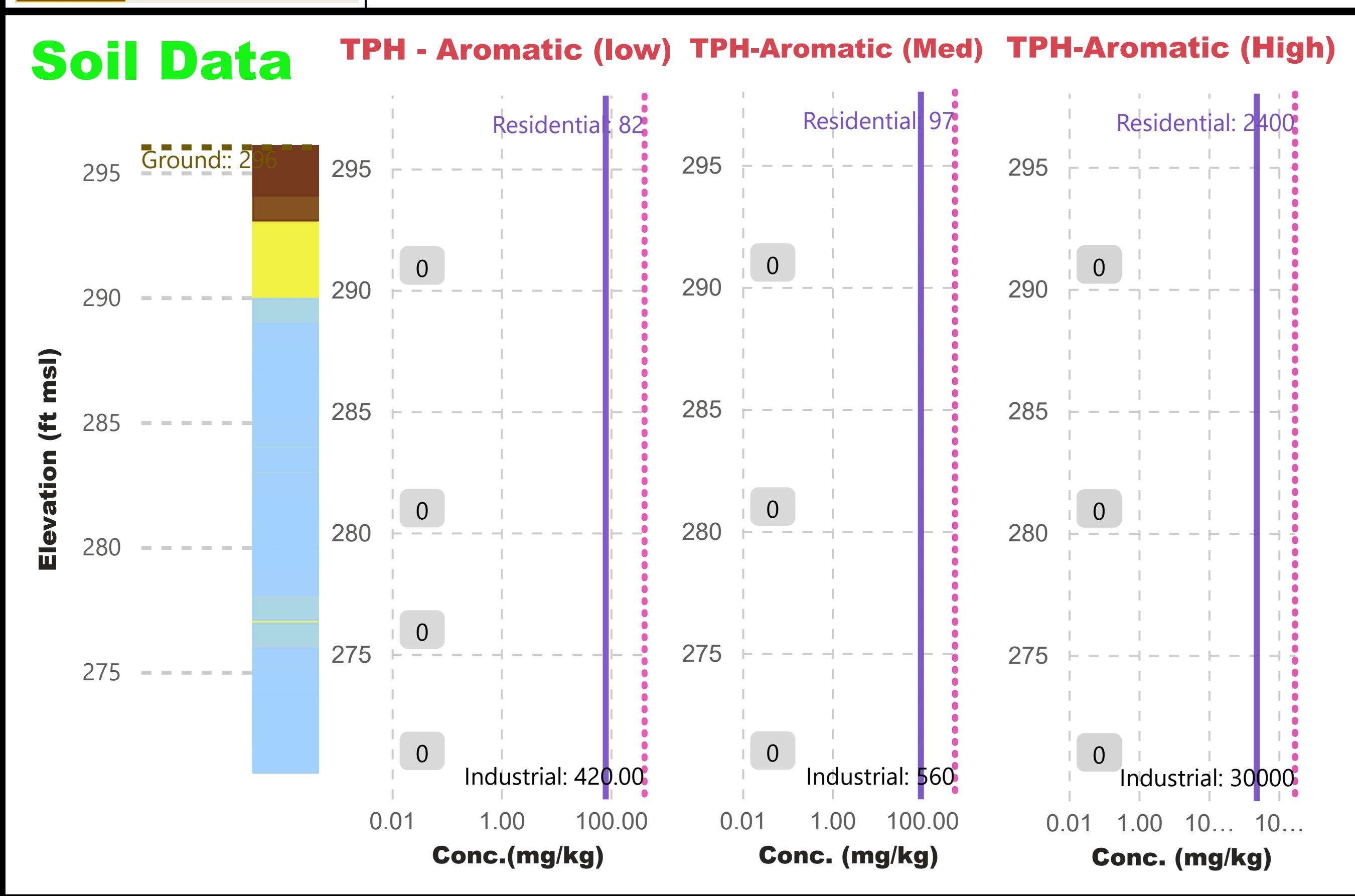
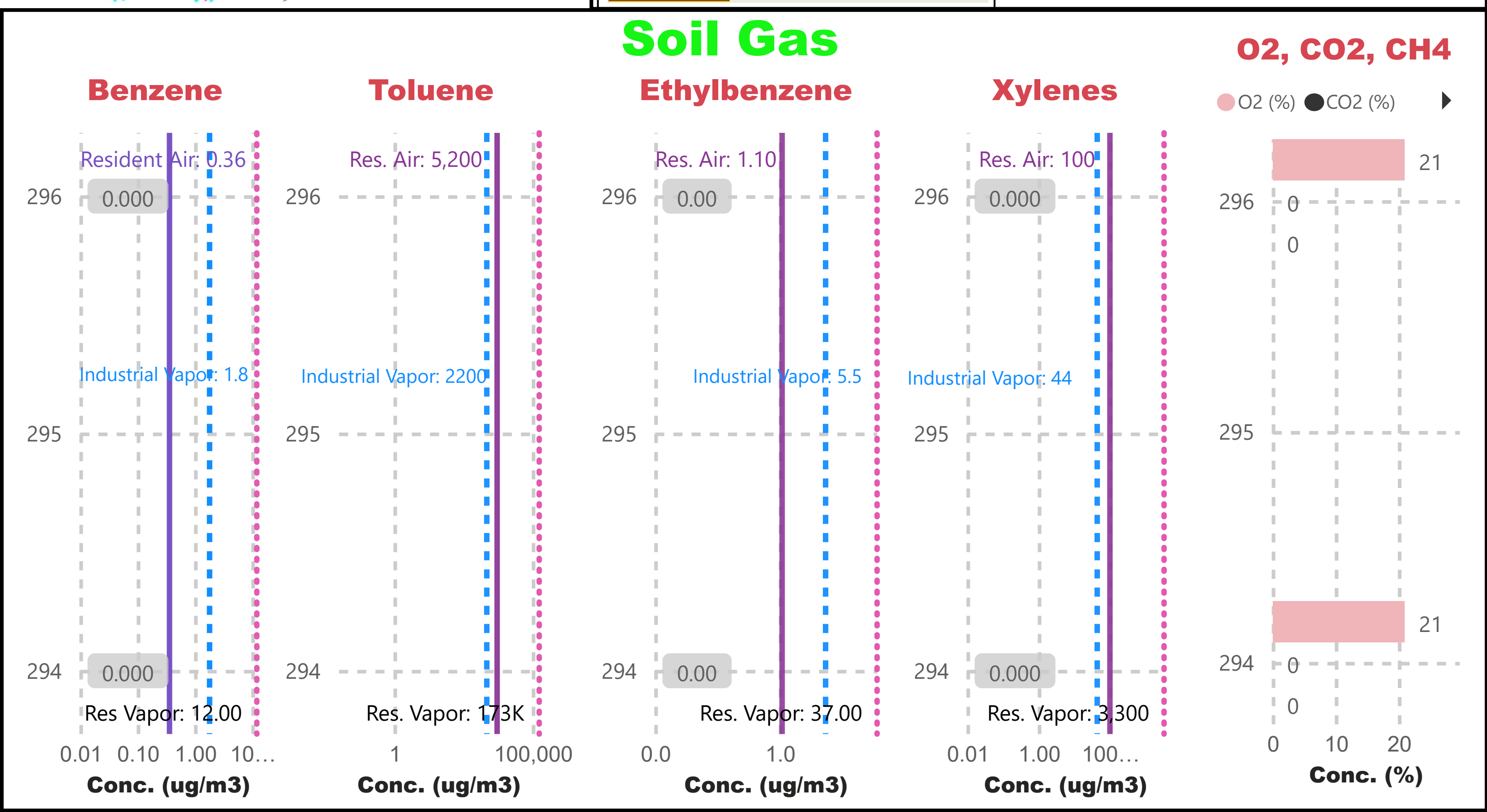
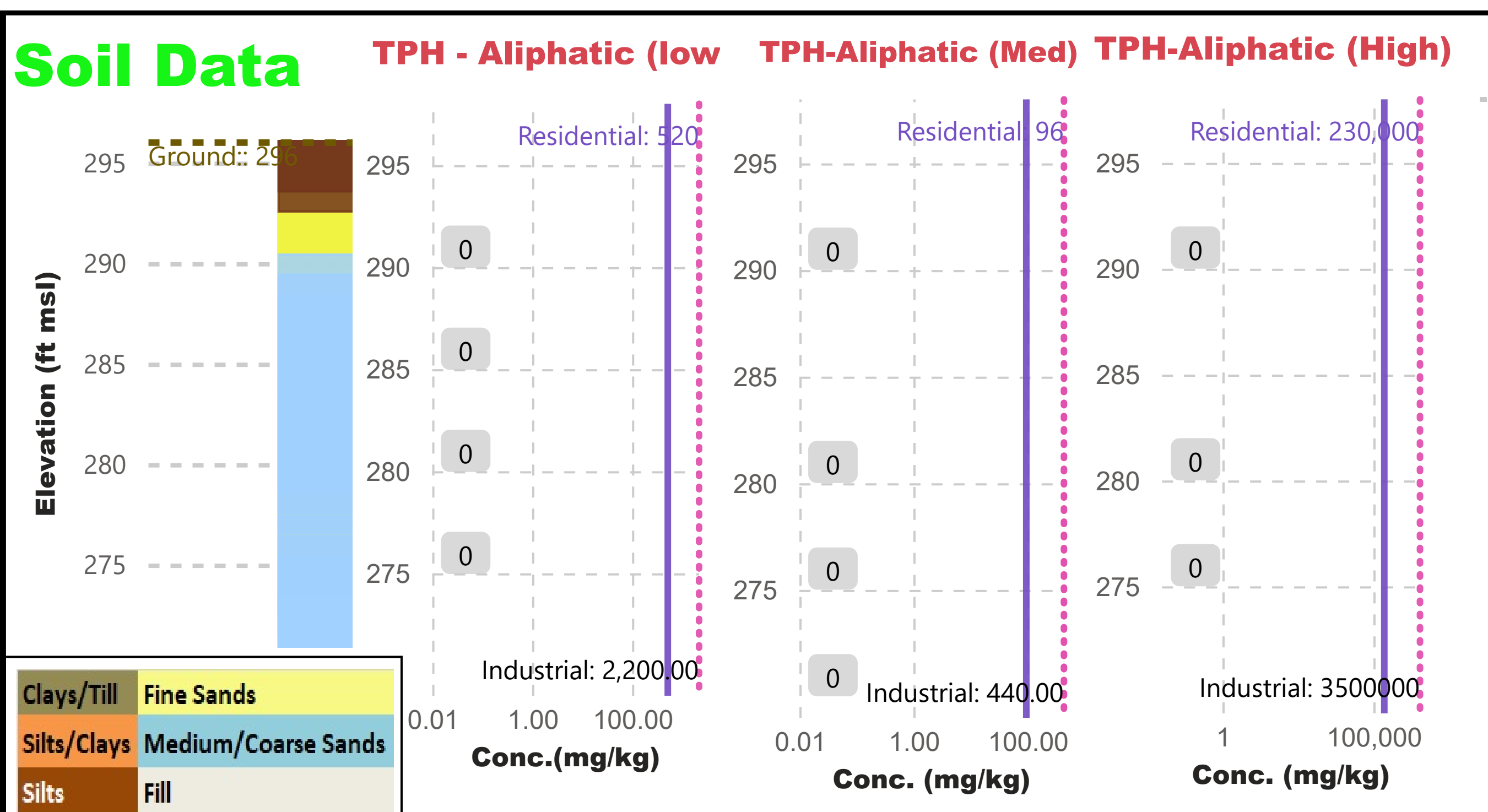
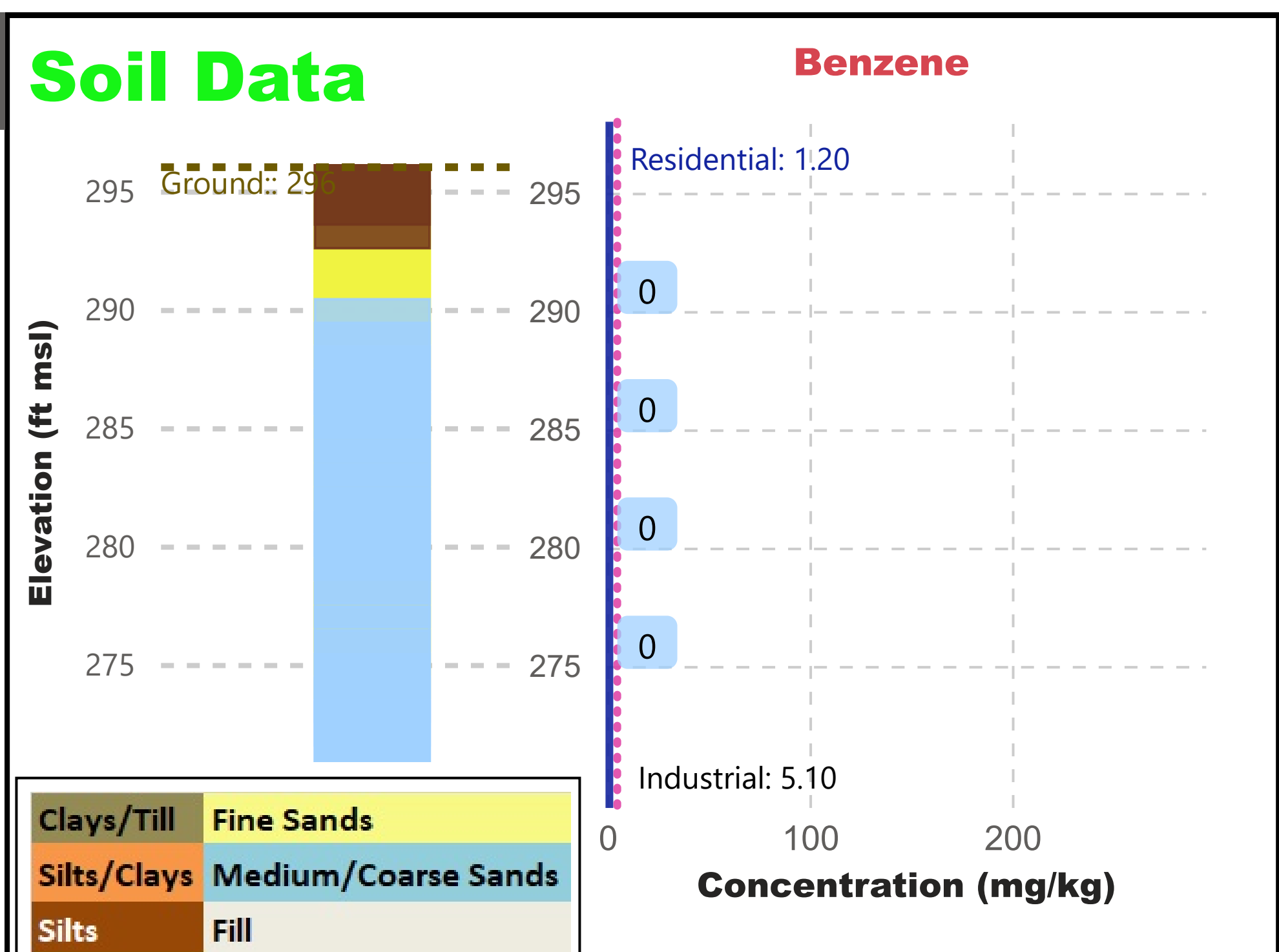


The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	ECS-6	EC8-10	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--	EC21-35	High
	ECS-7	EC8-10			
Aromatic	EC9-11	EC12-16	EC21-35	EC21-35	High
	EC9-11	EC12-16			
Aliphatic	EC8-10	EC12-16	EC9-22	EC22-35	High
	EC8-10	EC12-16			
Aromatic	EC8-10	EC12-16	EC9-22	EC22-35	High
	EC8-10	EC12-16			

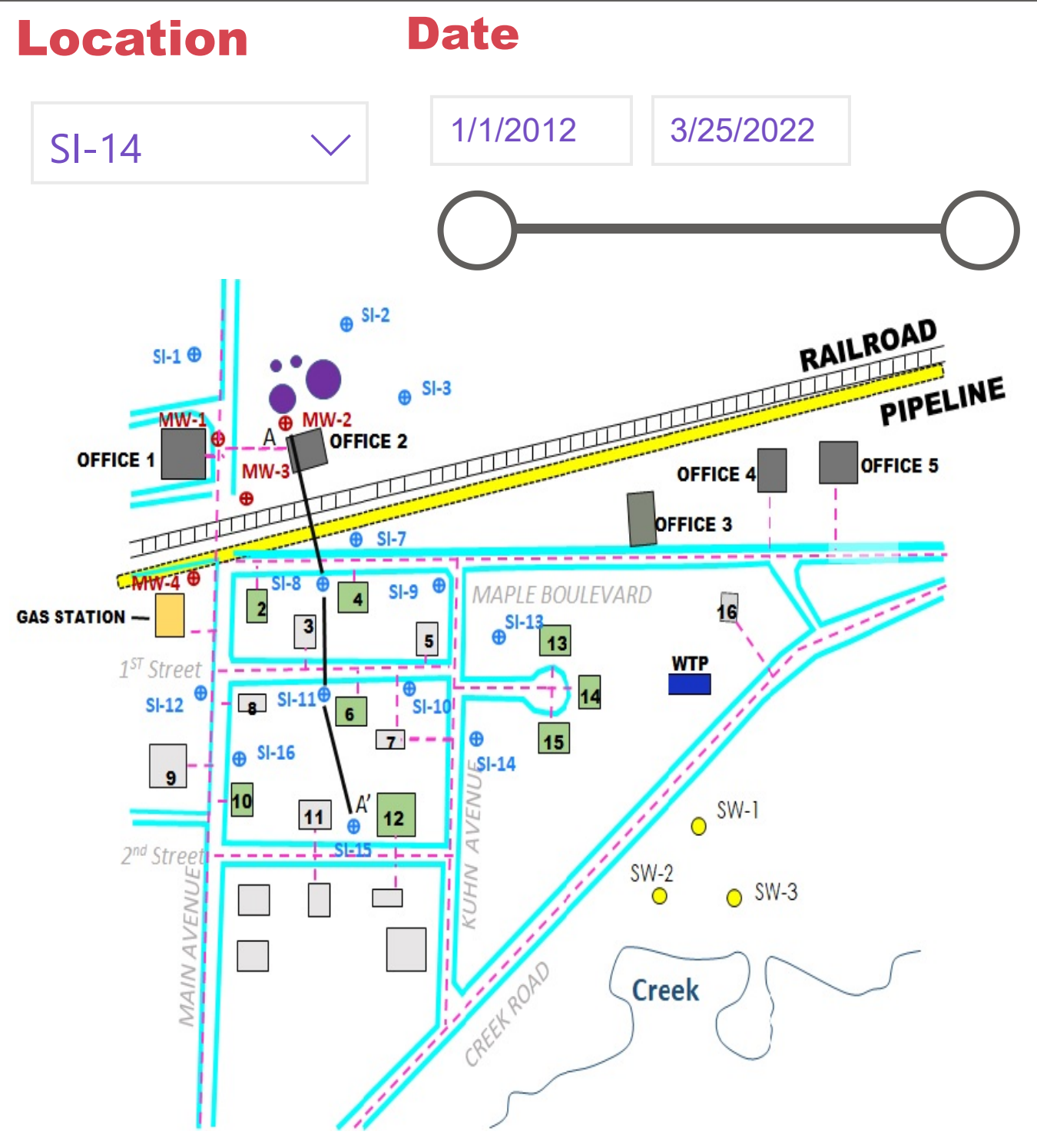
Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

MW- 13 Hydrograph & Dissolved Summary

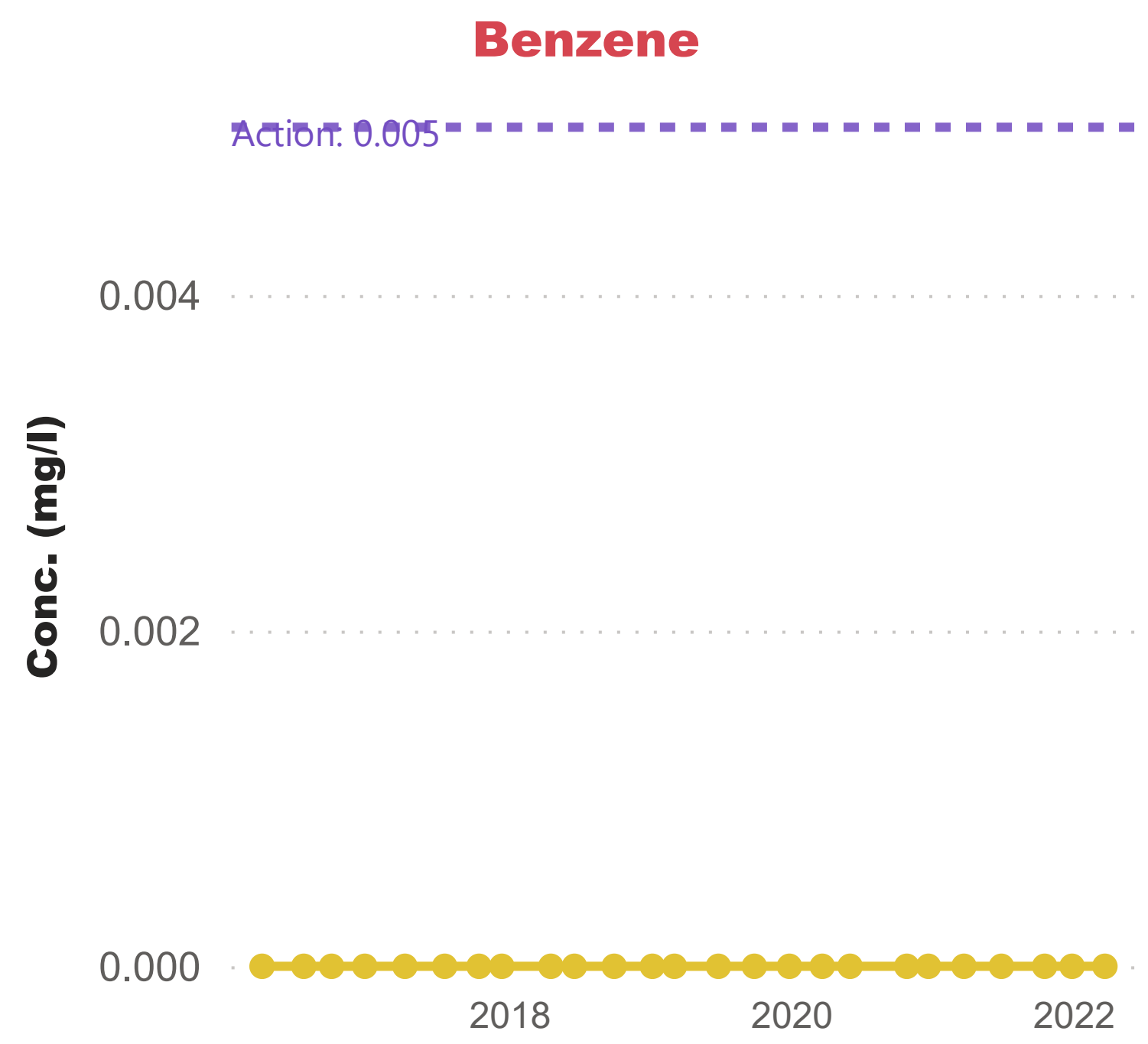


SI-14 Soil and Soil Gas Summary

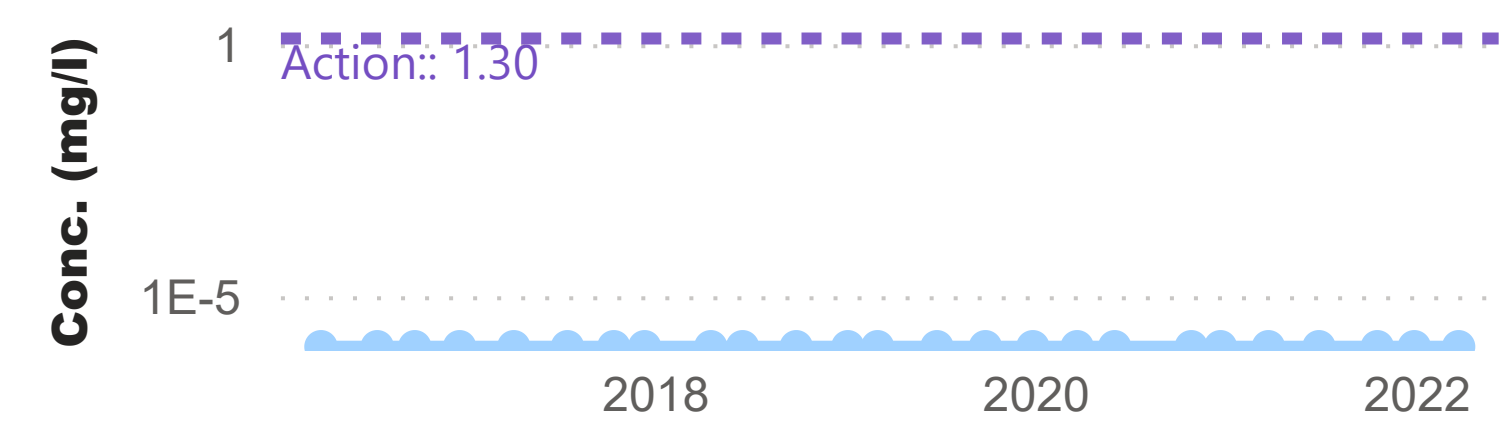
Clays/Till	Fine Sands	<table border="1"> <tr><td>EC5-6</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC7-8</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC9-11</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC12-14</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC15-17</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC18-19</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC20-22</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC23-25</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC26-28</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC29-31</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> <tr><td>EC32-34</td><td>EC12-16</td><td>EC16-21</td><td>EC21-35</td></tr> </table>		EC5-6	EC12-16	EC16-21	EC21-35	EC7-8	EC12-16	EC16-21	EC21-35	EC9-11	EC12-16	EC16-21	EC21-35	EC12-14	EC12-16	EC16-21	EC21-35	EC15-17	EC12-16	EC16-21	EC21-35	EC18-19	EC12-16	EC16-21	EC21-35	EC20-22	EC12-16	EC16-21	EC21-35	EC23-25	EC12-16	EC16-21	EC21-35	EC26-28	EC12-16	EC16-21	EC21-35	EC29-31	EC12-16	EC16-21	EC21-35	EC32-34	EC12-16	EC16-21	EC21-35	TPH Criteria Working Group 13 Transport Fractions	<table border="1"> <tr><td>EC5-8</td><td>EC8-16</td><td>EC16-35</td></tr> <tr><td>Low</td><td>Medium</td><td>High</td></tr> <tr><td>EC6-9</td><td>EC9-22</td><td>EC22-35</td></tr> <tr><td>Low</td><td>Medium</td><td>High</td></tr> </table>	EC5-8	EC8-16	EC16-35	Low	Medium	High	EC6-9	EC9-22	EC22-35	Low	Medium	High	EPA 6 Toxicity Fractions
EC5-6	EC12-16	EC16-21	EC21-35																																																											
EC7-8	EC12-16	EC16-21	EC21-35																																																											
EC9-11	EC12-16	EC16-21	EC21-35																																																											
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EC32-34	EC12-16	EC16-21	EC21-35																																																											
EC5-8	EC8-16	EC16-35																																																												
Low	Medium	High																																																												
EC6-9	EC9-22	EC22-35																																																												
Low	Medium	High																																																												



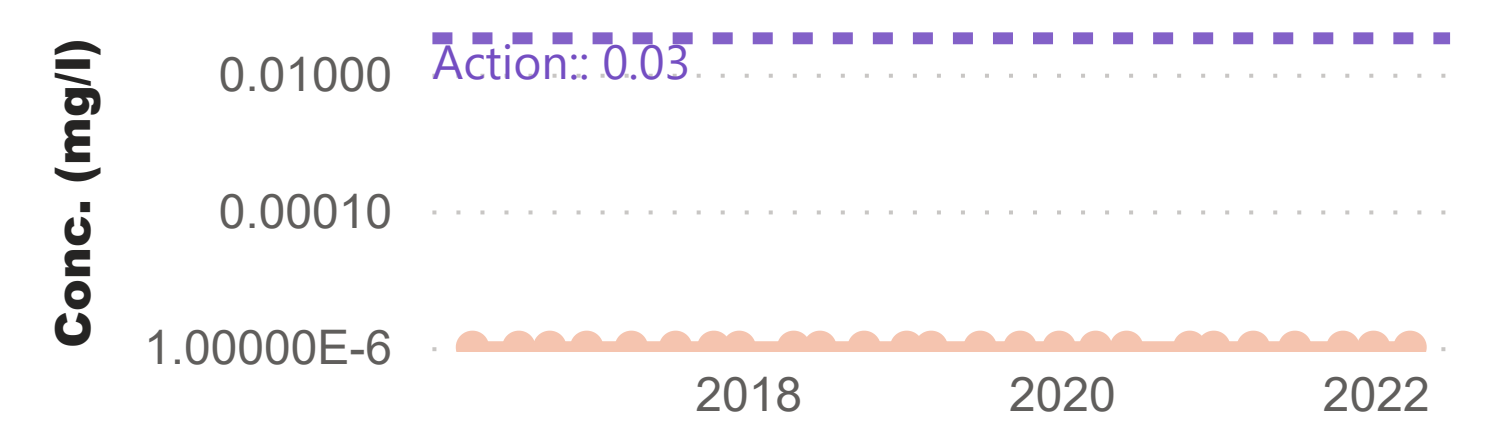
Dissolved Phase



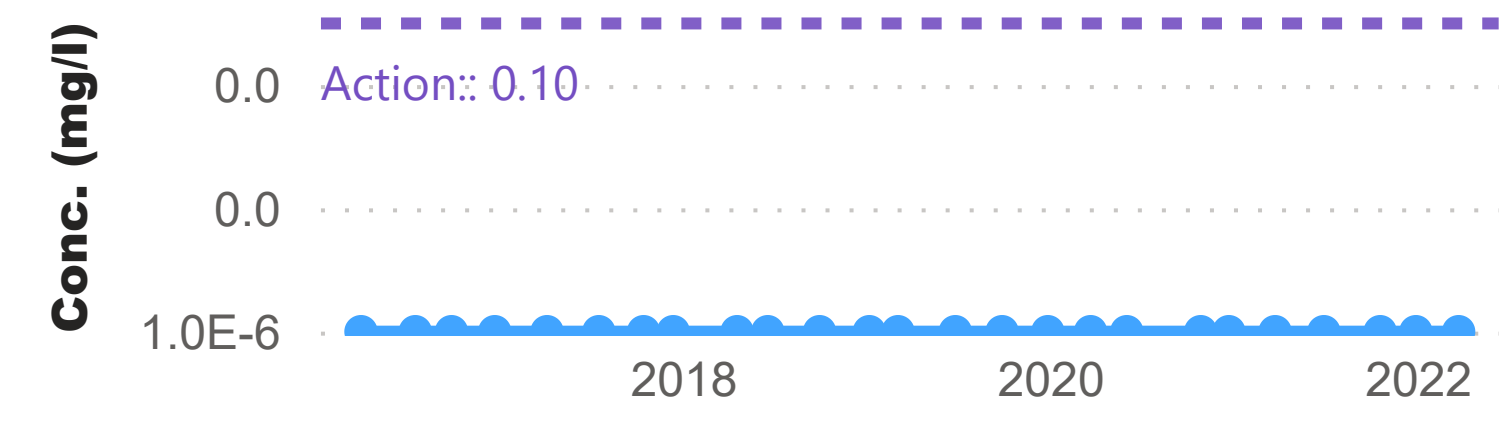
TPH-Aliphatic (Low)



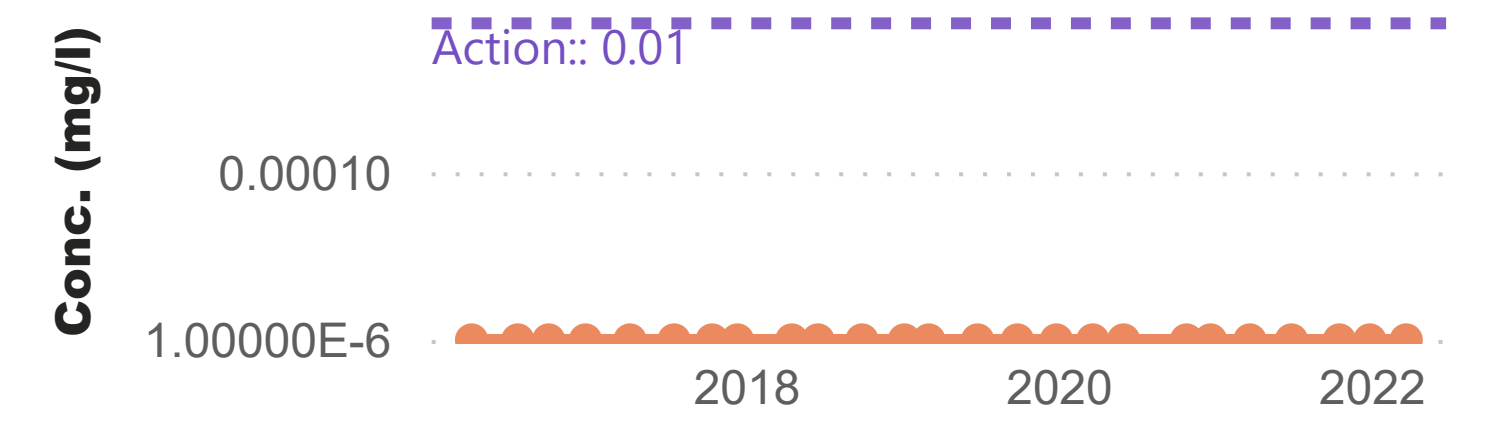
TPH-Aromatic (Low)



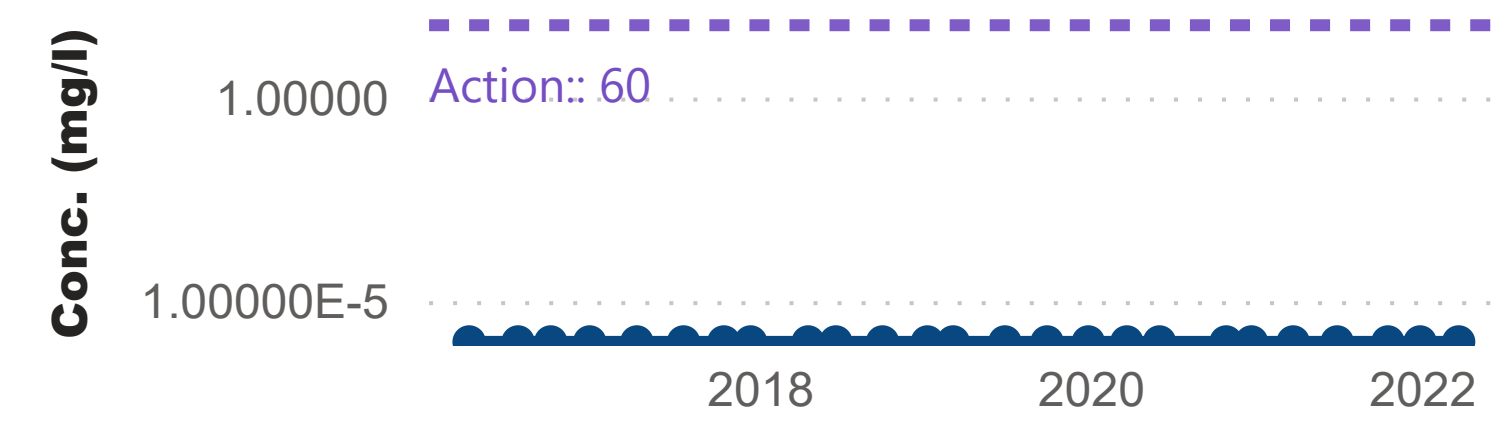
TPH-Aliphatic (Medium)



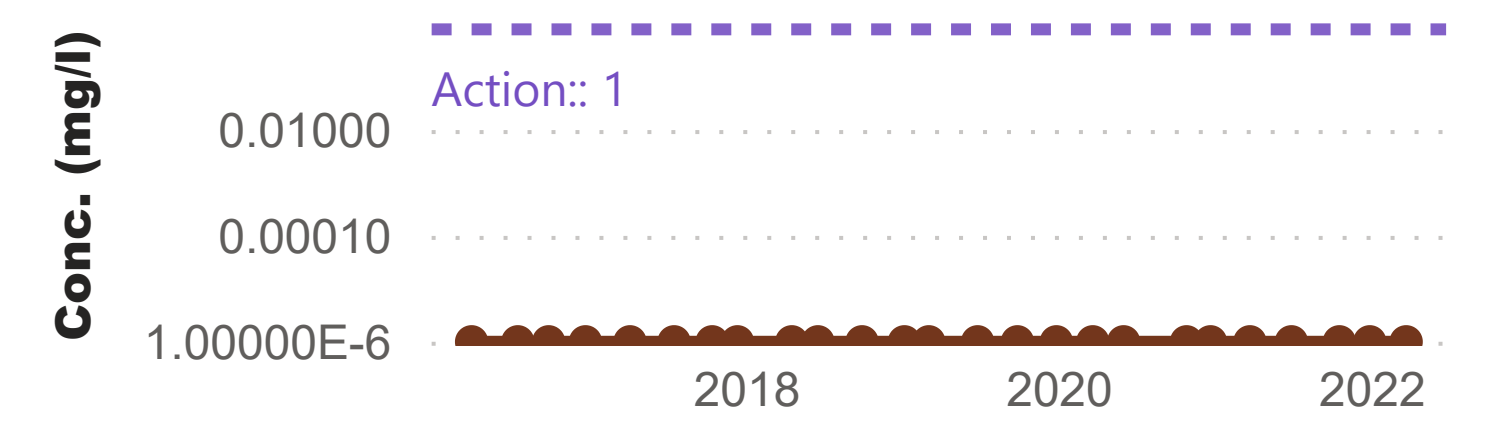
TPH-Aromatic (Medium)



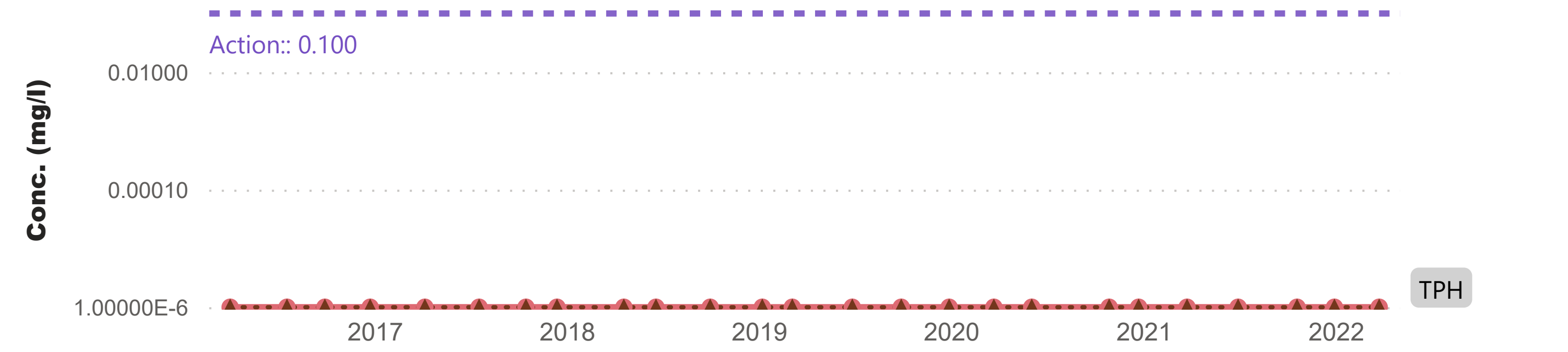
TPH-Aliphatic (High)



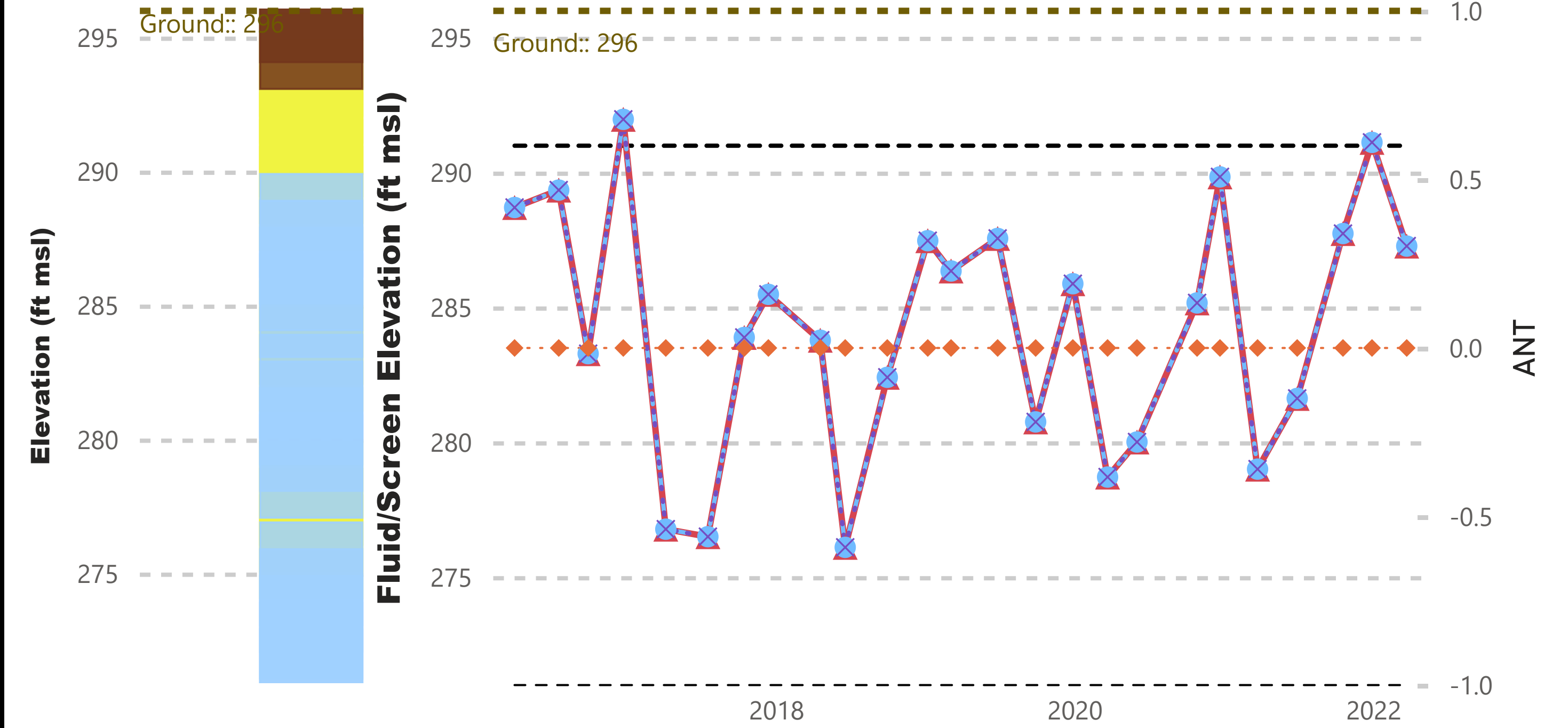
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



Clays/Till	Fine Sands
Silts/Clays	Medium/Coarse Sands
Silts	Fill

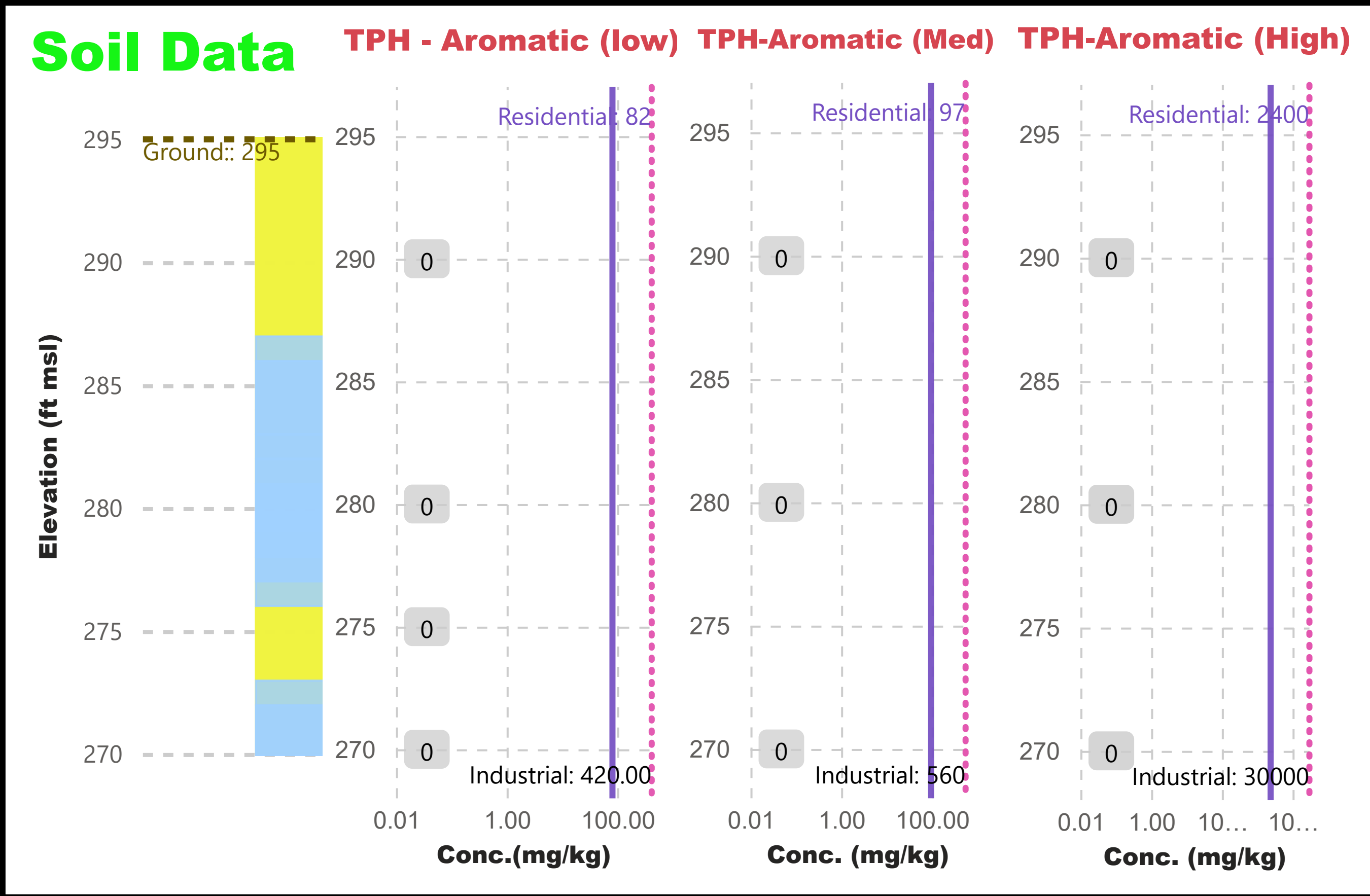
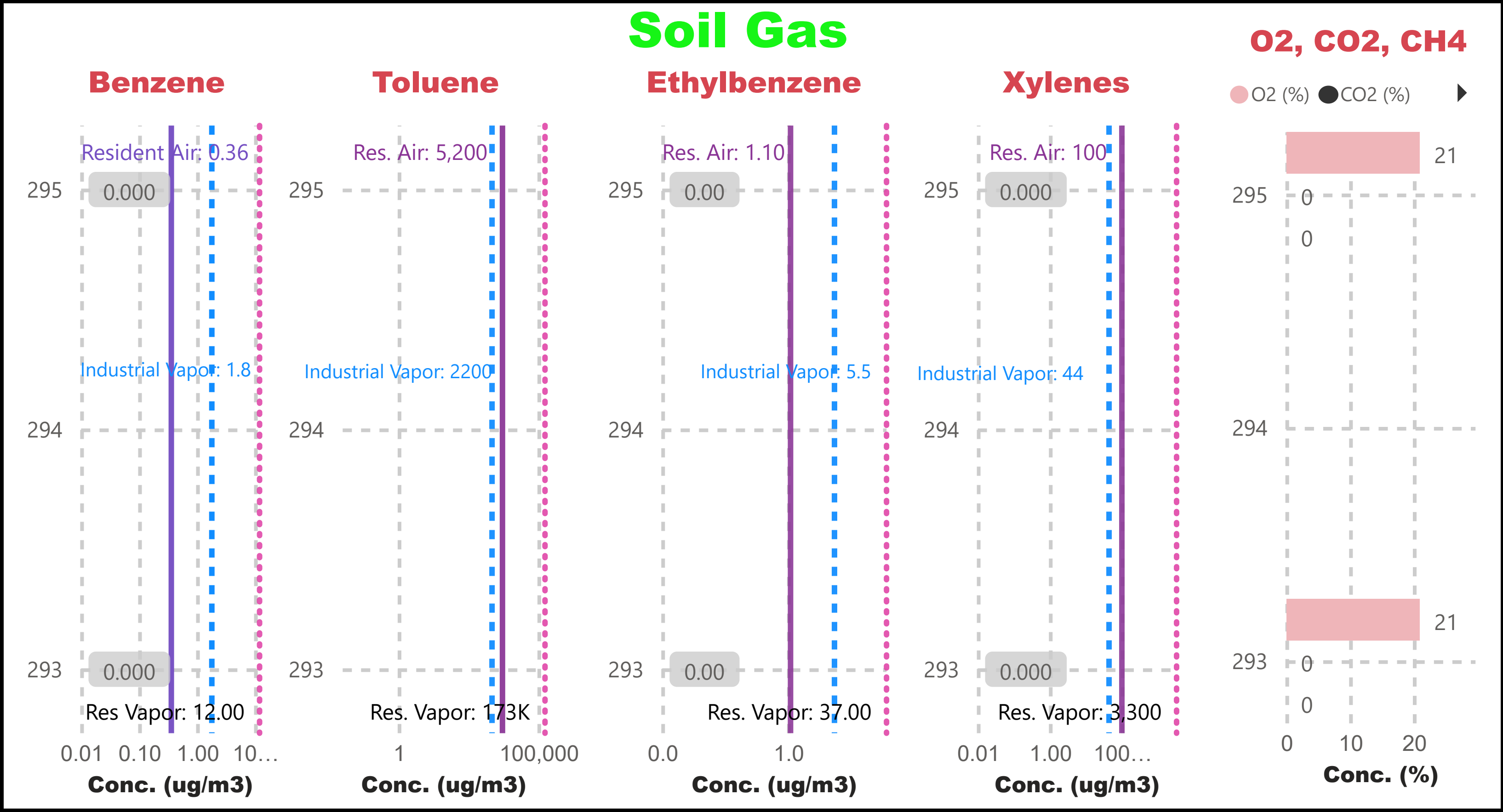
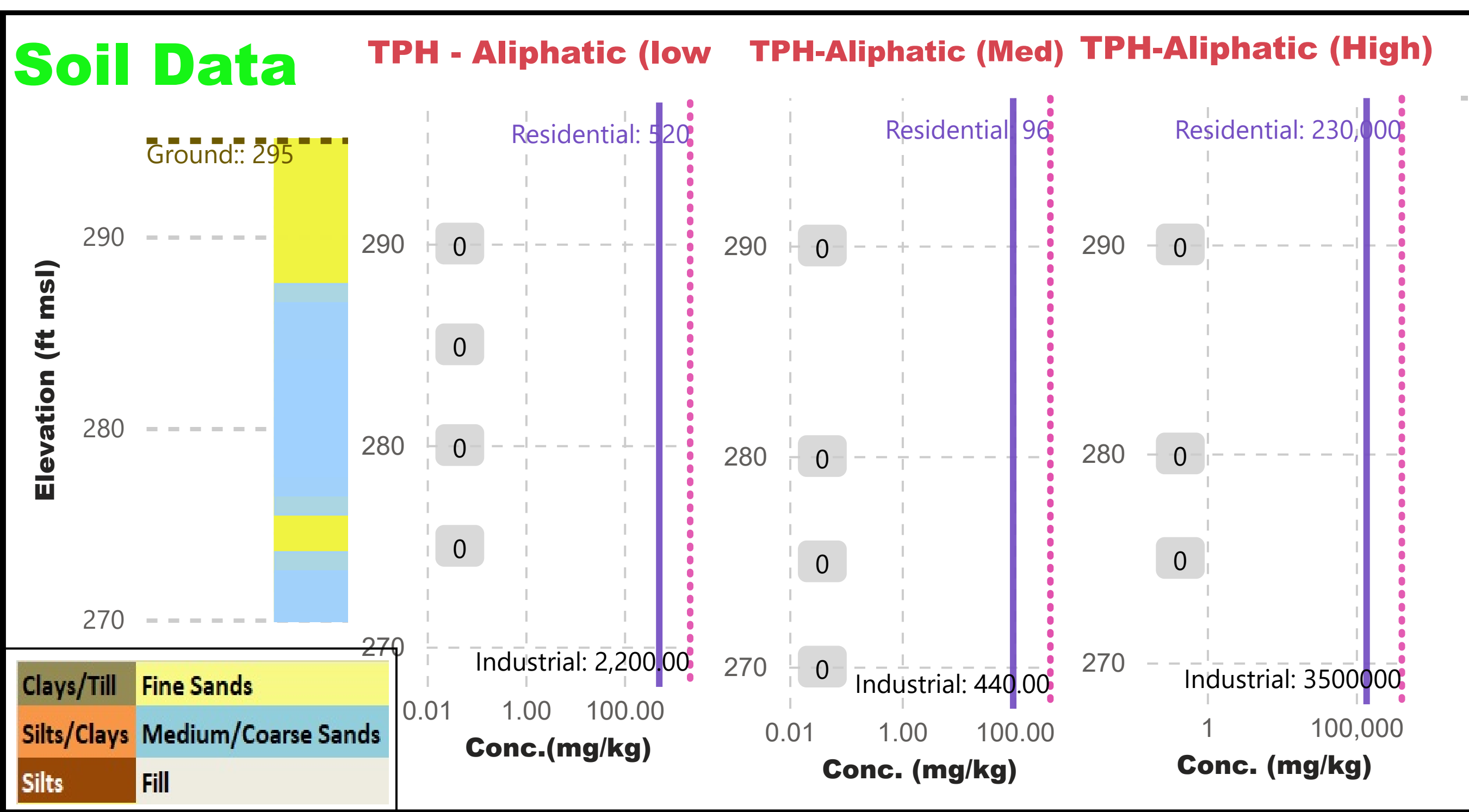
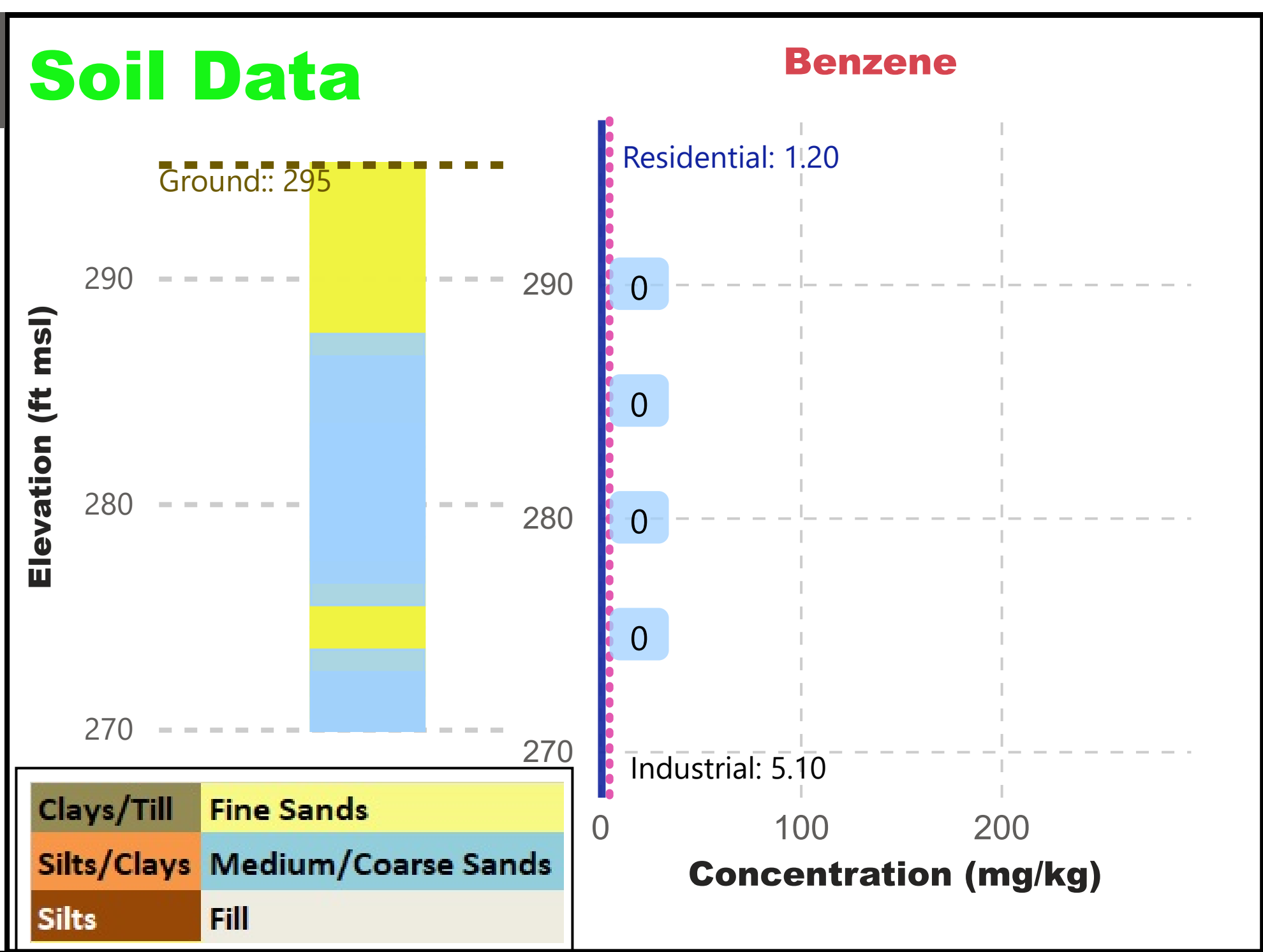
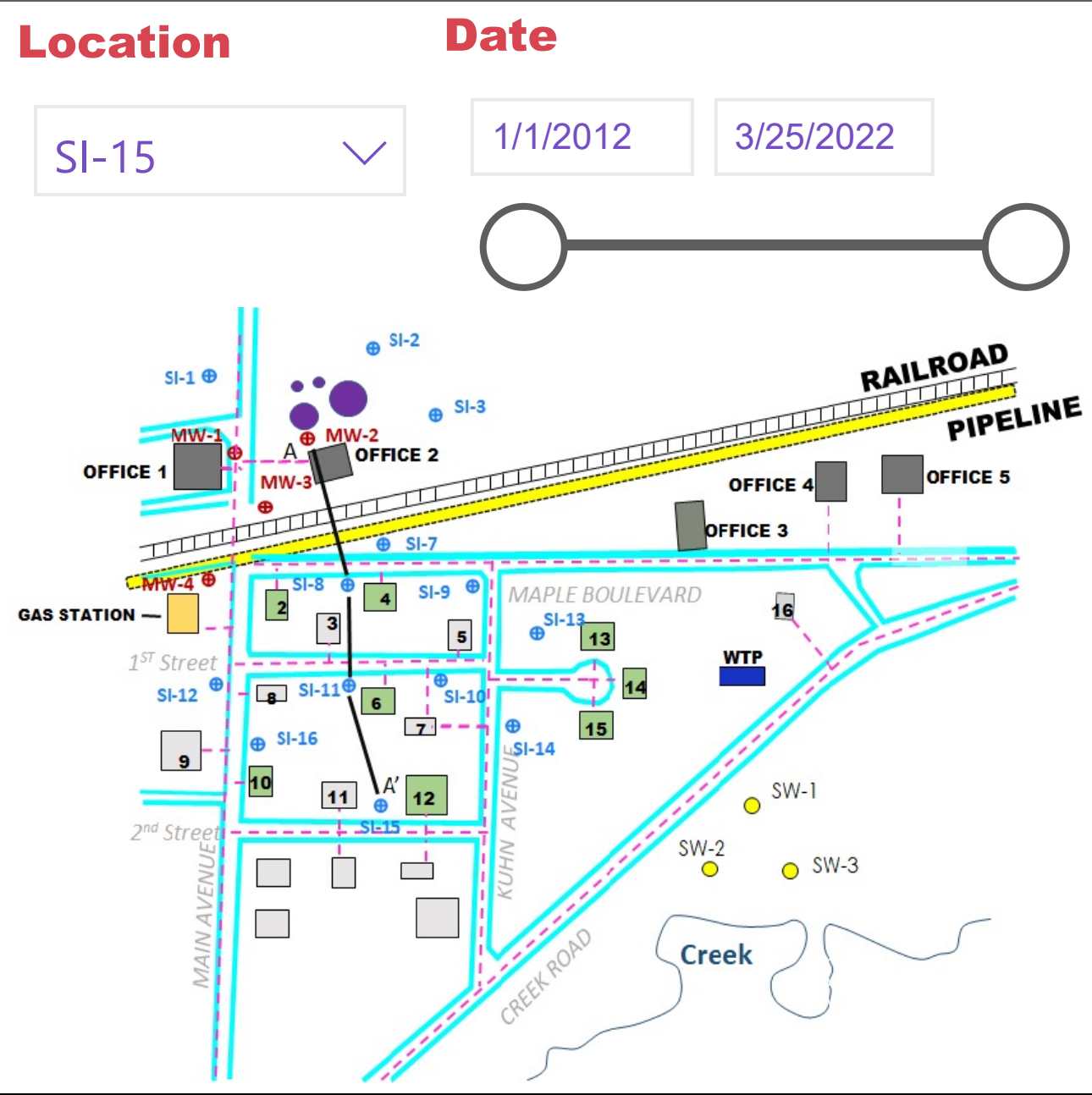
--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
● NAPL/Water Interface NWI		

The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group 13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	ECS-6	EC8-16	EC16-35 High	High
	ECS-7	EC9-22		
Aromatic	EC8-16	EC16-35	EC21-35 High	High
	EC9-22	EC22-35		

SI-14

Hydrograph & Dissolved Summary



SI-15 Soil and Soil Gas Summary

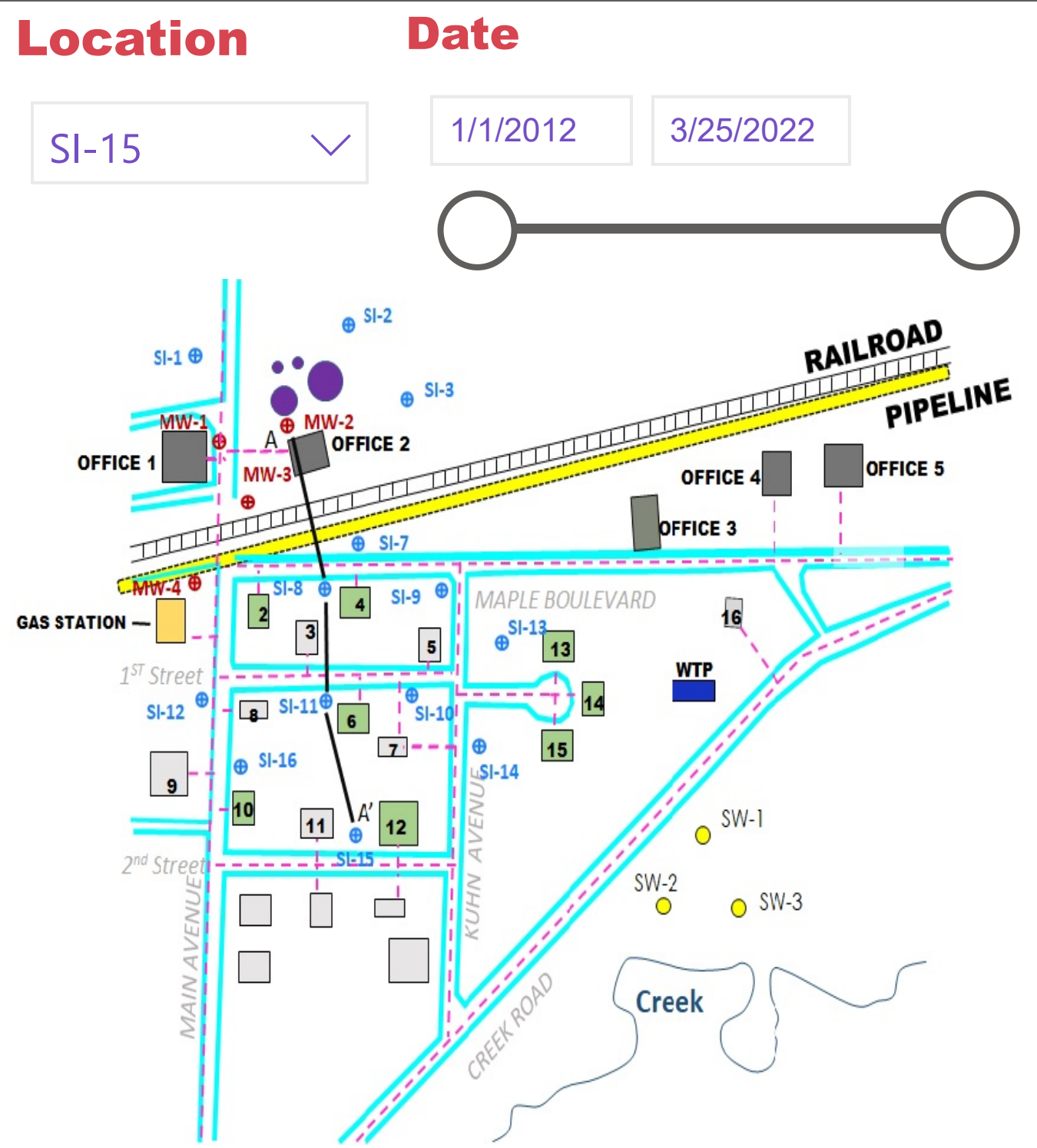
Clays/Till	Fine Sands
Silts/Clays	Medium/Coarse Sands
Silts	Fill

EC5-6	EC6-8	EC9-12	EC12-16	EC16-21	EC21-35
EC7-9	EC10-12	EC13-16	EC16-21	EC21-35	EC21-35

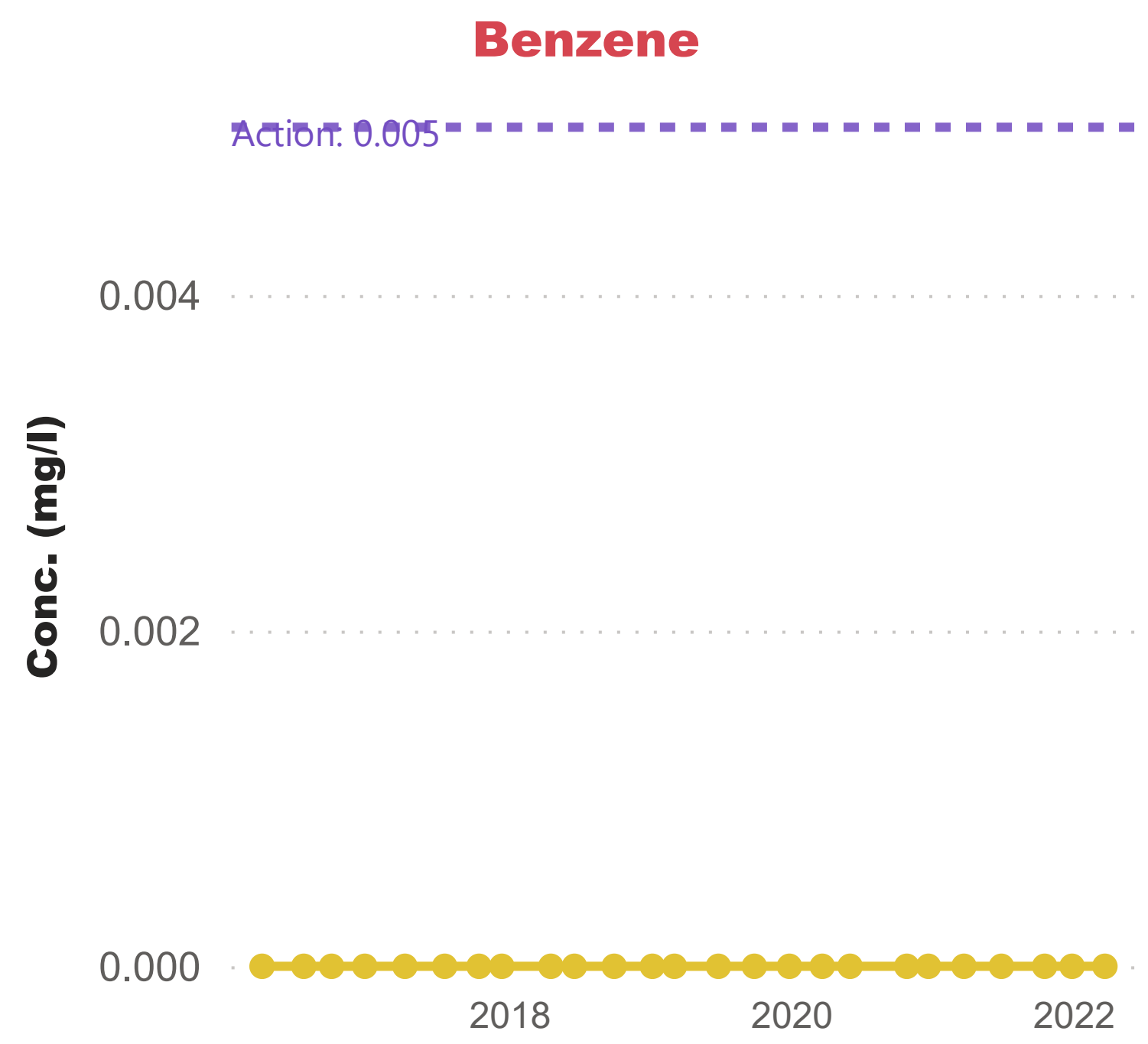
TPH Criteria Working Group 13 Transport Fractions

EC5-8	EC8-16	EC16-35
Low	Medium	High
EC6-9	EC9-22	EC22-35
Low	Medium	High

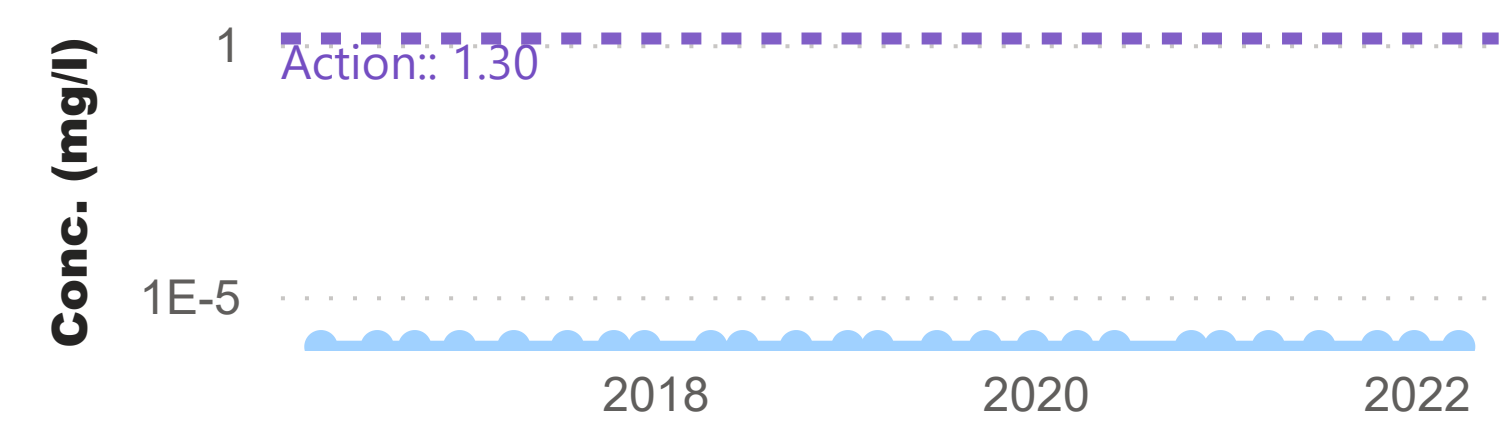
EPA 6 Toxicity Fractions



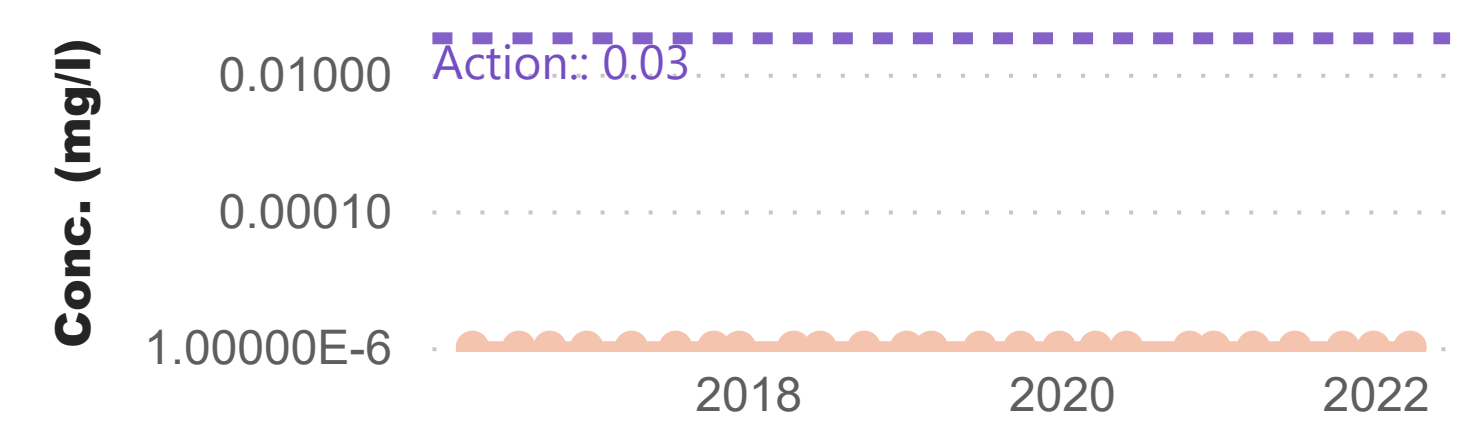
Dissolved Phase



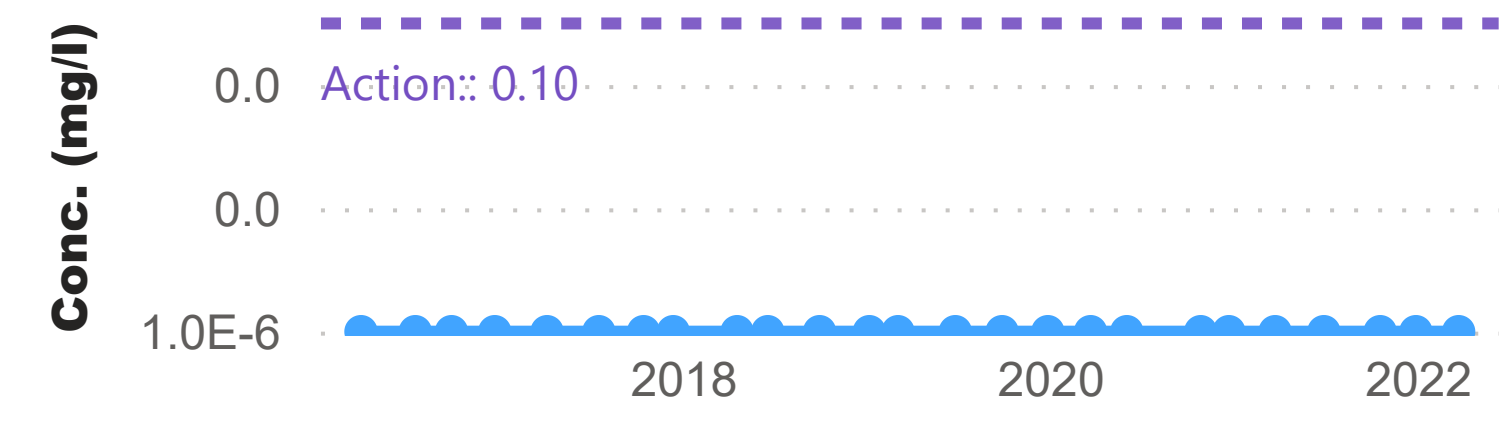
TPH-Aliphatic (Low)



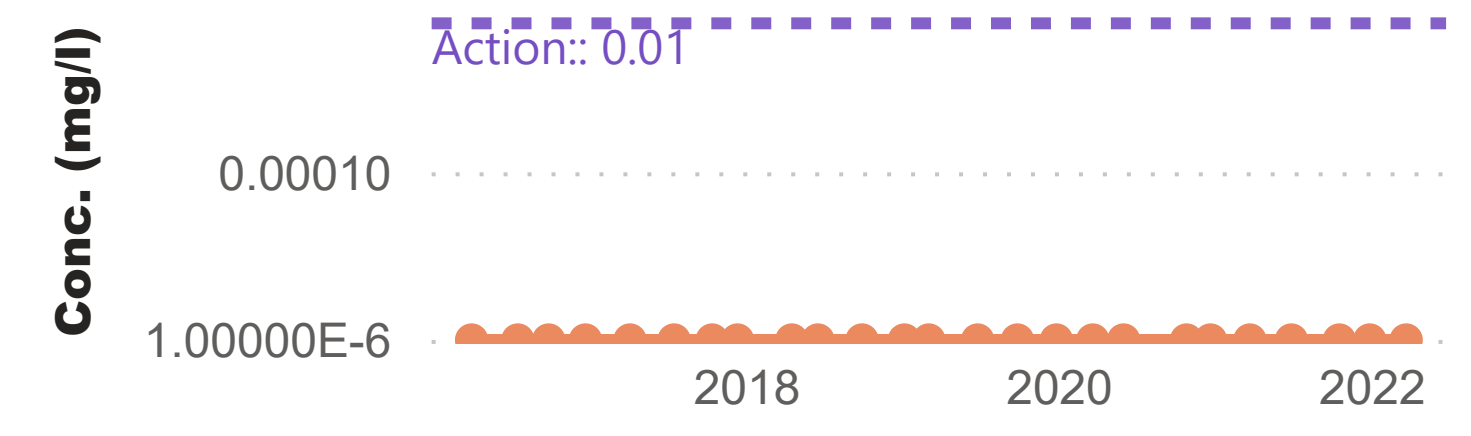
TPH-Aromatic (Low)



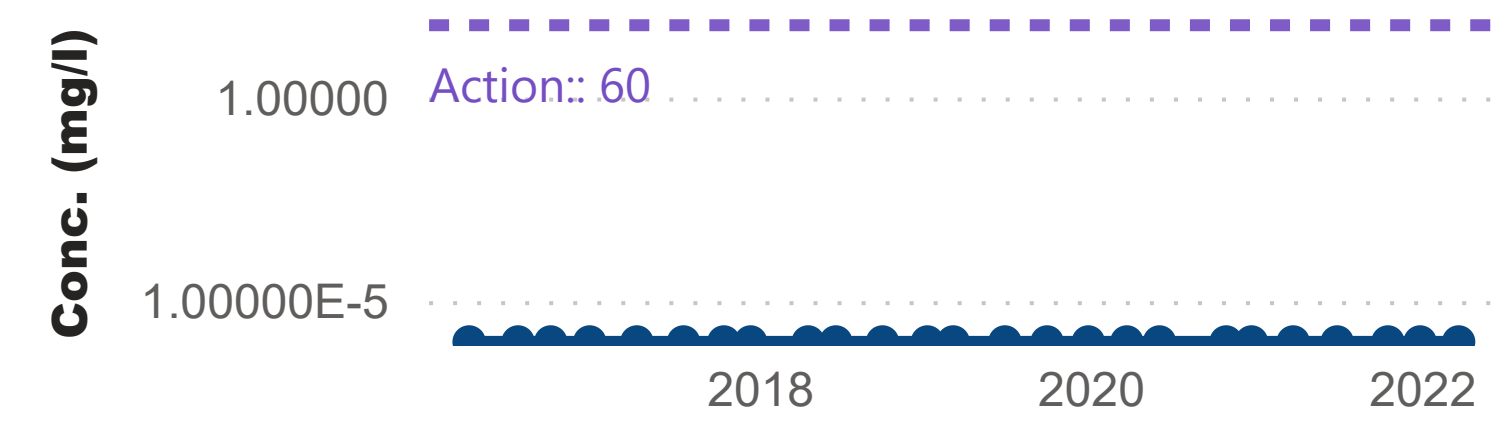
TPH-Aliphatic (Medium)



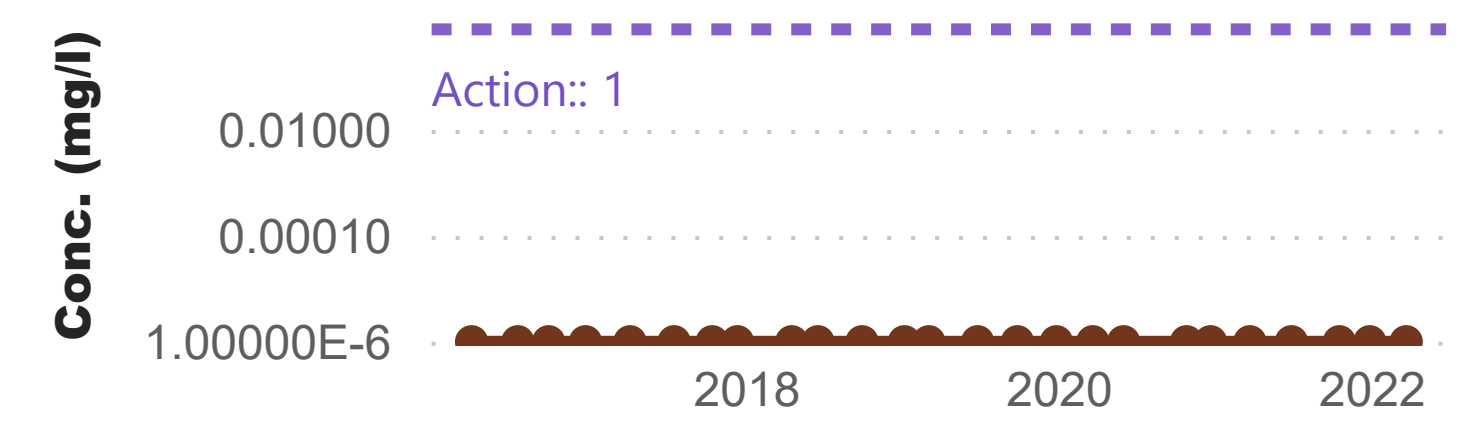
TPH-Aromatic (Medium)



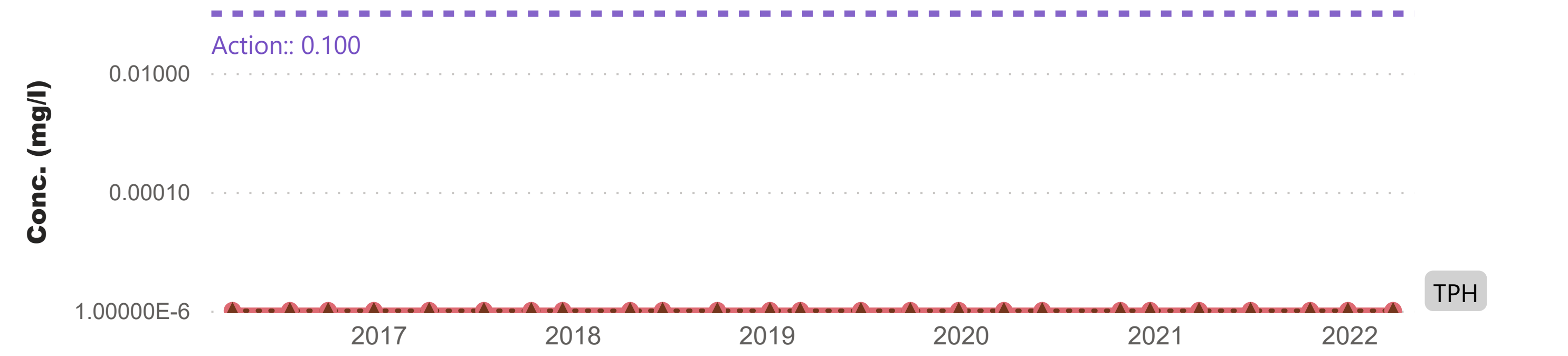
TPH-Aliphatic (High)



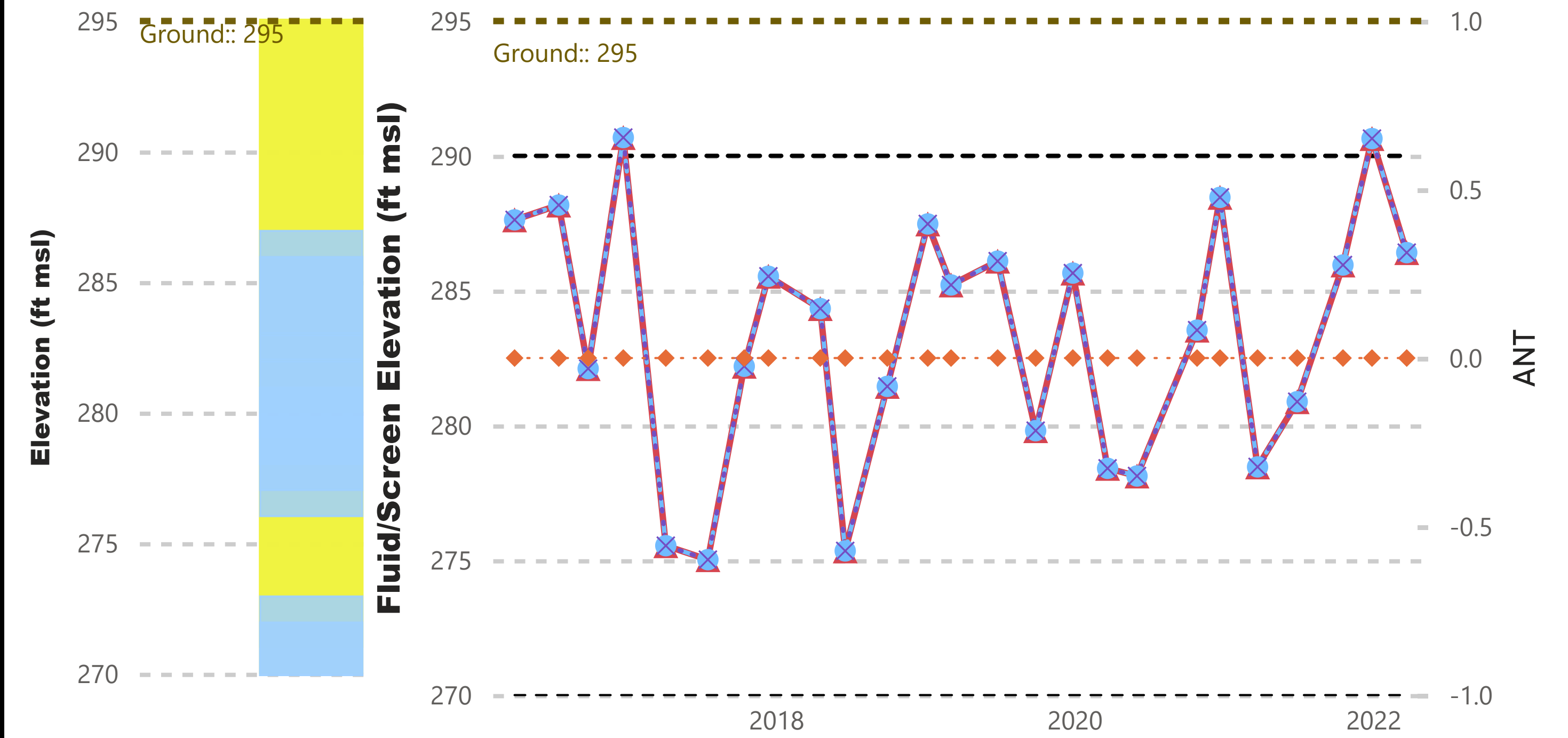
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



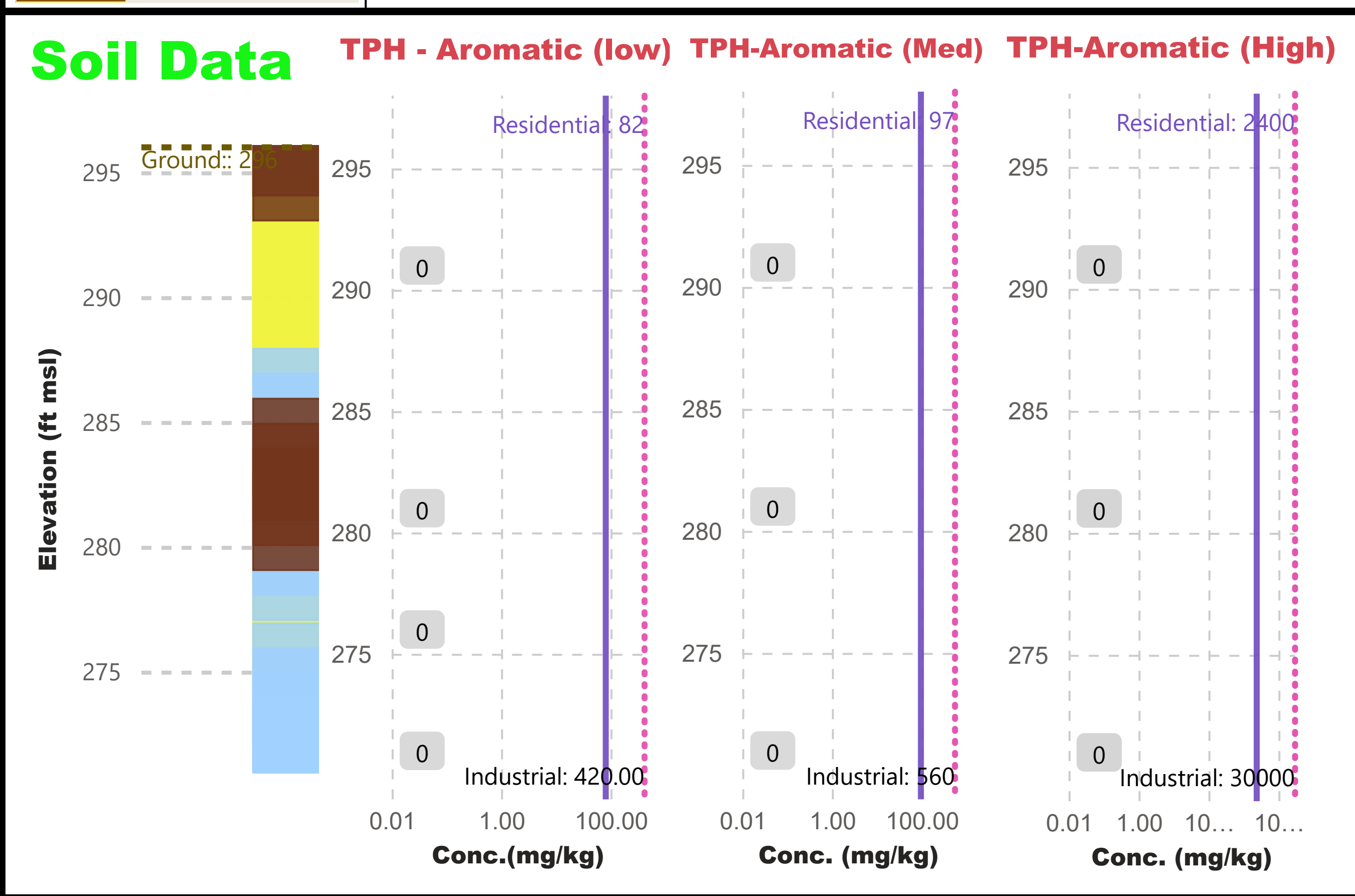
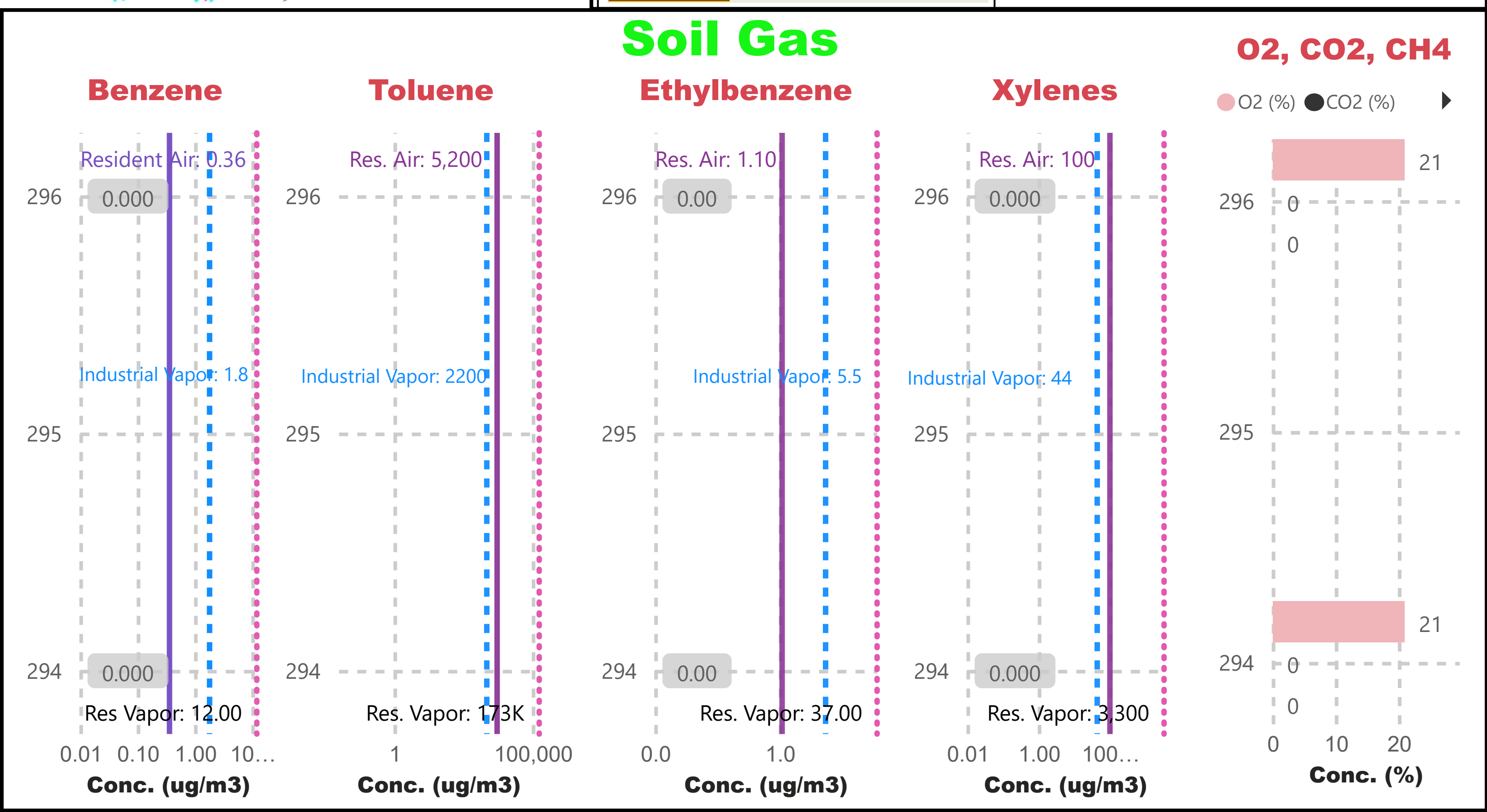
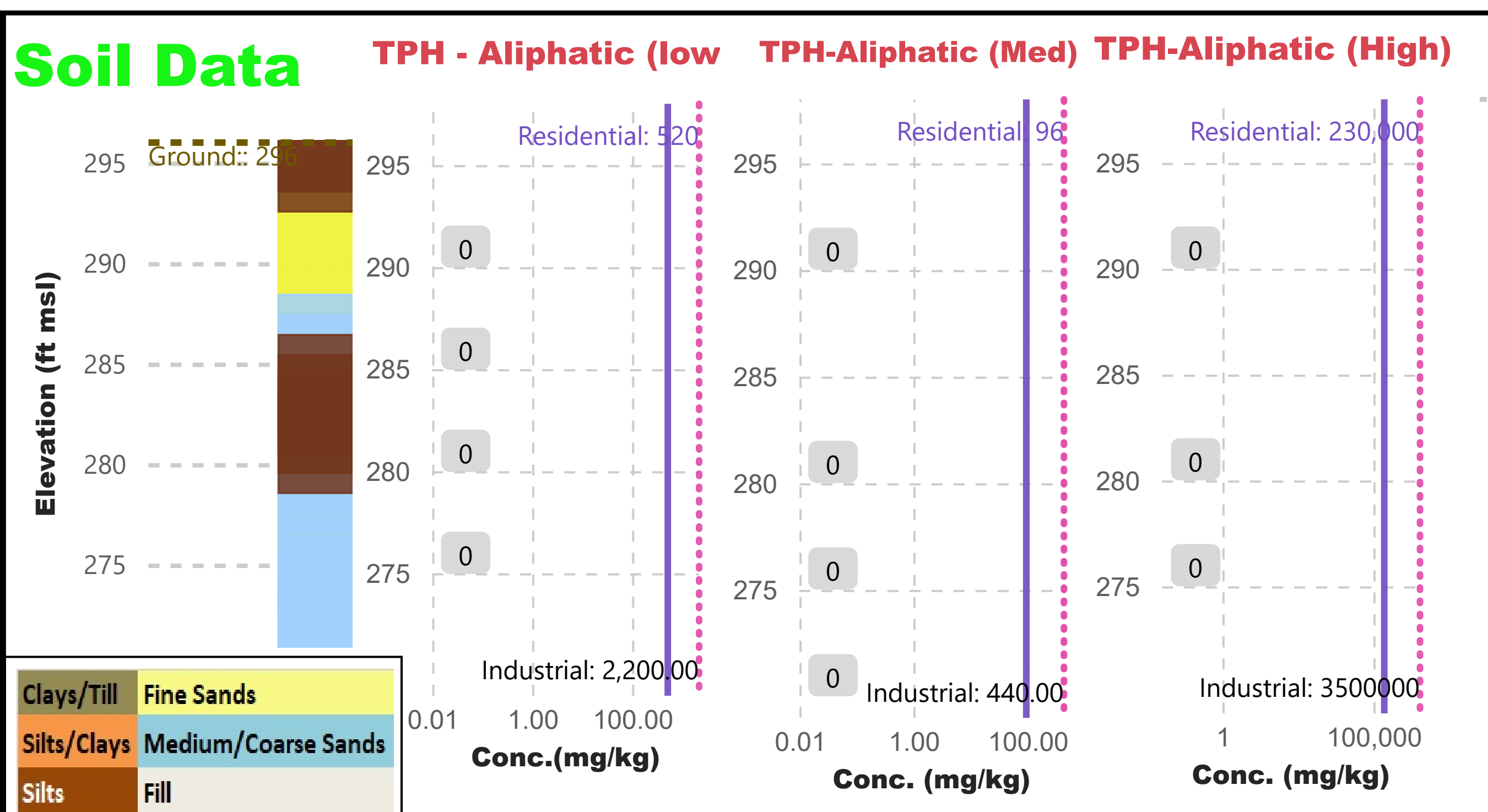
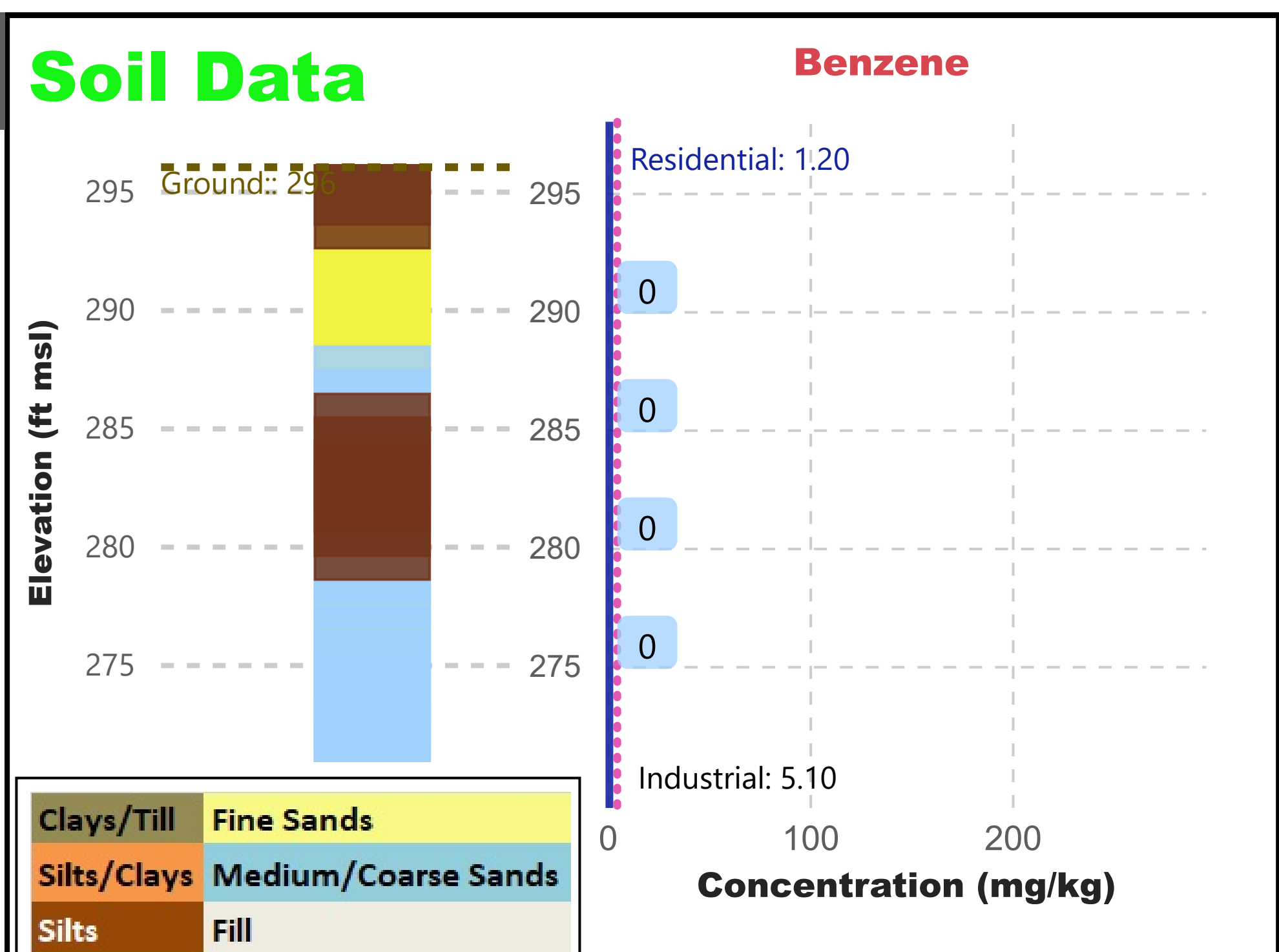
The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	Working Group	13 Transport Fractions	EPA 6 Toxicity Fractions
EC5-6	Low	EC8-16	Medium	EC16-35	High
EC7	Low	EC9-22	Medium	EC22-35	High
EC8-10	Low	EC10-12	Medium	EC12-16	High
EC10-12	Low	EC12-16	Medium	EC16-21	High
EC12-16	Low	EC16-21	Medium	EC21-35	High
EC16-21	Low	EC21-35	Medium	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--	High

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

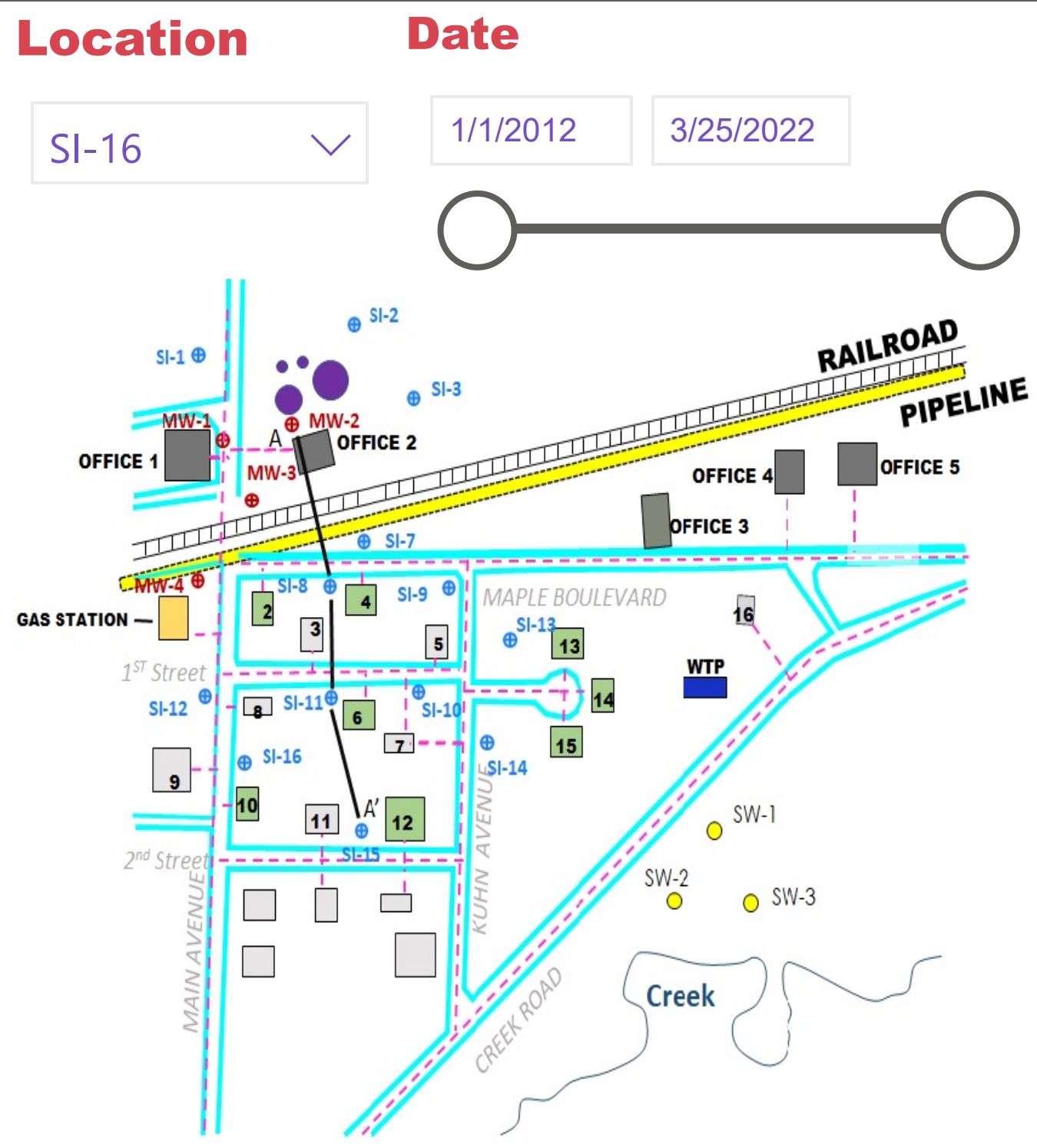
SI-15

Hydrograph & Dissolved Summary

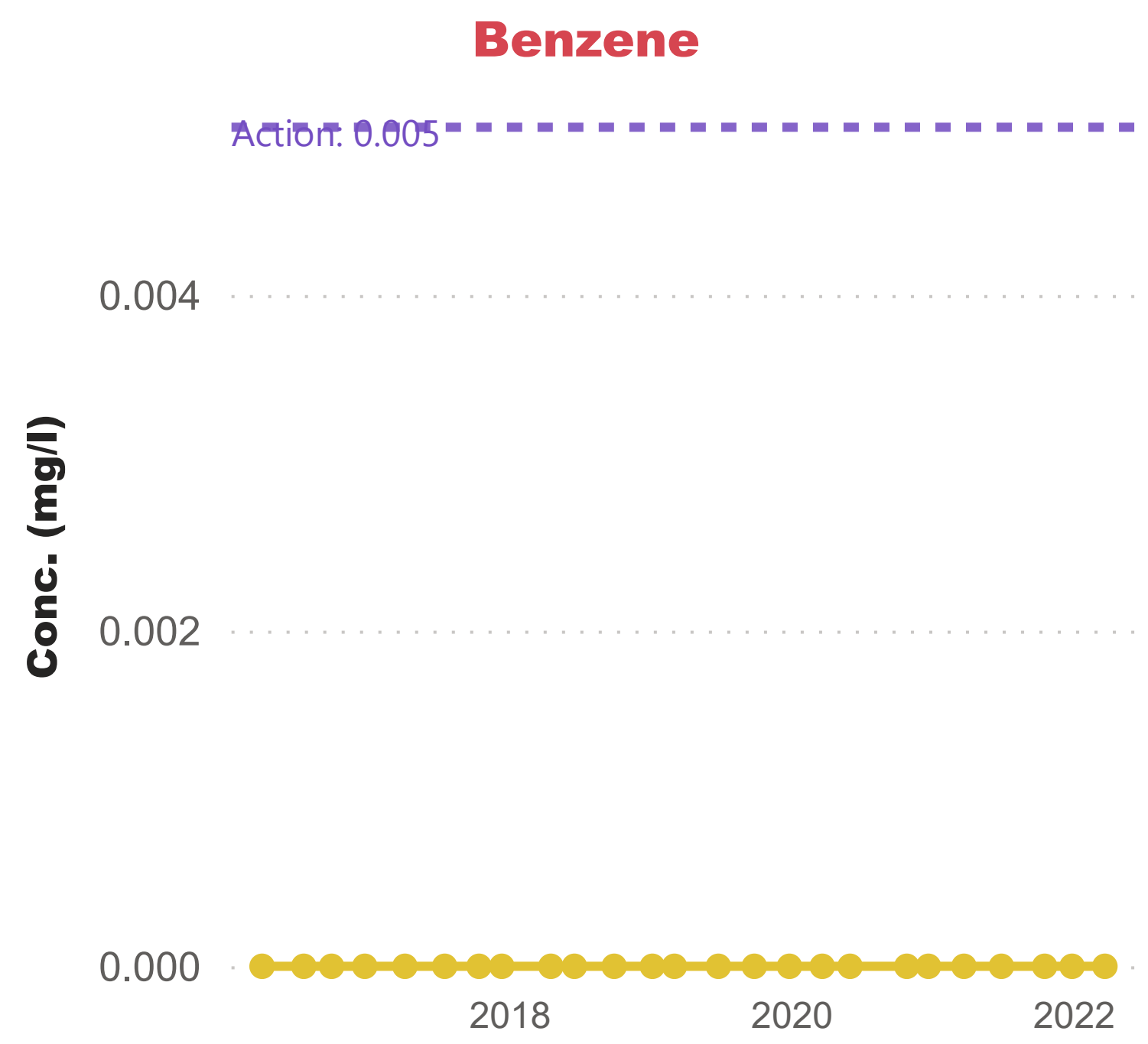


SI-16 Soil and Soil Gas Summary

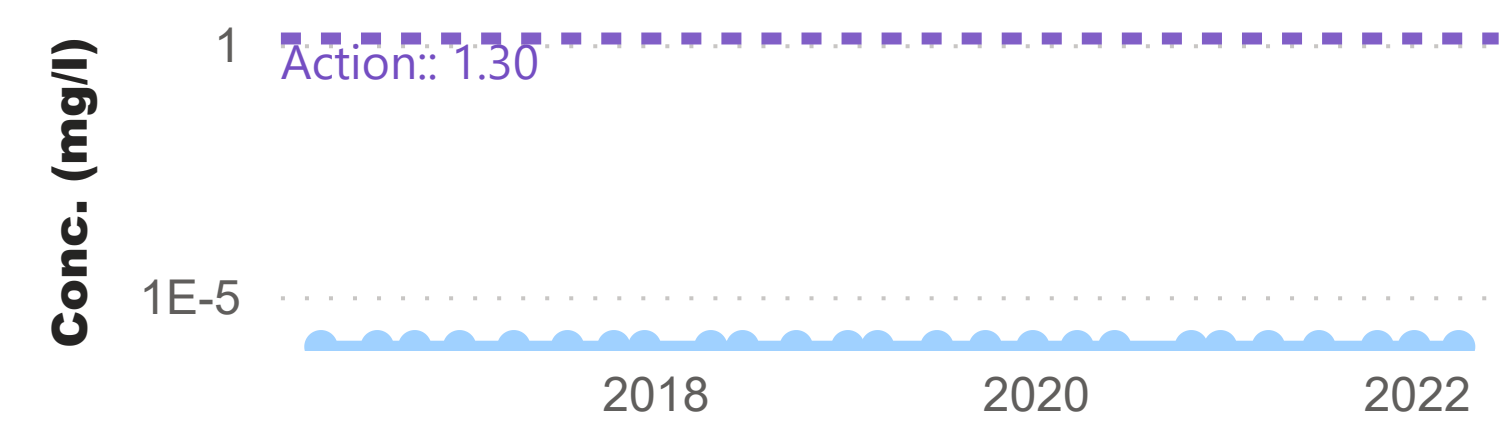
Clays/Till	Fine Sands		EPA 6 Toxicity Fractions
Silts/Clays	Medium/Coarse Sands		
Silts	Fill		



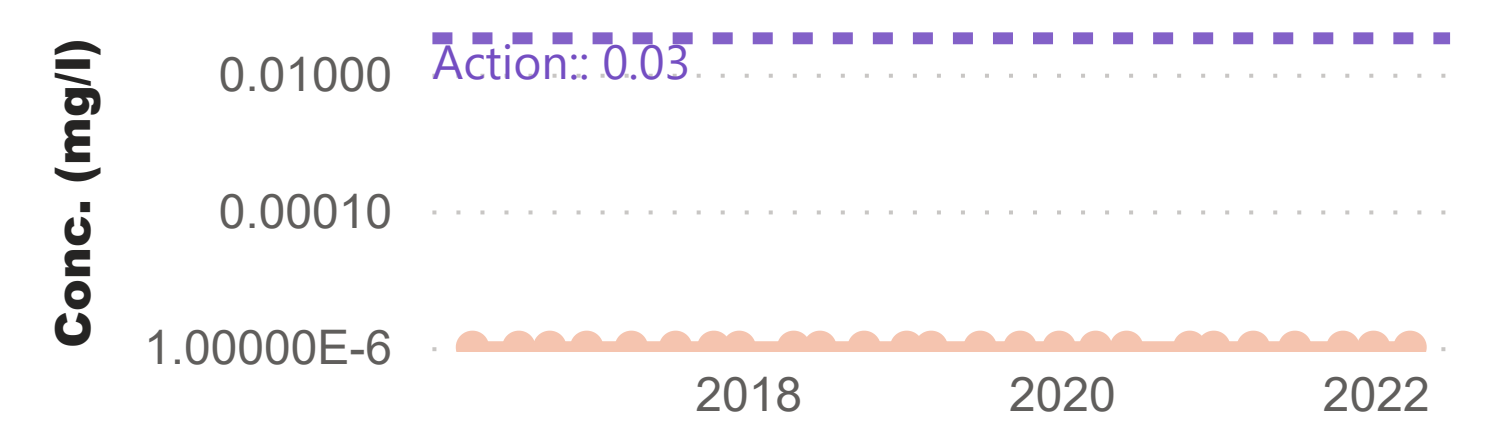
Dissolved Phase



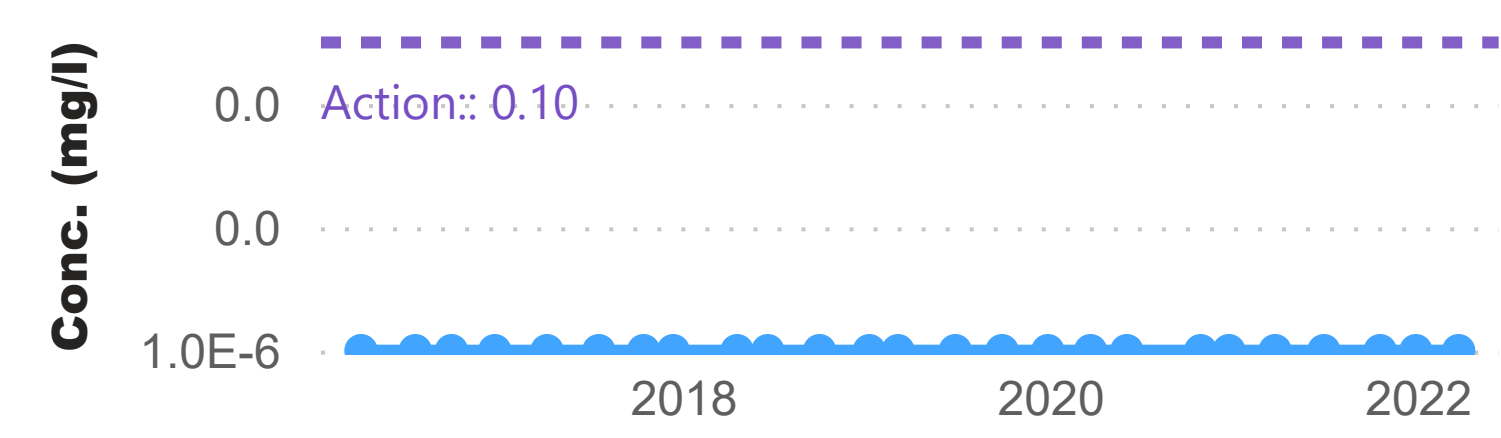
TPH-Aliphatic (Low)



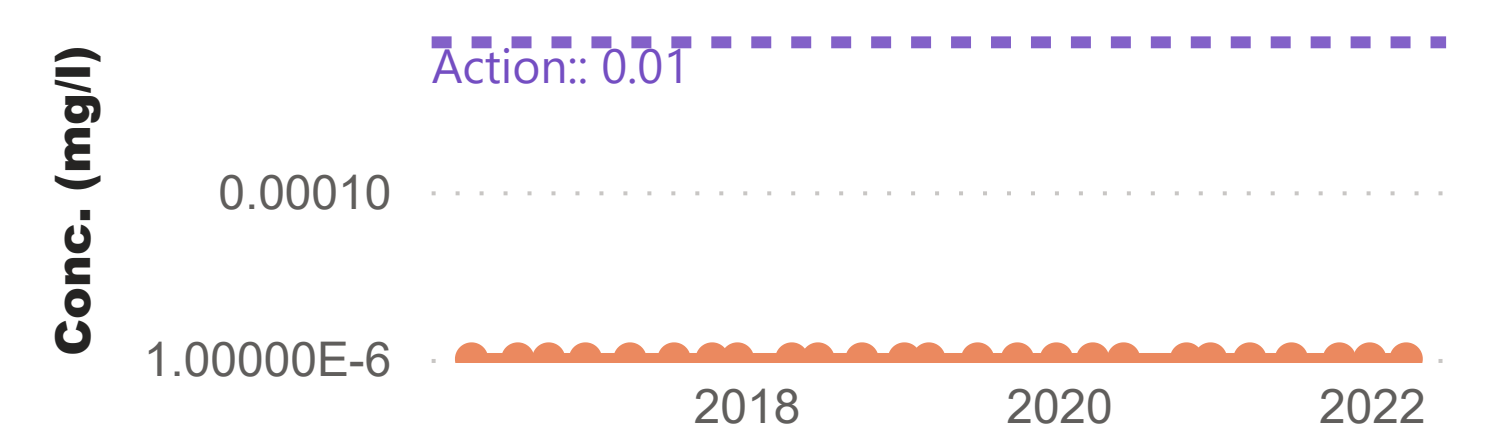
TPH-Aromatic (Low)



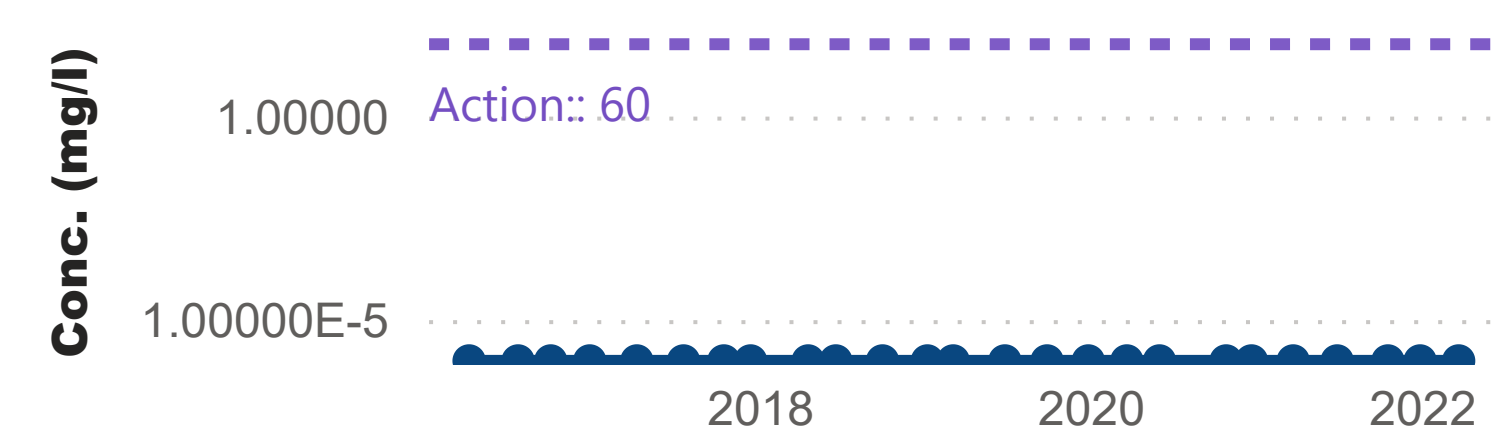
TPH-Aliphatic (Medium)



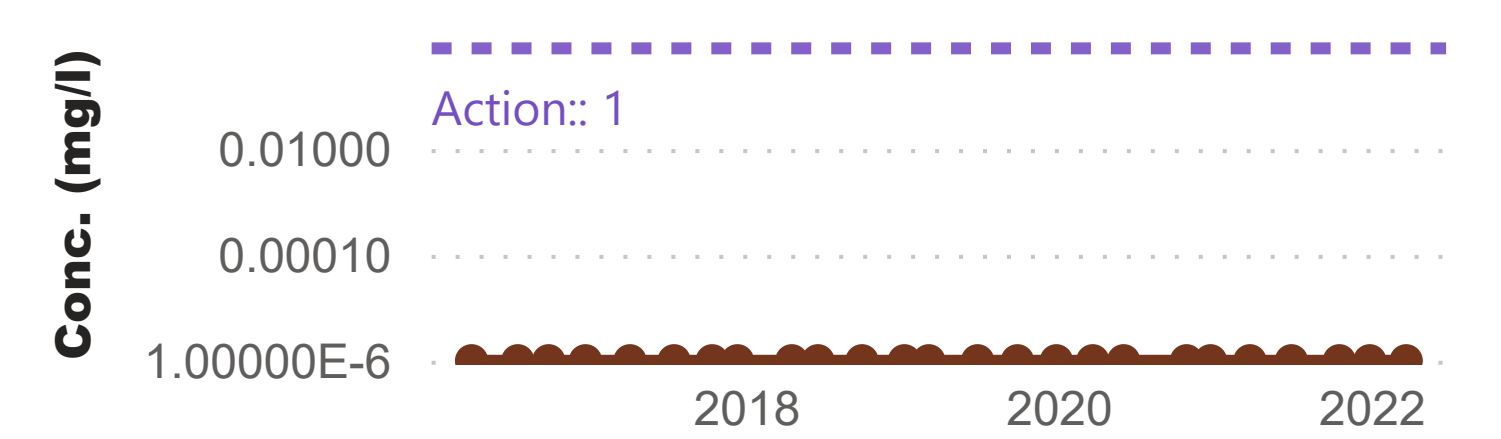
TPH-Aromatic (Medium)



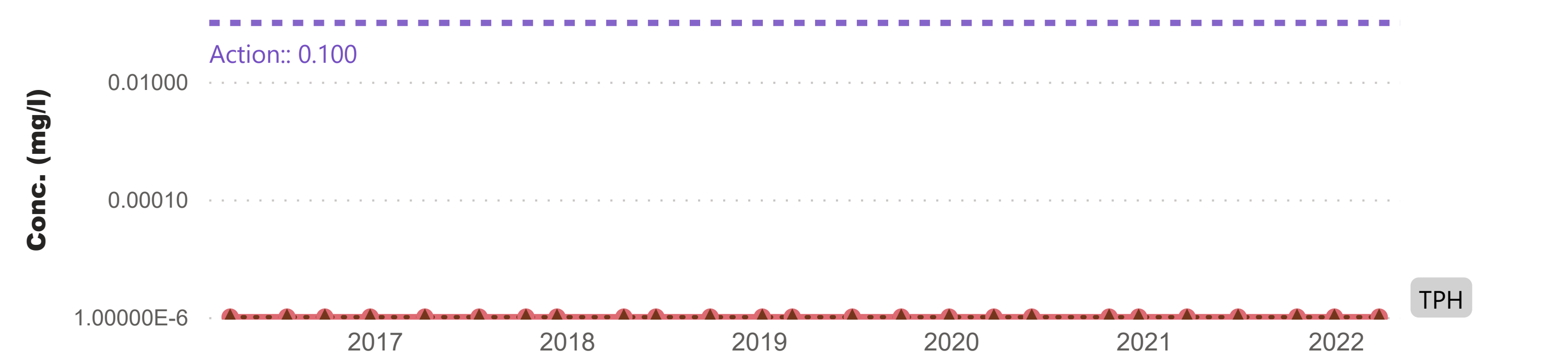
TPH-Aliphatic (High)



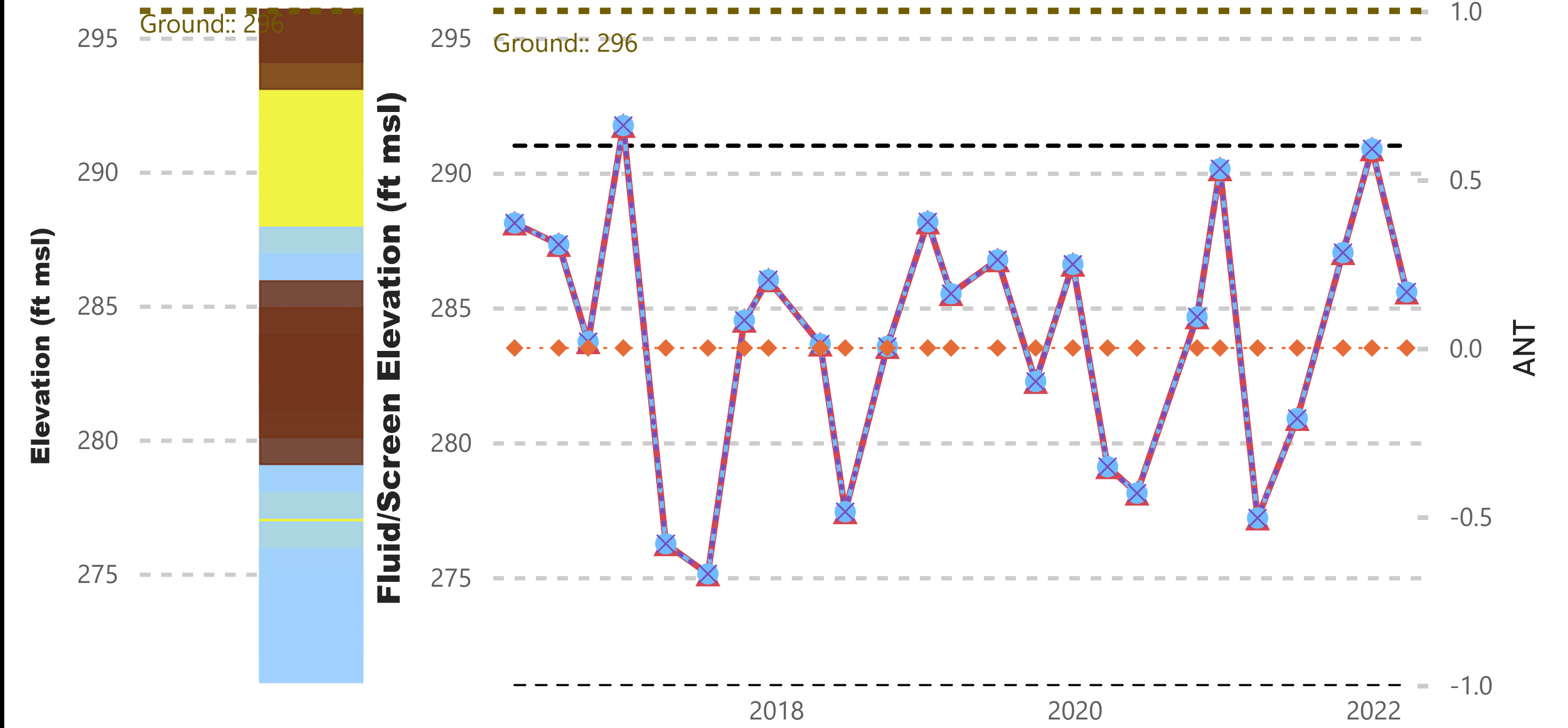
TPH-Aromatic (High)



TPH (with/without Silica Gel Cleanup)



Hydrograph



The Silica Gel Cleanup for TPH is a method used by the laboratory to "clean up" the sample extract before it is analyzed for TPH so that the extract contains primarily hydrocarbons (non-polar) compared to non-hydrocarbons like metabolites, natural organic matter, chlorinated solvents etc.

Molecular Structure	Aliphatic	Aromatic	TPH Criteria Working Group 13 Transport Fractions	EPA 6 Toxicity Fractions
Aliphatic	ECS-6	EC8-16	EC21-35 (same properties as EC16-21) -- not considered a transport fraction--	EC16-35 High
	ECS-7	EC9-22		
Aromatic	EC8-10	EC12-16	EC21-35	EC22-35 High
	EC9-12	EC16-21		

Increasing Equivalent Carbon (EC) Number →

Clays/Till	Fine Sands	--- Screen	TOS/BOS	X Corrected Groundwater Surface CGWS
Silts/Clays	Medium/Coarse Sands	▲ Air/NAPL Interface	ANI	◆ Apparent NAPL Thickness ANT
Silts	Fill	● NAPL/Water Interface	NWI	

SI-16

Hydrograph & Dissolved Summary