Rubidoux, CA NATTS Network Assessment Review

- Established 2007: Carbonyls, Chromium VI, PAHs, PM_{10} Metals, and VOCs
    - Chromium VI ended in in 2014
    - Added Ethylene Oxide in 2020
- For the NATTS Network Assessment (2007-2022):
    - 0 of 17 Method Quality Objective (MQO) Core HAPs were included in the national trends
        - Covid-19 restricted sampling during the 2020 sampling season
    - 237 of 253 pollutant datasets were suitable for trends analysis
    - Annual Average and 3-Year Rolling Average Concentrations were generally flat over time, with the exception of a few pollutants (lead (PM10), naphthalene, and tetrachloroethylene).
    - 100% Reporting of Datasets
- Method Quality Objectives (MQO): 2007-2022
    - Completeness: Met 85% completeness in 242 of 253 pollutant datasets
    - Method Detection Limits: Met MDL Target Ratio of 1.00 in 246 of 272 pollutant datasets
    - Bias: Met ±25% for 179 of 203 pollutant datasets
    - Overall Method Precision: Met ≤15% CV for 131 of 219 pollutant datasets
    - Analytical Method Precision: Met ≤15% CV for 153 of 210 pollutant datasets
- Analytical Laboratories for 2022

VOC	Carbonyl	PM_{10} Metals	PAHs
SCAQMD	SCAQMD	SCAQMD	ERG

- Equipment Year Deployed

Equipment Type	VOC	Carbonyl	PM_{10} Metals	PAHs
Sampler	2004	2018	2018	2016
Analytical	2021	2018	2021	2021
Preconcentrator	2020	NA	NA	NA
Standards Preparation	2018	NA	NA	NA
Canister Cleaning	2021	NA	NA	NA
Extraction	NA	NA	2017	2019

National Summary: NATTS data were collected at 27 locations across the United States, with sites beginning in 2003 or later (Figure 1) for 20 core HAPs. Over 670,000 concentrations (primary, secondary, and replicate) were generated and analyzed for this assessment. Pollutant datasets were scored to assess whether they were suitable for trends analysis. Each pollutant dataset was evaluated against four MQOs: Completeness; Sensitivity; Bias; and Precision. Datasets that were suitable (A- or B-rated) for six consecutive years were used for national trends analysis (Table 1).

National trends were determined by comparing the most recent 3-year blocked averages (e.g., 2017-2019 vs. 2020-2022) to determine if the NATTS Trends DQO was being met:

To be able to detect a 15 percent difference (trend) between the annual mean concentrations of successive 3-year periods within acceptable levels of decision error.

Of the 20 core HAPs. 17 were assessed for the NATTS Trends DQO. Due to sampling and analytical issues, acrolein and ethylene were not considered for trends analysis (Table 2). Additionally, hexavalent chromium was discontinued as a required pollutant . The assessment showed that across the network, 11 of those 17 pollutants were decreasing between the 3-year blocks, while four of those pollutants were increasing between the 3-year blocks. Two pollutants did not exhibit a noticeable trend.

Figure 1. NATTS Site and Year Established

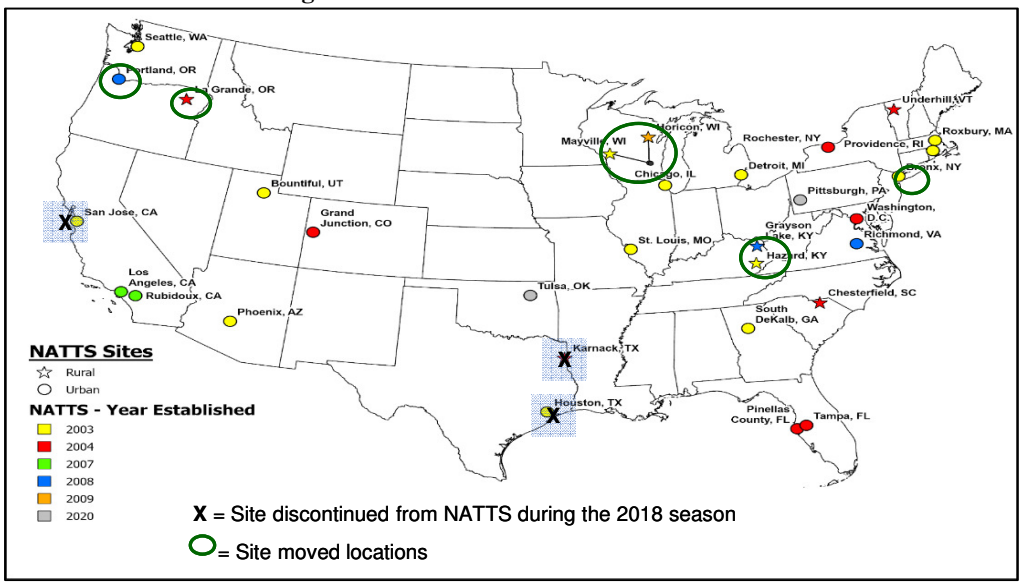


Table 1. NATTS Network Assessment: Count and Percentage of Suitable Datasets by Pollutant Group

Pollutant Group	A-rated		B-rated		Does Not Meet	
	#	%	#	%	#	%
VOCs	1,968	58%	864	25%	572	17%
Carbonyls	668	68%	231	24%	77	8%
PM_{10} Metals	1,906	66%	775	27%	217	7%
PAHs	571	77%	144	19%	29	4%
Total = 8,704	5,113	64%	2,014	25%	895	11%

Table 2. Three-Year Block Averages for National Trends

Pollutant[a,b]	Units	# Sites	Block 1	Block 2	% Difference
Acetaldehyde	µg/m^3	16	1.48	1.34	-9.2%
Arsenic (PM_{10})	ng/m^3	18	0.68	0.64	-6.6%
Benzene	µg/m^3	16	0.529	0.525	-0.8%
Benzo(a)pyrene	ng/m^3	18	0.086	0.072	-16.6%
Beryllium (PM_{10})	ng/m^3	18	0.008	0.010	15.0%
Butadiene, 1,3-	µg/m^3	15	0.057	0.054	-5.1%
Cadmium (PM_{10})	ng/m^3	20	0.087	0.090	3.7%
Carbon Tetrachloride	µg/m^3	15	0.53	0.50	-5.3%
Chloroform	µg/m^3	16	0.173	0.165	-4.8%
Formaldehyde	µg/m^3	15	2.809	2.482	-11.7%
Lead (PM_{10})	ng/m^3	20	2.44	2.43	-0.5%
Manganese (PM_{10})	ng/m^3	20	6.69	7.31	9.2%
Naphthalene	ng/m^3	17	42.00	35.10	-16.4%
Nickel (PM_{10})	ng/m^3	19	0.87	0.83	-3.7%
Tetrachloroethylene	µg/m^3	15	0.12	0.12	1.5%
Trichloroethylene	µg/m^3	14	0.019	0.022	16.3%
Vinyl Chloride	µg/m^3	16	0.004	0.001	-69.0%

[a] Acrolein and ethylene oxide were not assessed due to sampling and analytical issues

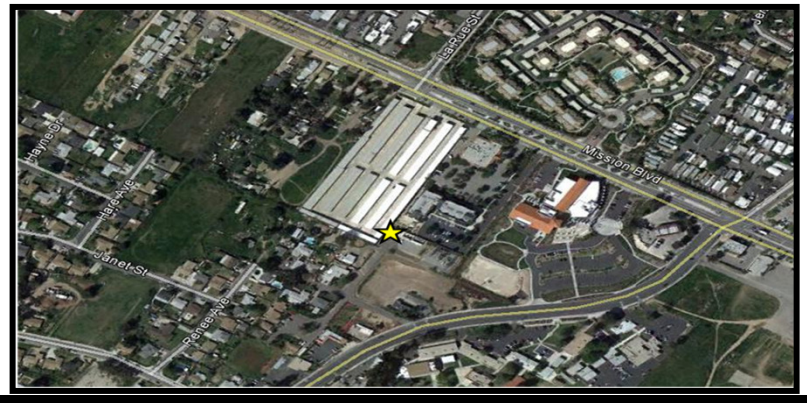
[b] Hexavalent chromium (not assessed) was discontinued in 2013

NATTS Monitoring Site Report: Rubidoux, CA

Site Information

Region	9
NATTS Site Type	Urban
County	Riverside
AQS Site Code	06-085-8001
NATTS Operating Agency	South Coast AQMD
Latitude	33.99958
Longitude	-117.41601
AQS Land Use	Residential
AQS Location Setting	Suburban
County Population (2023)	2,492,442

Figure 2. NATTS Site Location



Pollutant Datasets Evaluation: Suitable for Trends (Y=yes; Y(T)=yes, and used for DQO Trends; N=No; "--"=not rated)

Final Pollutant Name	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Acetaldehyde	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N(a)	Y	(b)	Y	Y
Arsenic (PM_{10})	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Benzene	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Benzo(a)pyrene	--	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Beryllium (PM_{10})	Y	Y	N(c)	N(c)	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Butadiene, 1,3-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Cadmium (PM_{10})	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Carbon tetrachloride	N(c)	N(c)	N(c)	Y	Y	Y	Y	Y	Y	N(d)	Y	Y	Y	(b)	Y	Y
Chloroform	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Formaldehyde	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N(a)	Y	(b)	Y	Y
Lead (PM_{10})	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Manganese (PM_{10})	N(c)	N(c)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Naphthalene	--	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Nickel (PM_{10})	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Tetrachloroethylene	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Trichloroethylene	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	(b)	Y	Y
Vinyl chloride	N(c)	N(c)	N(c)	N(c)	Y	Y	Y	N(a)	Y	N(a)	Y	Y	Y	(b)	Y	Y

[a]: Completeness was less than 75% based on 1-in-6 day sampling.

[b]: Due to Covid pandemic restrictions, sampling activities were limited; thus, the agency was not able to have the opportunity to collect enough samples.

[c]: Reported MDL to NATTS Target Ratio greater than 2.0

[d]: Bias Percent was outside of ±35%

Table 3. NATTS Network Assessment Data (2003-2022) - National Distribution Statistics By Type[a]

Analyte	Units	Site Type	# Data Records	% Detections	Arithmetic Mean[b]	Percentile Value[c]						
						5th	10th	25th	50th	75th	90th	95th
Acetaldehyde	µg/m^3	Urban	22,000	100%	1.73 ± 0.02	0.50	0.65	0.95	1.42	2.15	3.19	3.96
	µg/m^3	Rural	6,392	100%	1.17 ± 0.03	0.36	0.45	0.65	0.92	1.35	1.98	2.67
	µg/m^3	All Sites	28,392	100%	1.61 ± 0.02	0.45	0.58	0.85	1.29	1.97	2.99	3.79
Arsenic (PM_{10})	ng/m^3	Urban	21,944	95%	0.87 ± 0.03	0.03	0.16	0.32	0.56	0.96	1.65	2.37
	ng/m^3	Rural	6,385	96%	0.49 ± 0.02	0.03	0.08	0.16	0.35	0.58	0.93	1.30
	ng/m^3	All Sites	28,329	96%	0.78 ± 0.02	0.03	0.13	0.27	0.51	0.87	1.51	2.16
Benzene	µg/m^3	Urban	22,246	99%	0.85 ± 0.01	0.23	0.29	0.42	0.64	1.02	1.62	2.20
	µg/m^3	Rural	5,932	90%	0.52 ± 0.01	ND	0.06	0.20	0.38	0.67	1.08	1.51
	µg/m^3	All Sites	28,178	97%	0.78 ± 0.01	0.16	0.23	0.36	0.58	0.95	1.52	2.07
Benzo(a)pyrene	ng/m^3	Urban	17,810	73%	0.10 ± 0.01	ND	ND	ND	0.04	0.10	0.23	0.35
	ng/m^3	Rural	4,735	37%	0.07 ± 0.01	ND	ND	ND	ND	0.02	0.19	0.38
	ng/m^3	All Sites	22,545	65%	0.09 ± 0.01	ND	ND	ND	0.03	0.09	0.22	0.35
Beryllium (PM_{10})	ng/m^3	Urban	21,786	77%	0.042 ± 0.004	ND	ND	0.0005	0.005	0.015	0.043	0.098
	ng/m^3	Rural	6,062	49%	0.018 ± 0.002	ND	ND	ND	ND	0.004	0.012	0.041
	ng/m^3	All Sites	27,848	71%	0.037 ± 0.003	ND	ND	ND	0.003	0.011	0.038	0.083
Butadiene, 1,3-	µg/m^3	Urban	22,220	78%	0.092 ± 0.002	ND	ND	0.018	0.051	0.110	0.215	0.317
	µg/m^3	Rural	5,940	29%	0.017 ± 0.001	ND	ND	ND	ND	0.011	0.054	0.104
	µg/m^3	All Sites	28,160	68%	0.076 ± 0.002	ND	ND	ND	0.039	0.092	0.190	0.283
Cadmium (PM_{10})	ng/m^3	Urban	21,954	93%	0.184 ± 0.014	ND	0.019	0.043	0.081	0.160	0.354	0.572
	ng/m^3	Rural	6,067	89%	0.092 ± 0.005	ND	ND	0.026	0.055	0.099	0.179	0.270
	ng/m^3	All Sites	28,021	92%	0.164 ± 0.011	ND	0.012	0.039	0.075	0.143	0.300	0.518
Carbon Tetrachloride	µg/m^3	Urban	22,202	98%	0.556 ± 0.002	0.336	0.423	0.486	0.550	0.638	0.725	0.784
	µg/m^3	Rural	5,909	84%	0.494 ± 0.010	ND	ND	0.342	0.533	0.629	0.728	0.807
	µg/m^3	All Sites	28,111	95%	0.543 ± 0.003	ND	0.363	0.475	0.547	0.636	0.726	0.788
Chloroform	µg/m^3	Urban	22,218	88%	0.243 ± 0.016	ND	ND	0.094	0.129	0.205	0.398	0.630
	µg/m^3	Rural	5,942	56%	0.062 ± 0.002	ND	ND	ND	0.049	0.098	0.134	0.228
	µg/m^3	All Sites	28,160	82%	0.205 ± 0.013	ND	ND	0.076	0.110	0.187	0.342	0.543

Table 3. NATTS Network Assessment Data (2003-2022) - National Distribution Statistics By Type[a]

Analyte	Units	Site Type	# Data Records	% Detections	Arithmetic Mean[b]	Percentile Value[c]						
						5th	10th	25th	50th	75th	90th	95th
Formaldehyde	µg/m^3	Urban	22,024	100%	3.03 ± 0.04	0.69	1.00	1.57	2.42	3.72	5.47	6.95
	µg/m^3	Rural	6,432	100%	2.16 ± 0.04	0.49	0.64	1.03	1.67	2.69	4.12	5.34
	µg/m^3	All Sites	28,456	100%	2.83 ± 0.03	0.61	0.86	1.42	2.25	3.50	5.22	6.65
Lead (PM_{10})	ng/m^3	Urban	21,955	100%	3.97 ± 0.10	0.70	0.95	1.46	2.49	4.34	7.87	11.16
	ng/m^3	Rural	6,066	99%	1.93 ± 0.14	0.34	0.45	0.75	1.27	2.14	3.59	4.96
	ng/m^3	All Sites	28,021	100%	3.53 ± 0.09	0.53	0.75	1.22	2.17	3.88	6.99	10.10
Manganese (PM_{10})	ng/m^3	Urban	21,906	100%	9.76 ± 0.25	1.06	1.49	2.53	4.96	10.43	20.40	30.79
	ng/m^3	Rural	6,067	99%	3.79 ± 0.12	0.48	0.74	1.34	2.48	4.49	8.08	11.64
	ng/m^3	All Sites	27,973	100%	8.47 ± 0.20	0.84	1.22	2.16	4.19	8.99	18.13	27.27
Naphthalene	ng/m^3	Urban	17,811	100%	67.25 ± 0.97	13.42	18.03	28.73	49.00	84.13	136.42	180.00
	ng/m^3	Rural	4,732	98%	21.76 ± 1.02	2.79	4.04	6.84	12.47	23.51	45.68	69.01
	ng/m^3	All Sites	22,543	100%	57.70 ± 0.83	5.92	9.77	20.41	40.15	74.11	124.40	167.26
Nickel (PM_{10})	ng/m^3	Urban	21,958	98%	1.76 ± 0.05	0.29	0.40	0.62	1.02	1.86	3.32	5.05
	ng/m^3	Rural	5,989	85%	0.56 ± 0.07	ND	ND	0.10	0.26	0.53	0.96	1.63
	ng/m^3	All Sites	27,947	95%	1.50 ± 0.04	0.00	0.17	0.45	0.84	1.59	2.92	4.47
Tetrachloroethylene	µg/m^3	Urban	22,209	84%	0.24 ± 0.05	ND	ND	0.05	0.12	0.22	0.43	0.68
	µg/m^3	Rural	5,936	38%	0.07 ± 0.02	ND	ND	ND	ND	0.04	0.12	0.31
	µg/m^3	All Sites	28,145	75%	0.21 ± 0.04	ND	ND	ND	0.08	0.20	0.38	0.61
Trichloroethylene	µg/m^3	Urban	22,204	43%	0.040 ± 0.008	ND	ND	ND	ND	0.043	0.096	0.152
	µg/m^3	Rural	5,922	19%	0.019 ± 0.003	ND	ND	ND	ND	ND	0.029	0.124
	µg/m^3	All Sites	28,126	38%	0.036 ± 0.006	ND	ND	ND	ND	0.033	0.085	0.148
Vinyl Chloride	µg/m^3	Urban	22,021	18%	0.0046 ± 0.0003	ND	ND	ND	ND	ND	0.0126	0.0251
	µg/m^3	Rural	5,940	13%	0.0070 ± 0.0008	ND	ND	ND	ND	ND	0.0125	0.0304
	µg/m^3	All Sites	27,961	17%	0.0051 ± 0.0003	ND	ND	ND	ND	ND	0.0126	0.0253

[a] Statistics presented are from pollutant datasets which were suitable for trends.

[b] The arithmetic mean is the average of all samples results which include actual measured values. If no chemical was registered, then a value of zero is used when calculating the mean.

[c] ND: No results of this chemical were registered by the laboratory analytical equipment.

Table 4. Summary Statistics for Rubidoux, CA

Analyte	Units	# Data Records	% Detection	Arithmetic Mean[a]	Percentile Value[b]						
					5th	10th	25th	50th	75th	90th	95th
Acetaldehyde	µg/m^3	903	100%	2.23 ± 1.32	0.63	0.81	1.16	1.99	3.01	4.05	4.69
Arsenic (PM_{10})	ng/m^3	916	98%	1.06 ± 1.35	0.14	0.21	0.36	0.52	0.78	1.18	2.01
Benzene	µg/m^3	899	100%	0.88 ± 1.40	0.28	0.34	0.48	0.74	1.13	1.57	1.93
Benzo(a)pyrene	ng/m^3	899	68%	0.06 ± 1.45	ND	ND	ND	0.02	0.06	0.15	0.22
Beryllium (PM_{10})	ng/m^3	916	86%	0.254 ± 1.486	ND	ND	0.008	0.020	0.030	0.100	1.600
Butadiene, 1,3-	µg/m^3	896	80%	0.10 ± 1.56	ND	ND	0.02	0.07	0.14	0.24	0.31
Cadmium (PM_{10})	ng/m^3	916	90%	0.12 ± 1.60	ND	0.01	0.05	0.08	0.12	0.20	0.31
Carbon Tetrachloride	µg/m^3	890	100%	0.49 ± 1.70	0.38	0.40	0.44	0.50	0.53	0.58	0.63
Chloroform	µg/m^3	897	98%	0.17 ± 1.77	0.05	0.10	0.10	0.15	0.20	0.25	0.29
Formaldehyde	µg/m^3	903	100%	3.80 ± 1.85	1.12	1.41	2.23	3.61	5.00	6.36	7.39
Lead (PM_{10})	ng/m^3	916	100%	4.74 ± 1.96	1.23	1.71	2.65	3.84	5.85	8.61	10.00
Manganese (PM_{10})	ng/m^3	916	99%	17.71 ± 2.10	0.90	3.20	9.16	15.99	24.01	33.79	41.50
Naphthalene	ng/m^3	899	100%	64.38 ± 2.29	14.33	18.14	28.65	49.85	82.50	129.34	164.37
Nickel (PM_{10})	ng/m^3	914	100%	2.37 ± 0.10	0.50	0.70	1.08	1.72	2.48	4.26	8.00
Tetrachloroethylene	µg/m^3	895	79%	0.11 ± 0.01	ND	ND	0.07	0.07	0.14	0.21	0.28
Trichloroethylene	µg/m^3	896	23%	0.016 ± 0.002	ND	ND	ND	ND	ND	0.05	0.06
Vinyl Chloride	µg/m^3	843	4%	0.0010 ± 0.0004	ND	ND	ND	ND	ND	ND	ND

[a] :The arithmetic mean is the average of all samples results which included actual measured values. If no chemical was registered, then a value of zero is used.

[b] ND: No results of this chemical were registered by the laboratory analytical equipment.

Table 5. Analytical Labs Supporting this Site

Pollutant Group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
VOCs	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD
Carbonyls	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD
PM_{10} Metals	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD
PAHs	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG

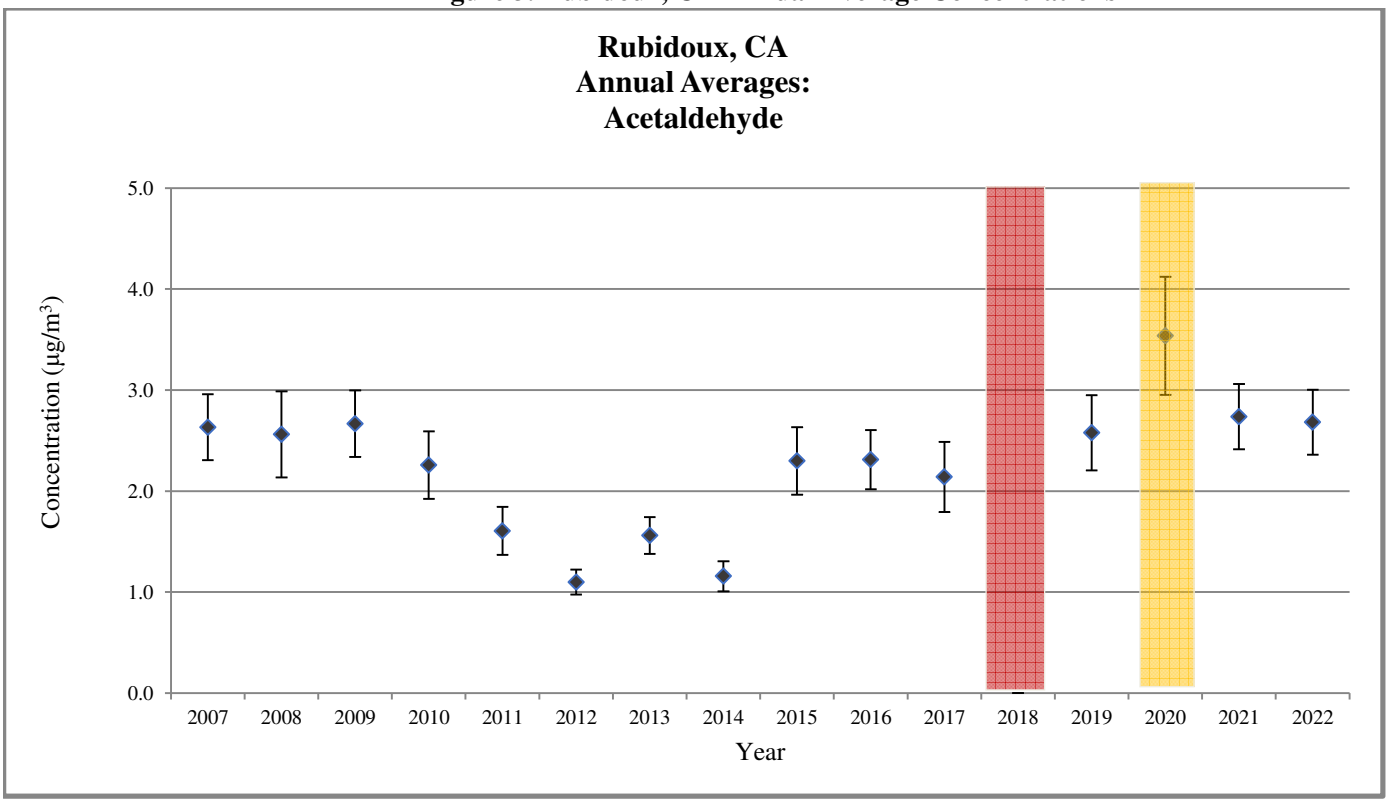
Pollutant Group	2020	2021	2022
VOCs	SCAQMD	SCAQMD	SCAQMD
Carbonyls	SCAQMD	SCAQMD	SCAQMD
PM_{10} Metals	SCAQMD	SCAQMD	SCAQMD
PAHs	ERG	ERG	ERG

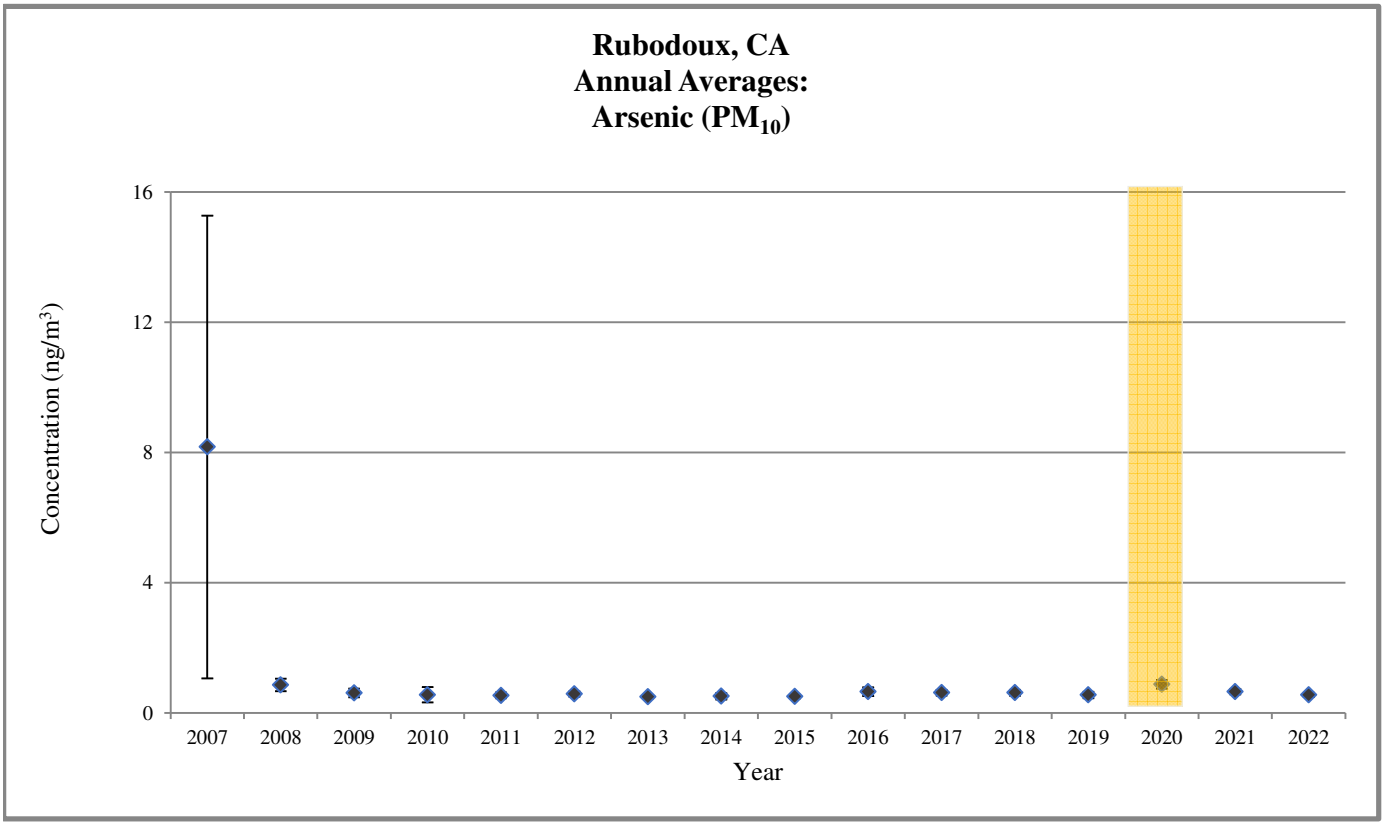
--: Not Applicable

SCAQMD: South Coast Air Quality Management District

ERG: Eastern Research Group, Inc.

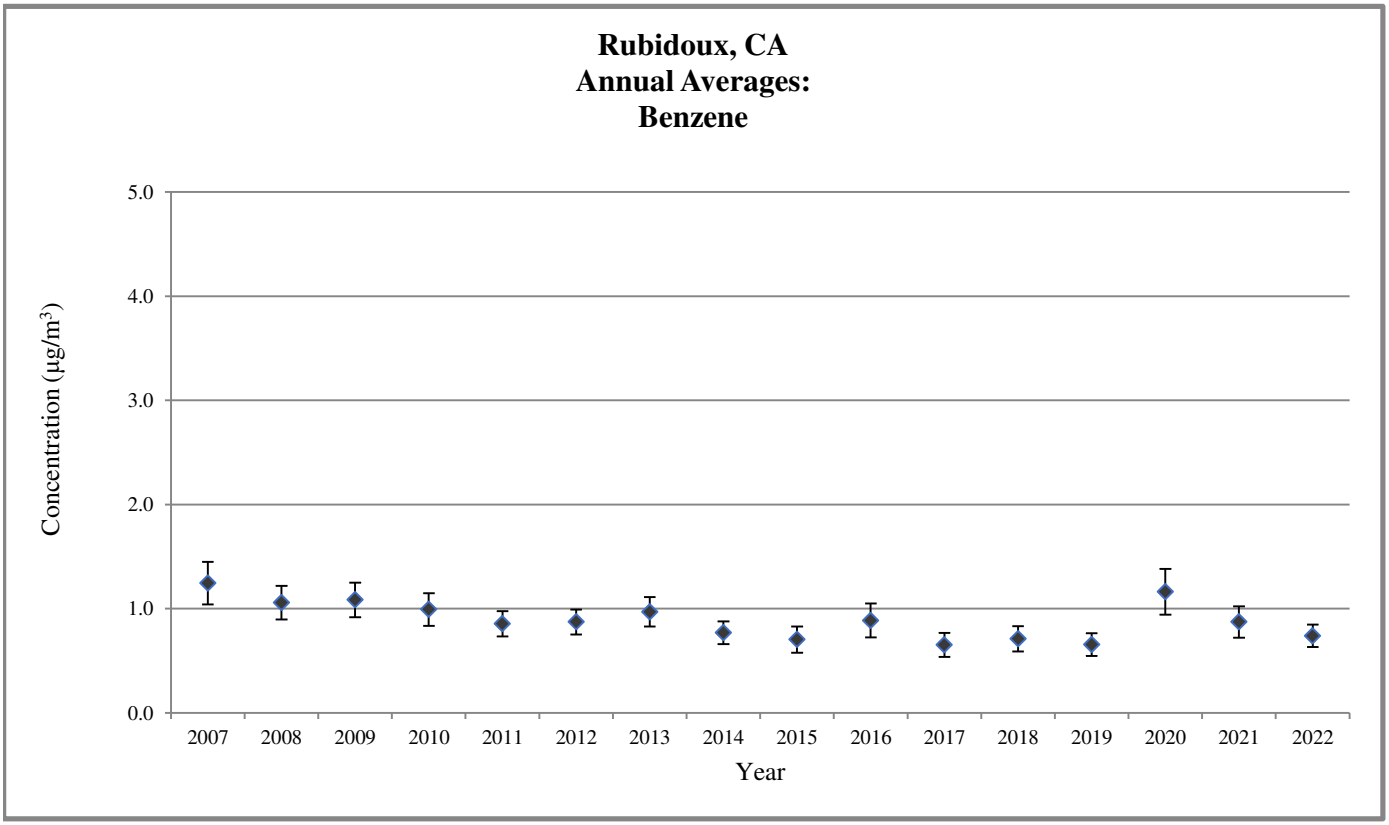
Figure 3. Rubidoux, CA Annual Average Concentrations

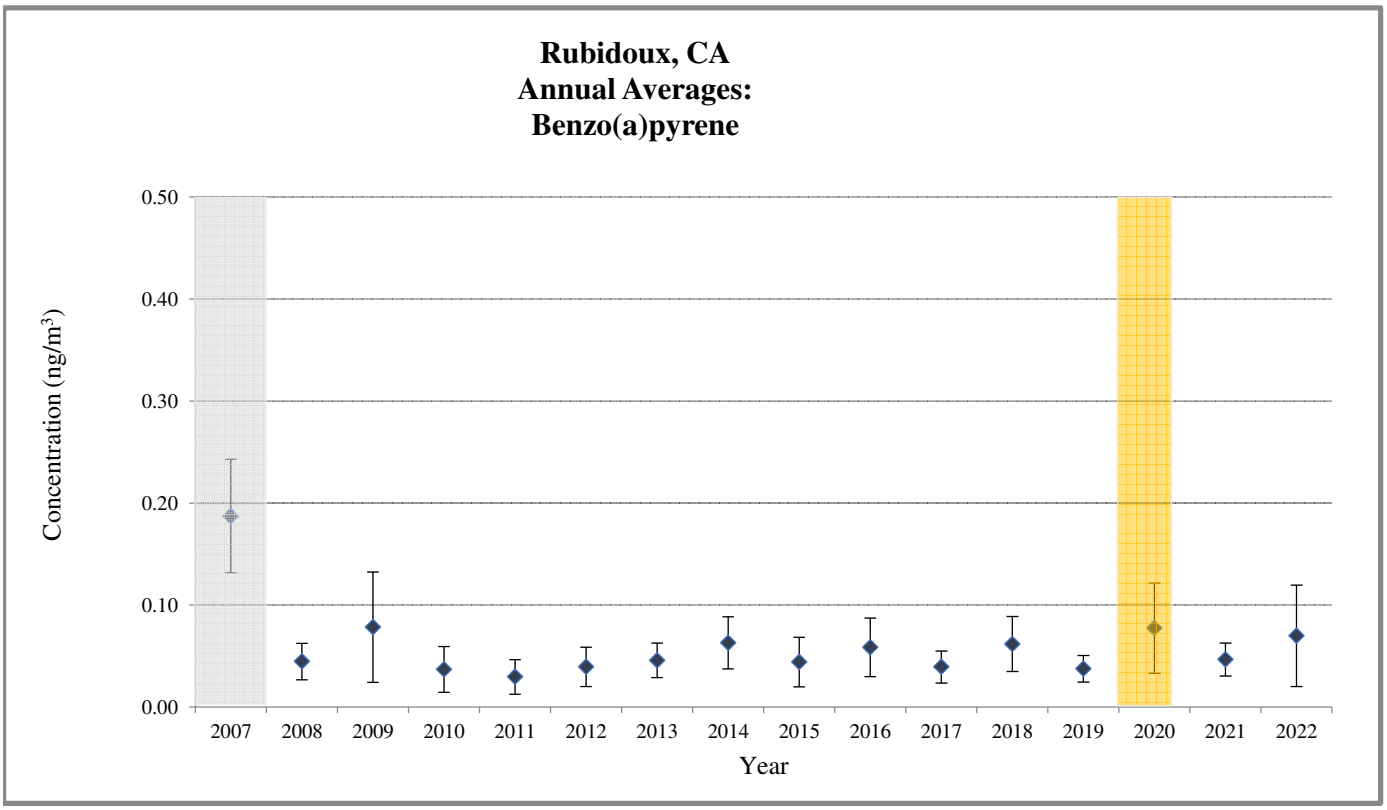




Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

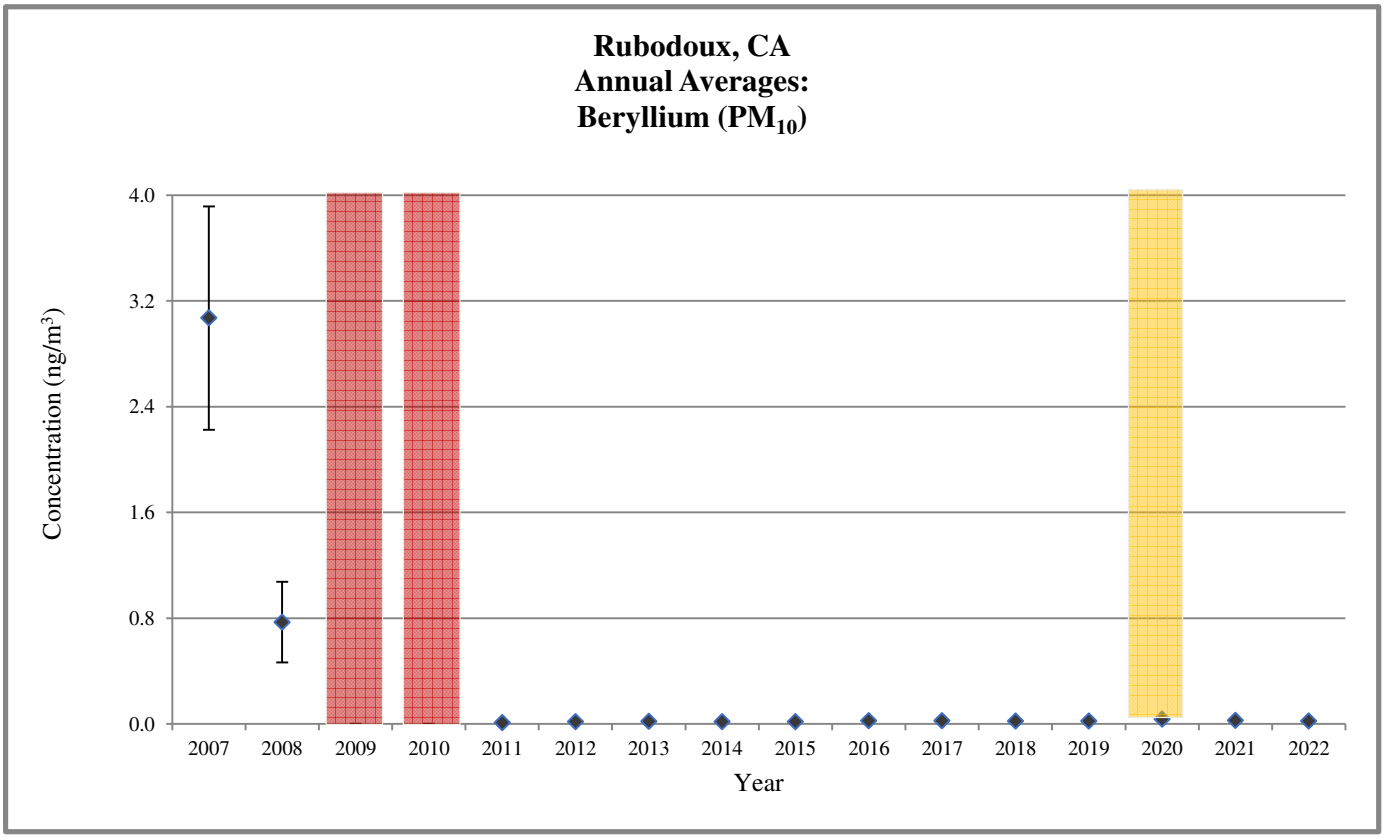
Figure 3. Rubidoux, CA Annual Average Concentrations

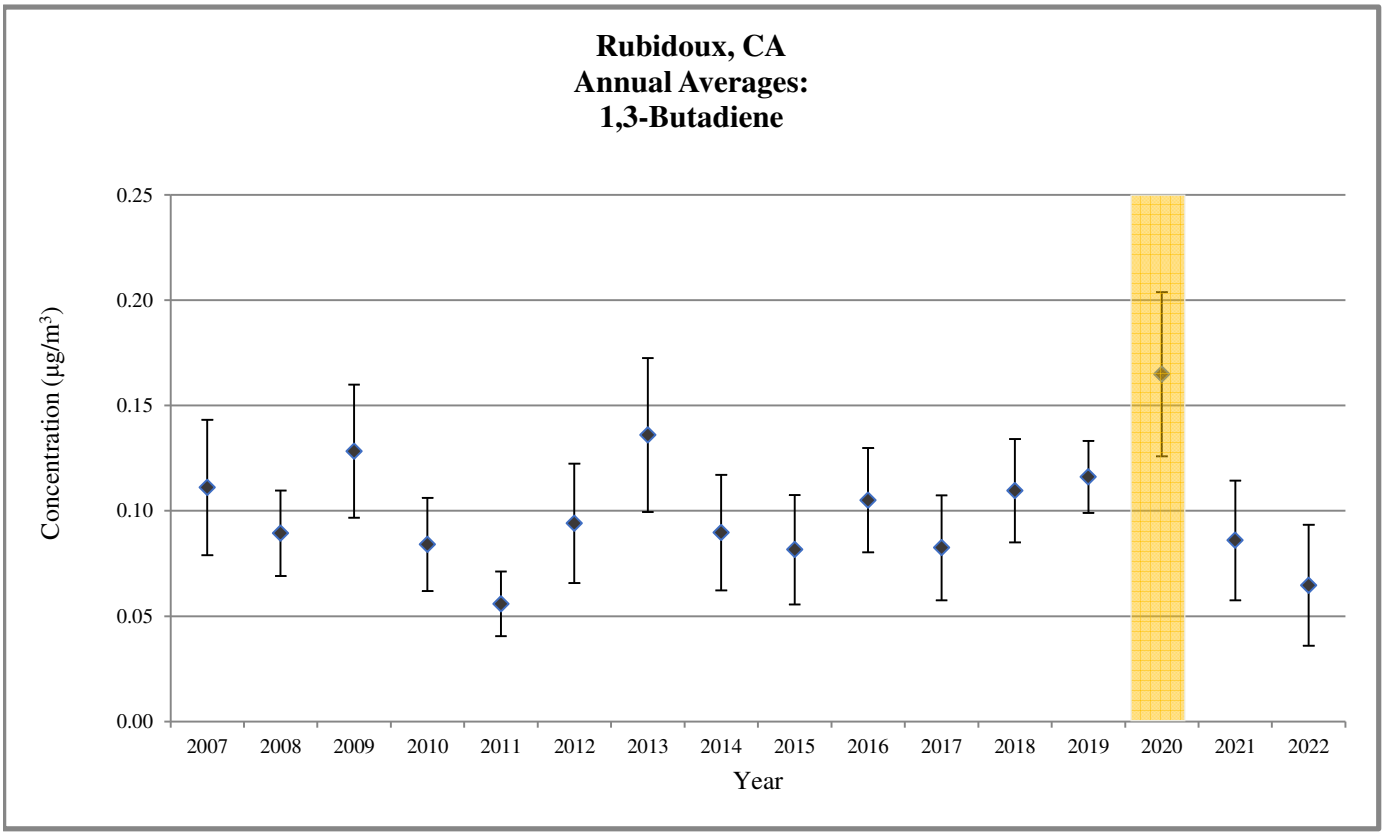




Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

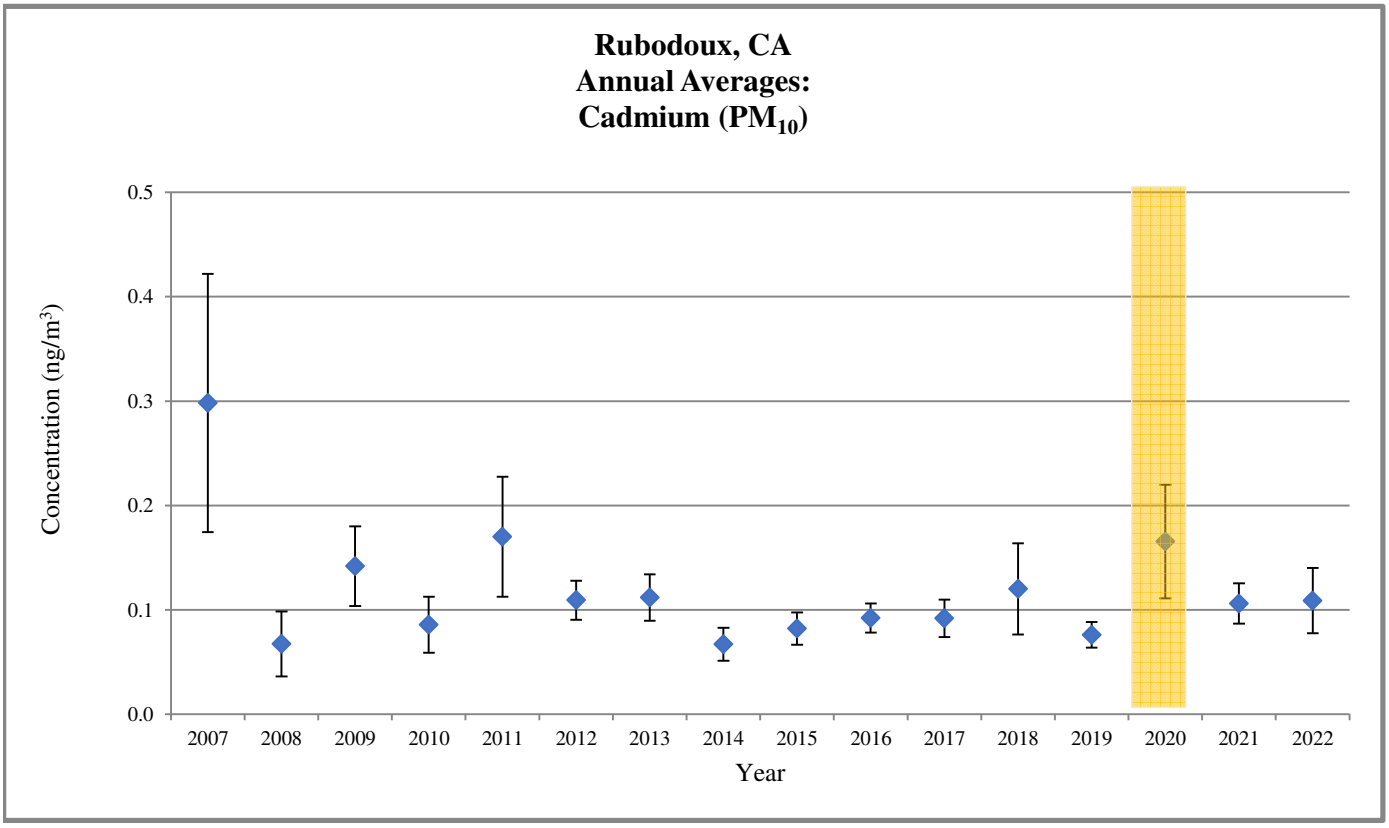
Figure 3. Rubidoux, CA Annual Average Concentrations

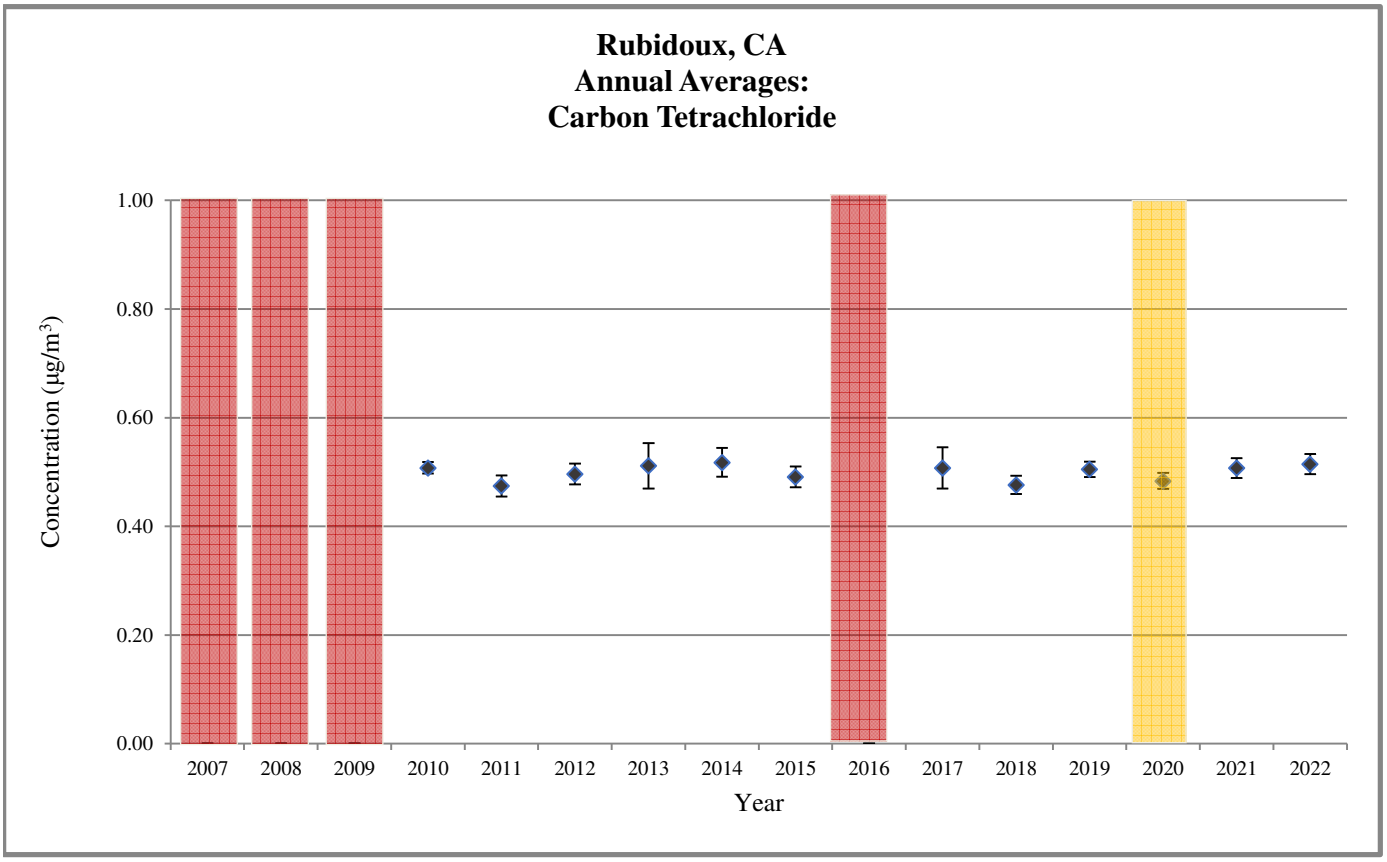




Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

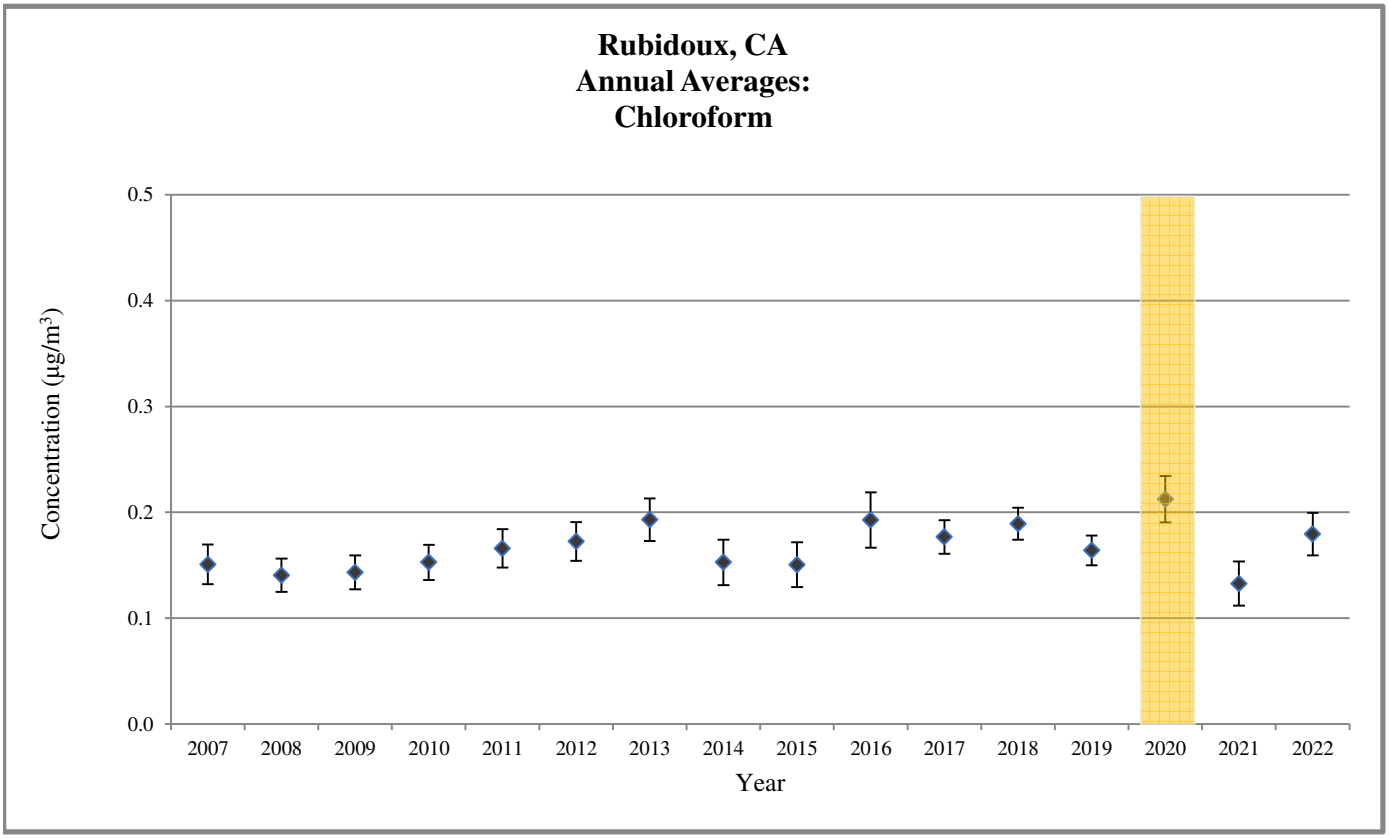
Figure 3. Rubidoux, CA Annual Average Concentrations

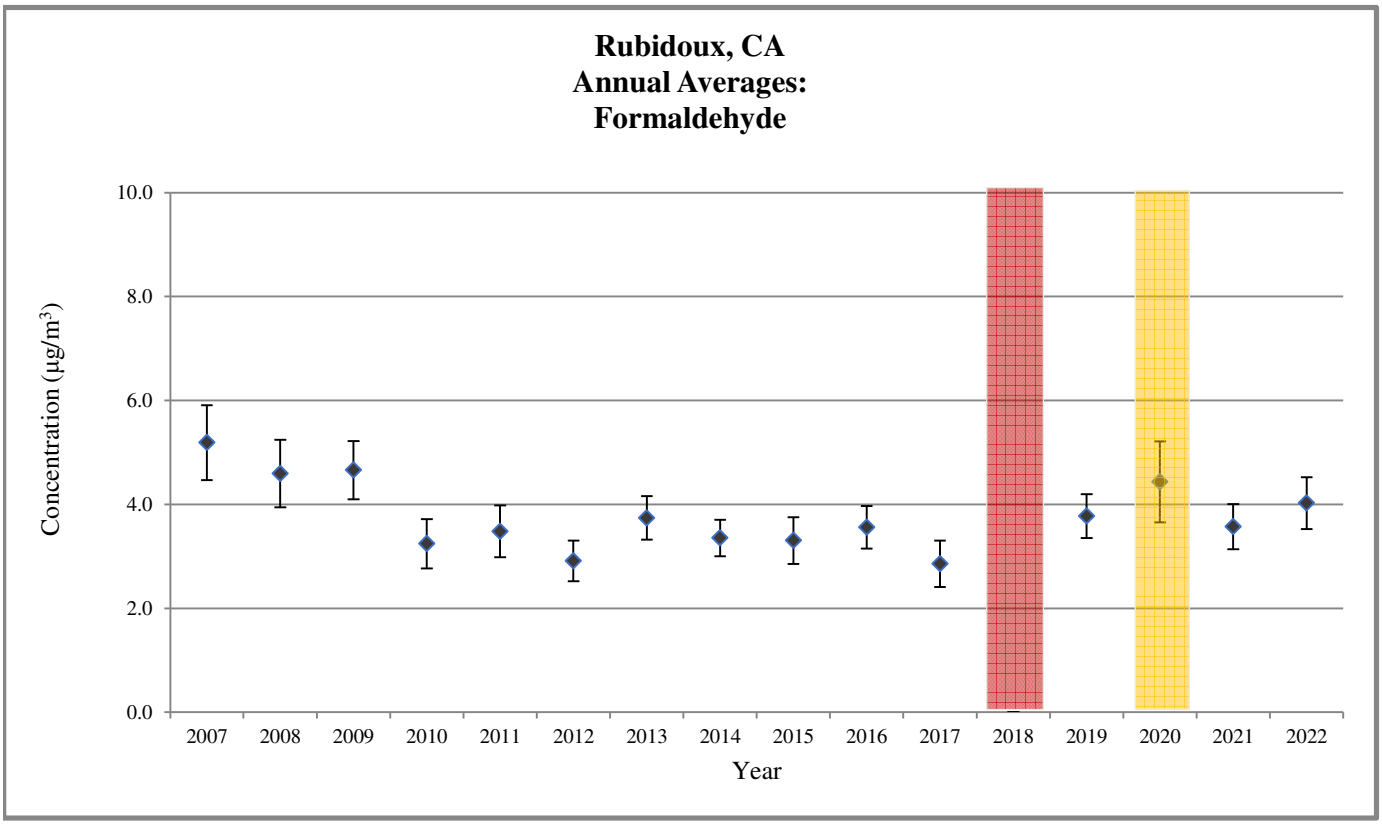




Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

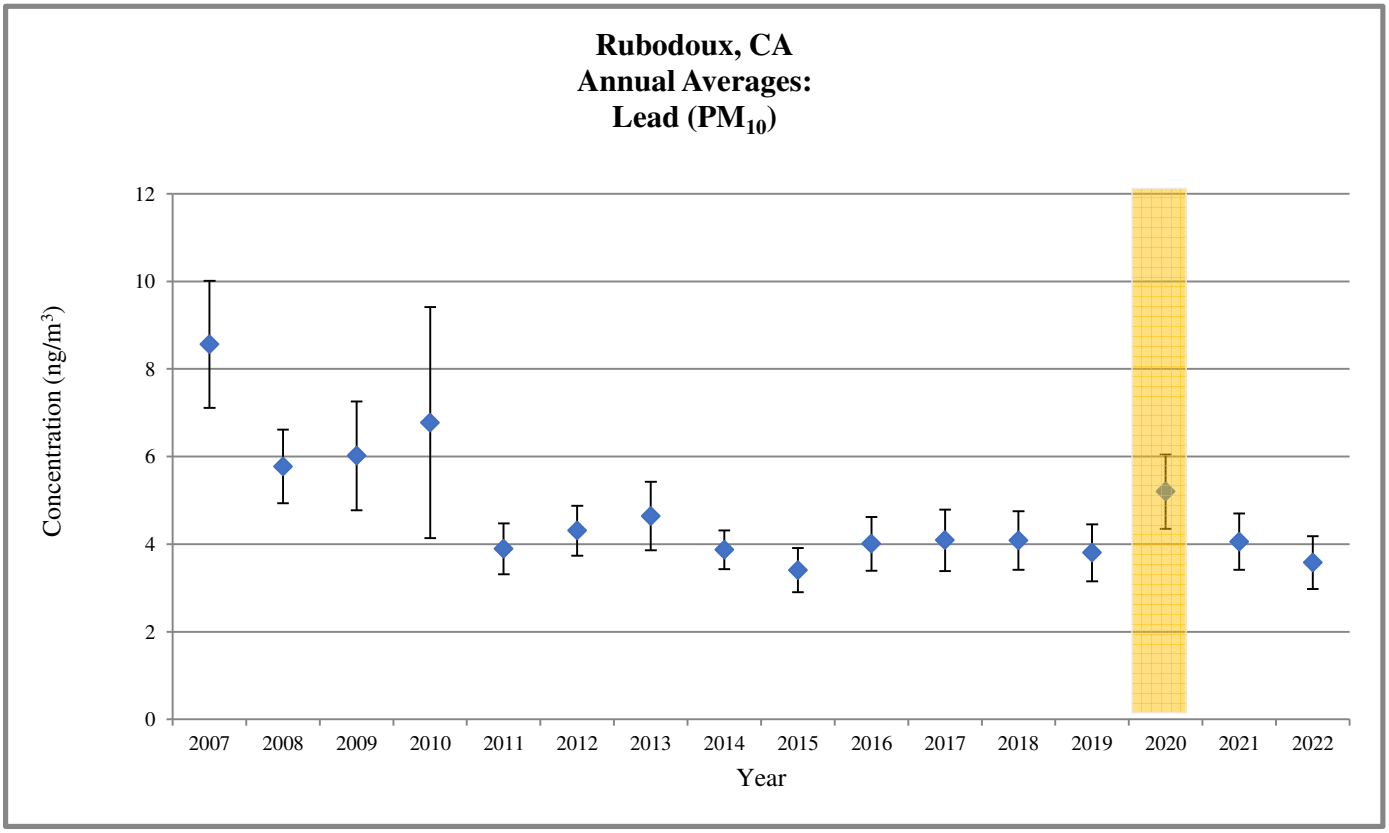
Figure 3. Rubidoux, CA Annual Average Concentrations

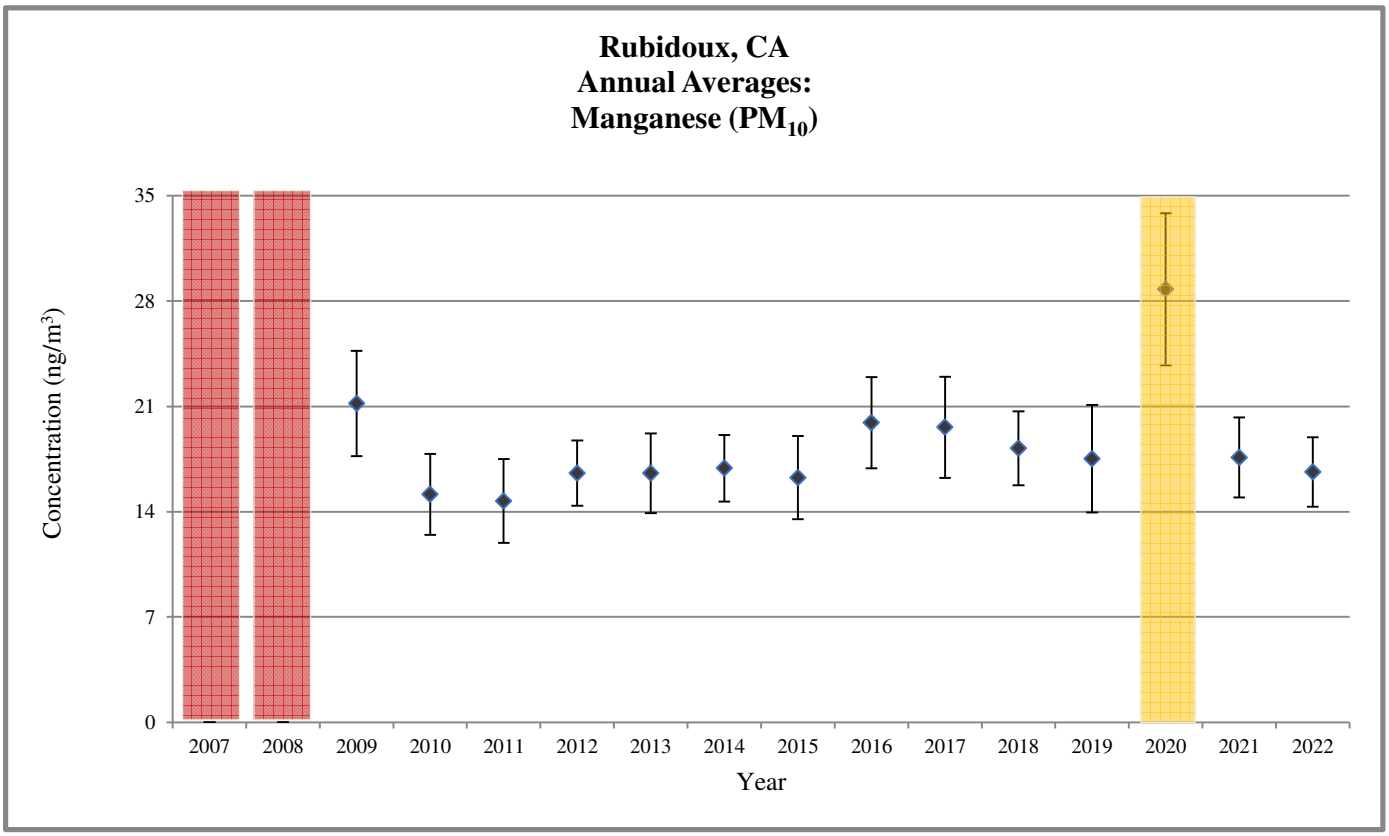




Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

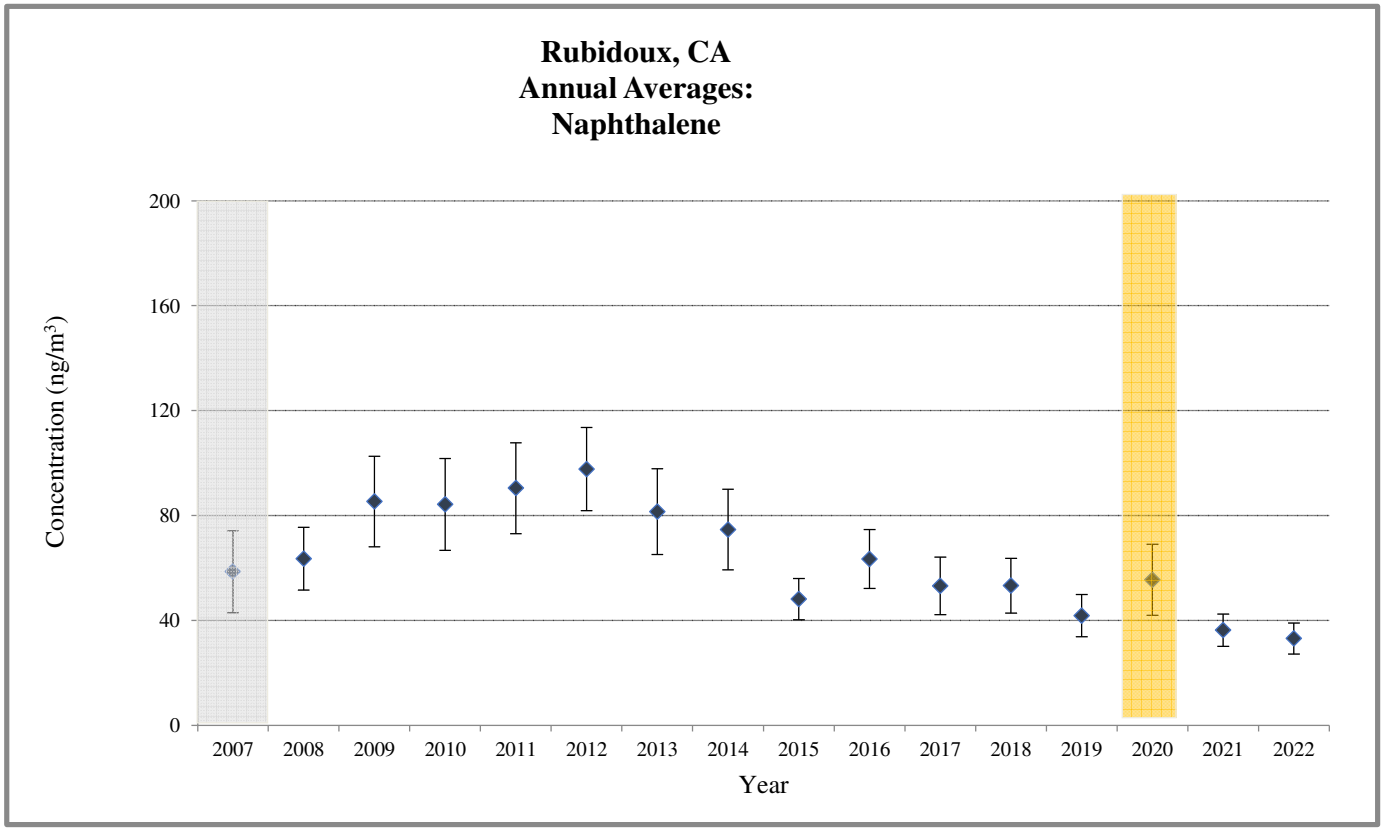
Figure 3. Rubidoux, CA Annual Average Concentrations

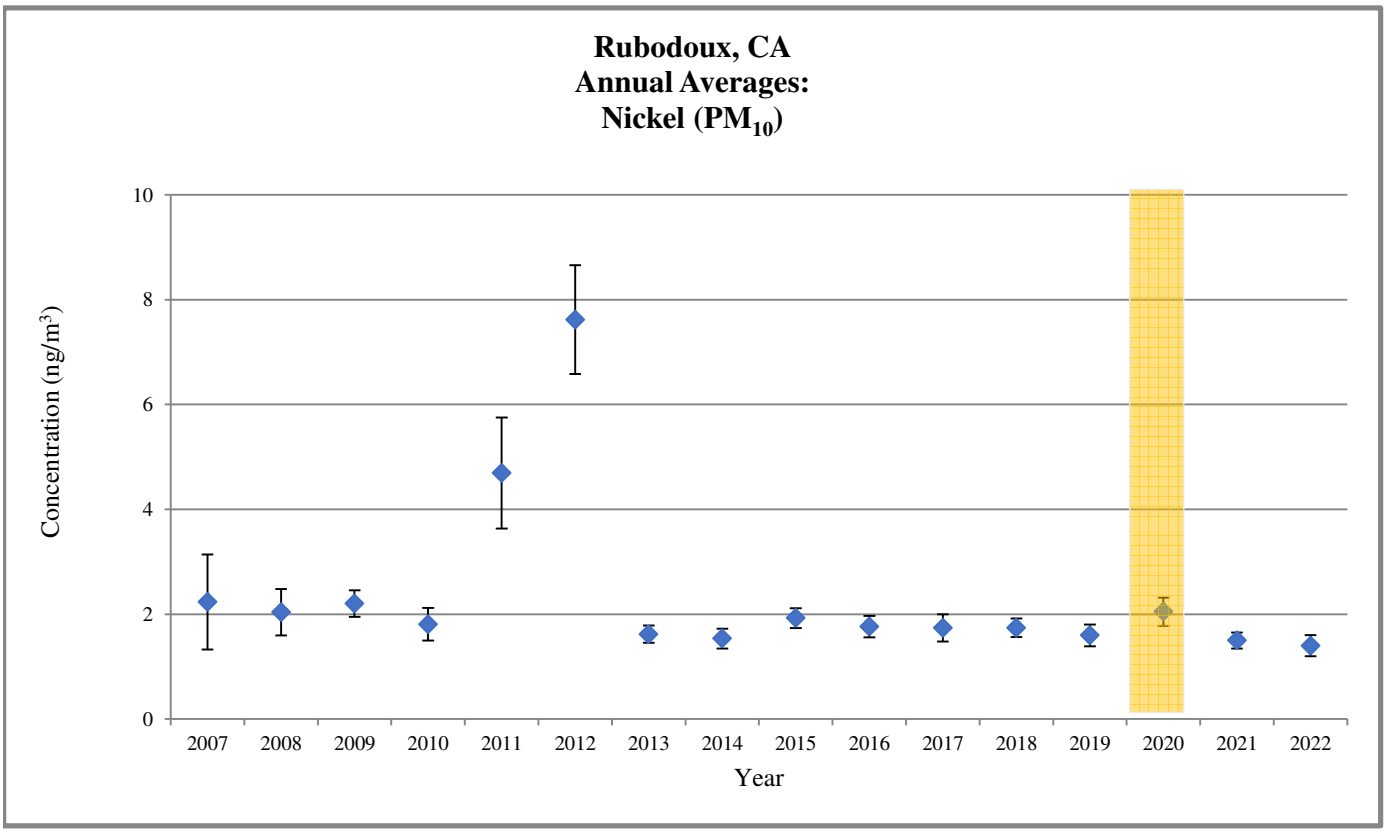




Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

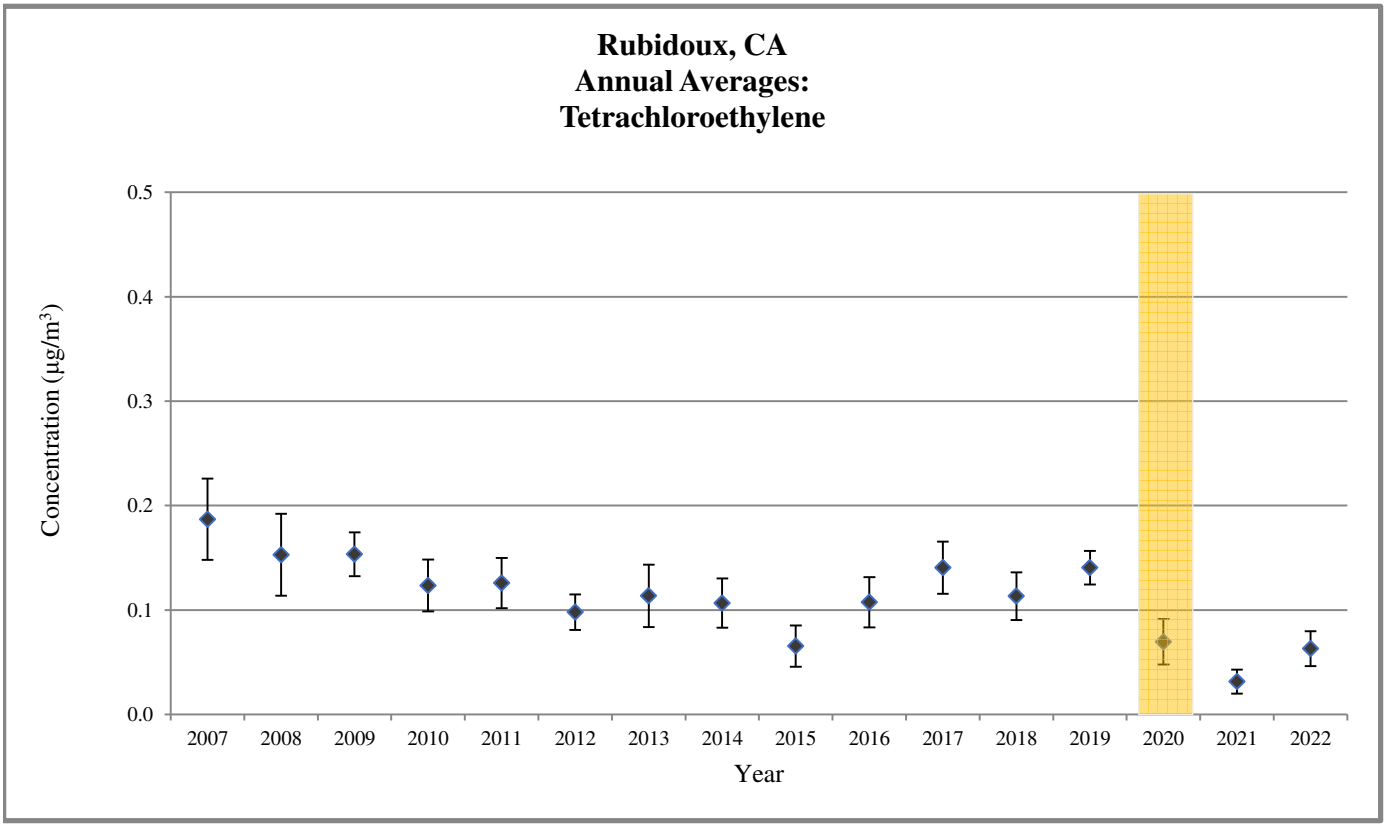
Figure 3. Rubidoux, CA Annual Average Concentrations

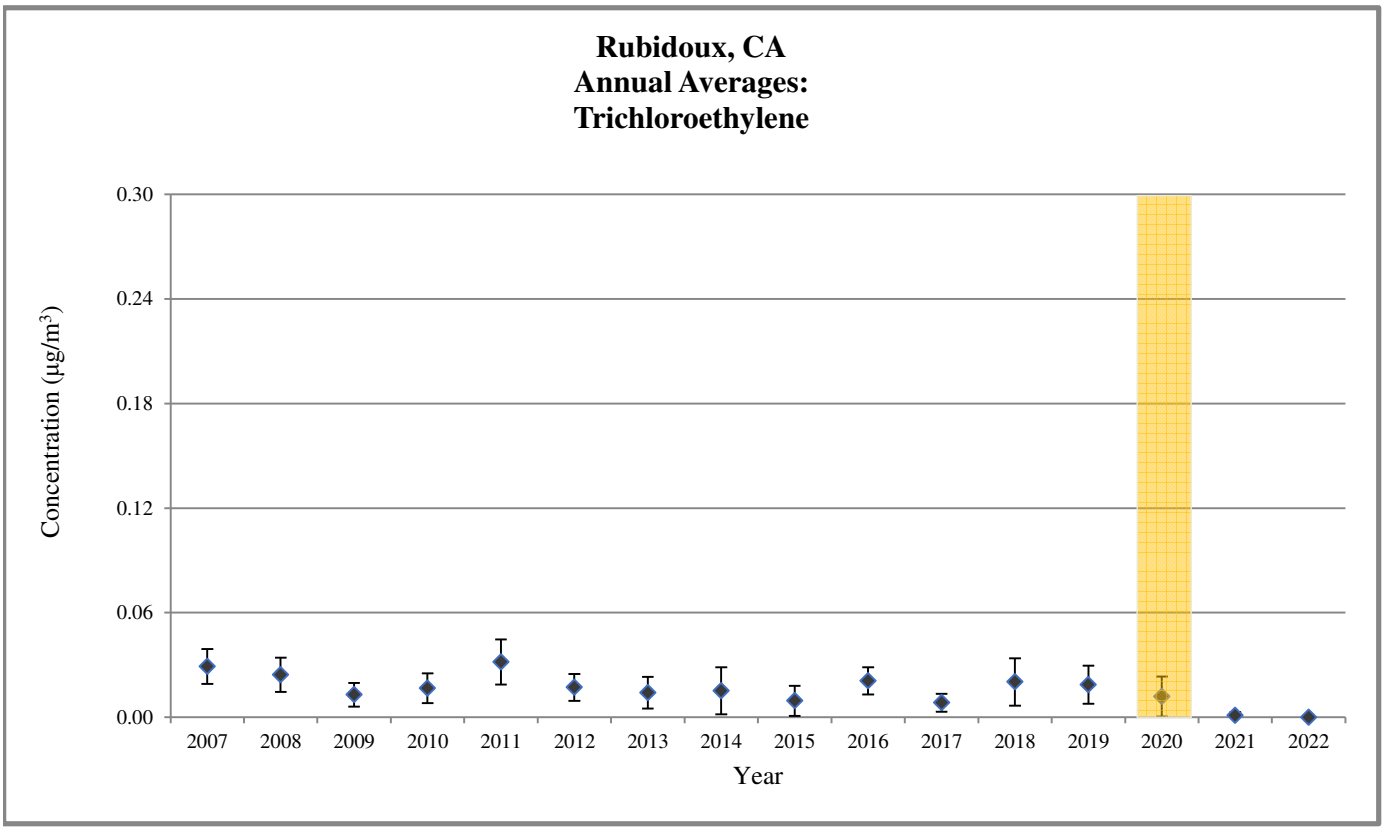




Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

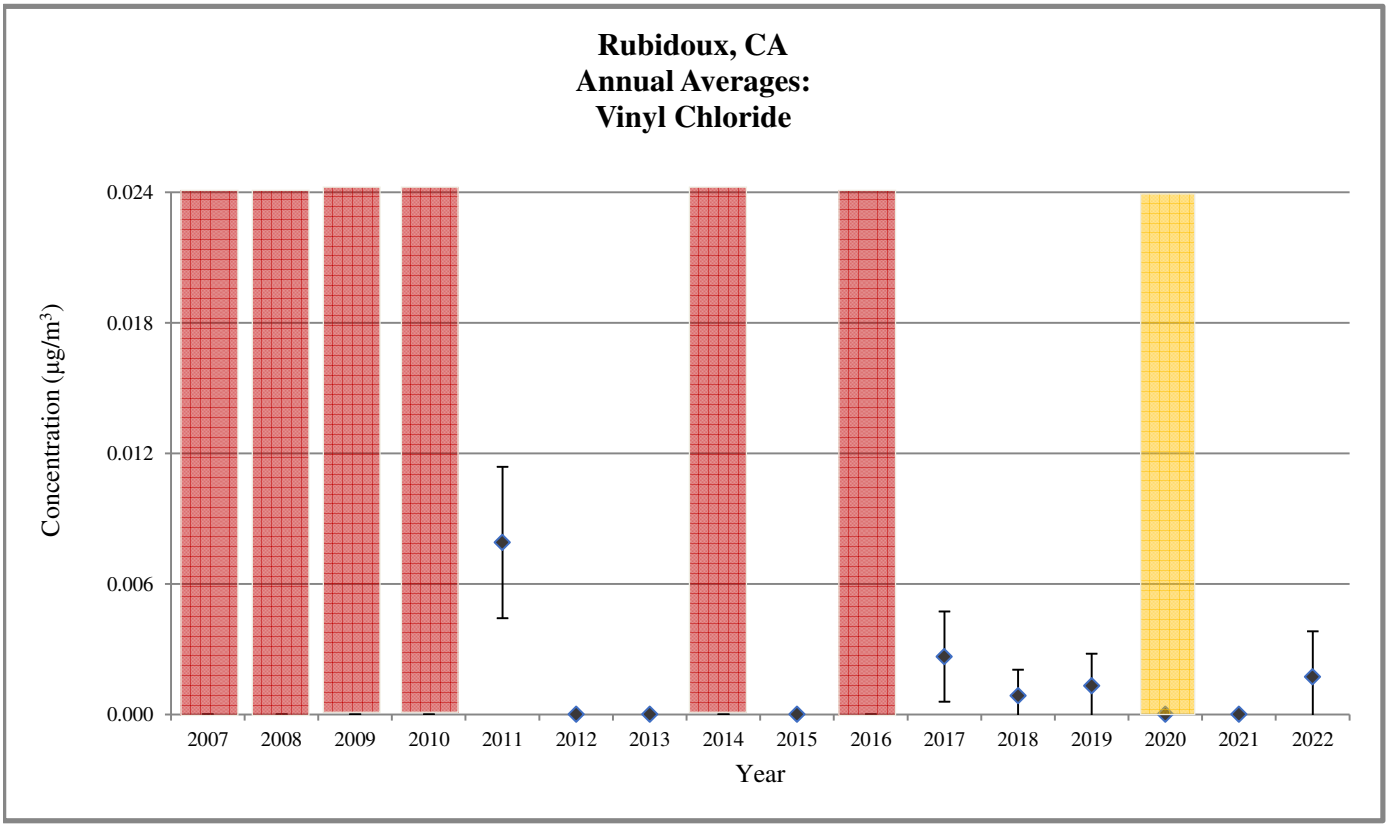
Figure 3. Rubidoux, CA Annual Average Concentrations





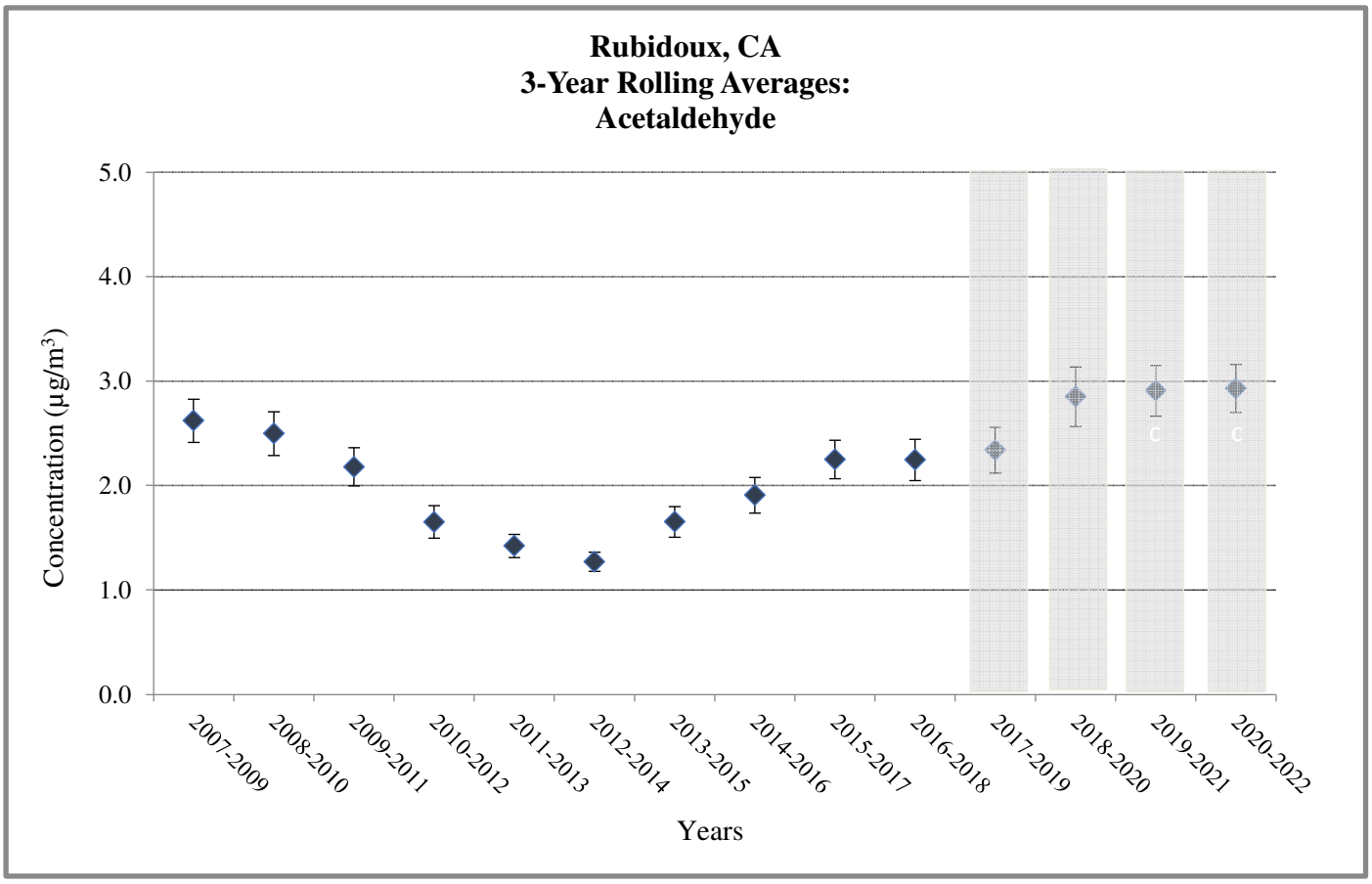
Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

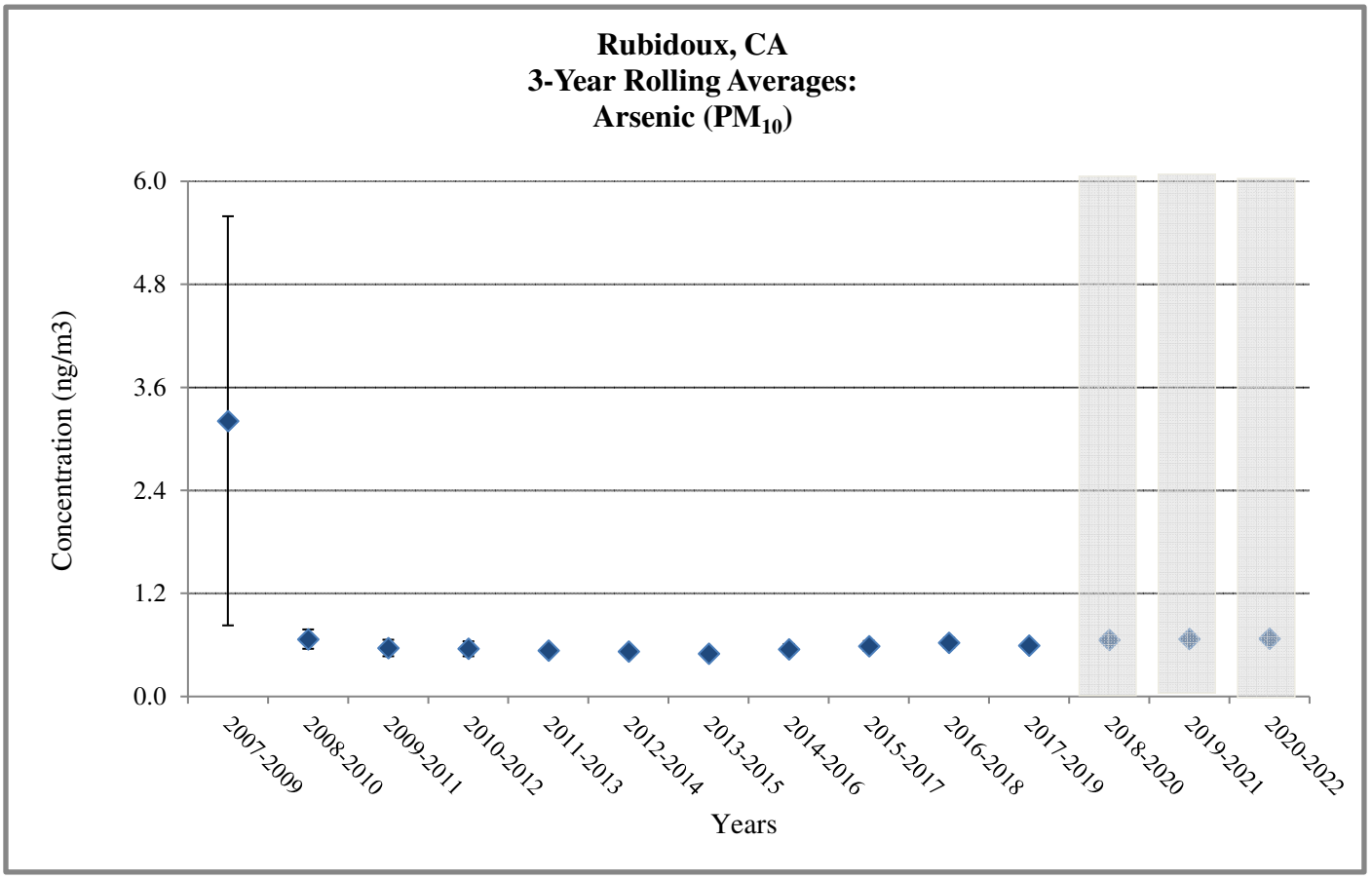
Figure 3. Rubidoux, CA Annual Average Concentrations



Sampling began midway through the year.
Does not meet MQO
Not enough observations due to Covid-19 restrictions

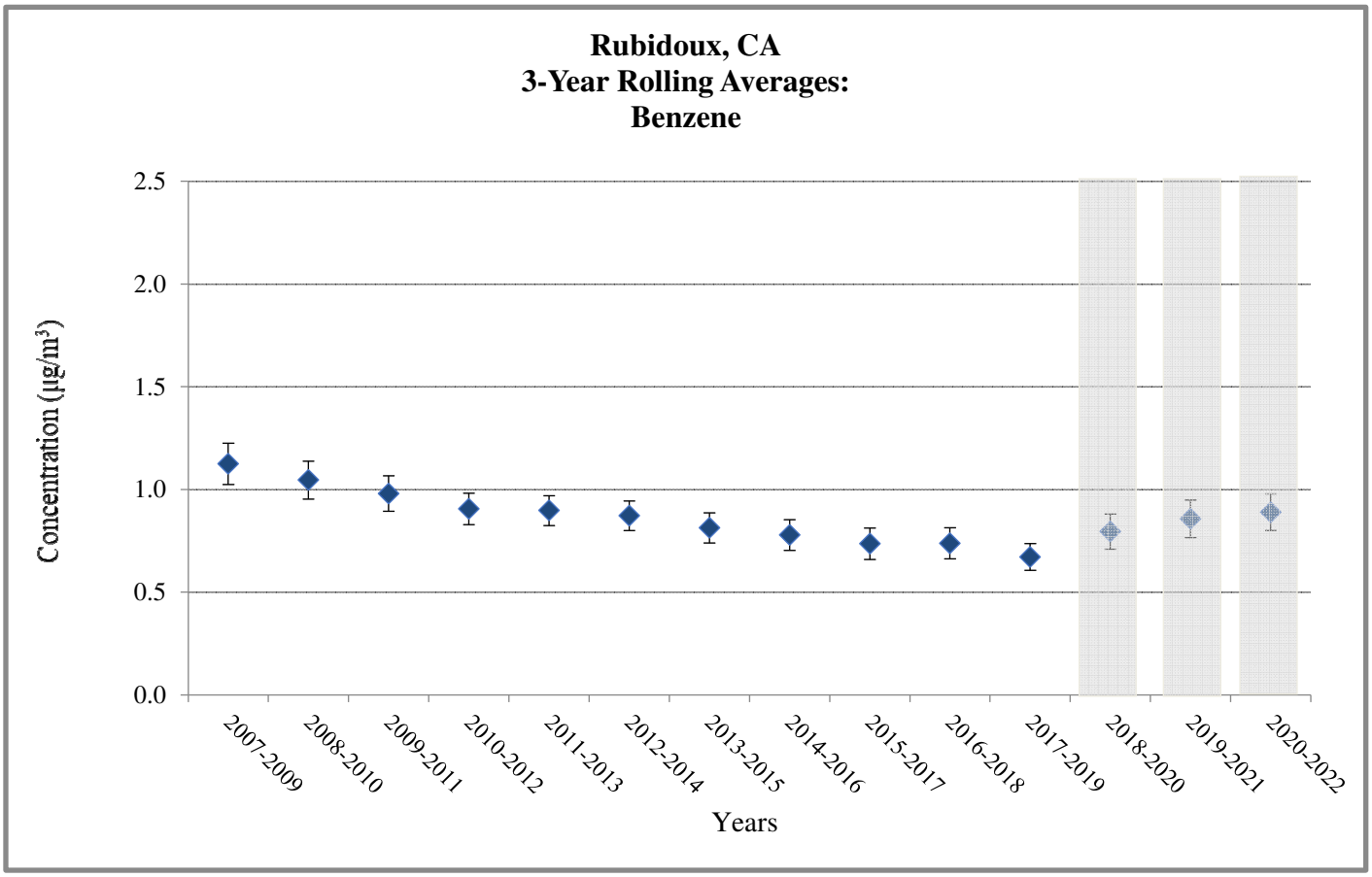
Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations

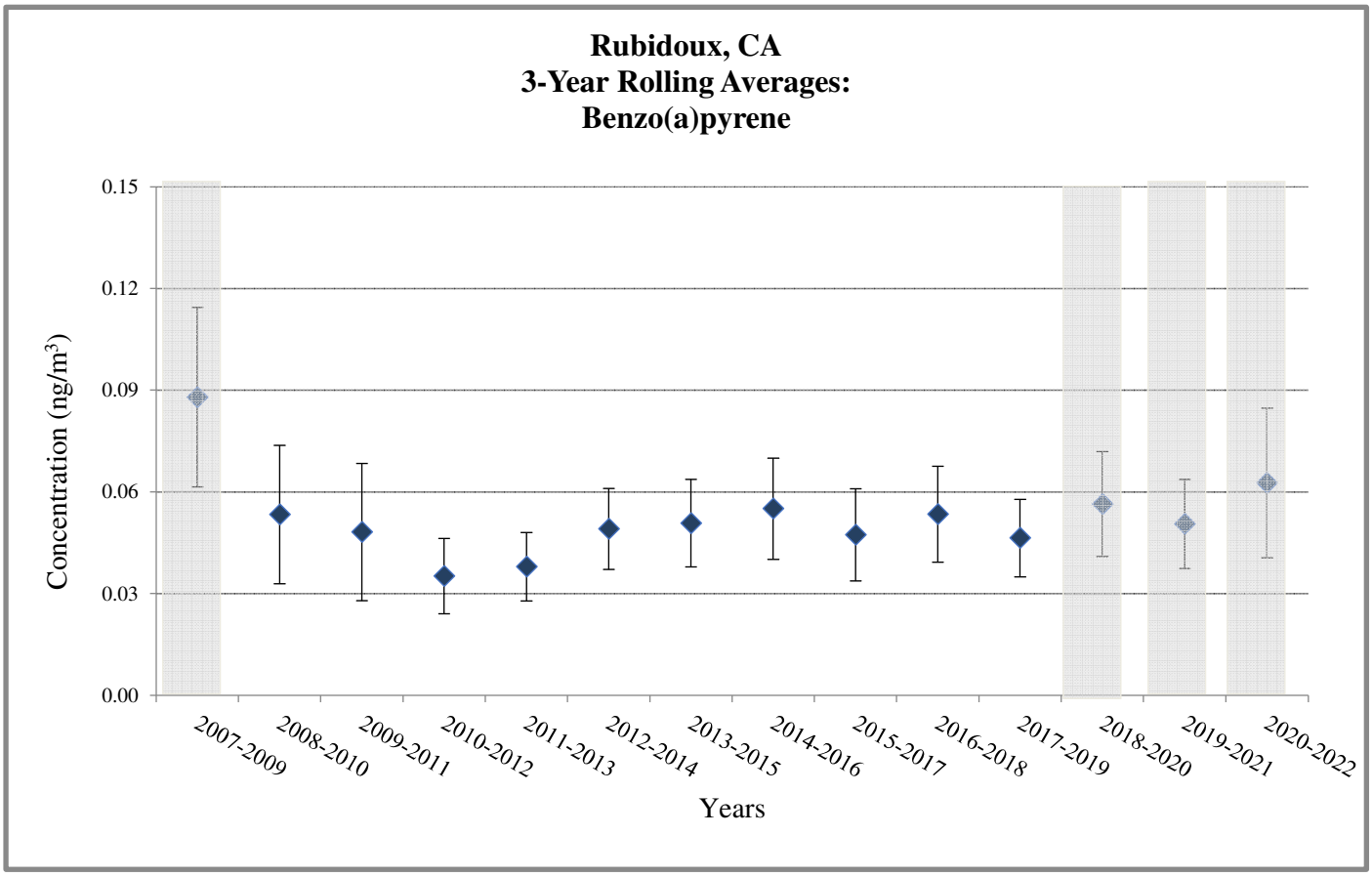




Does not meet MQO or wasn't able to collect enough samples

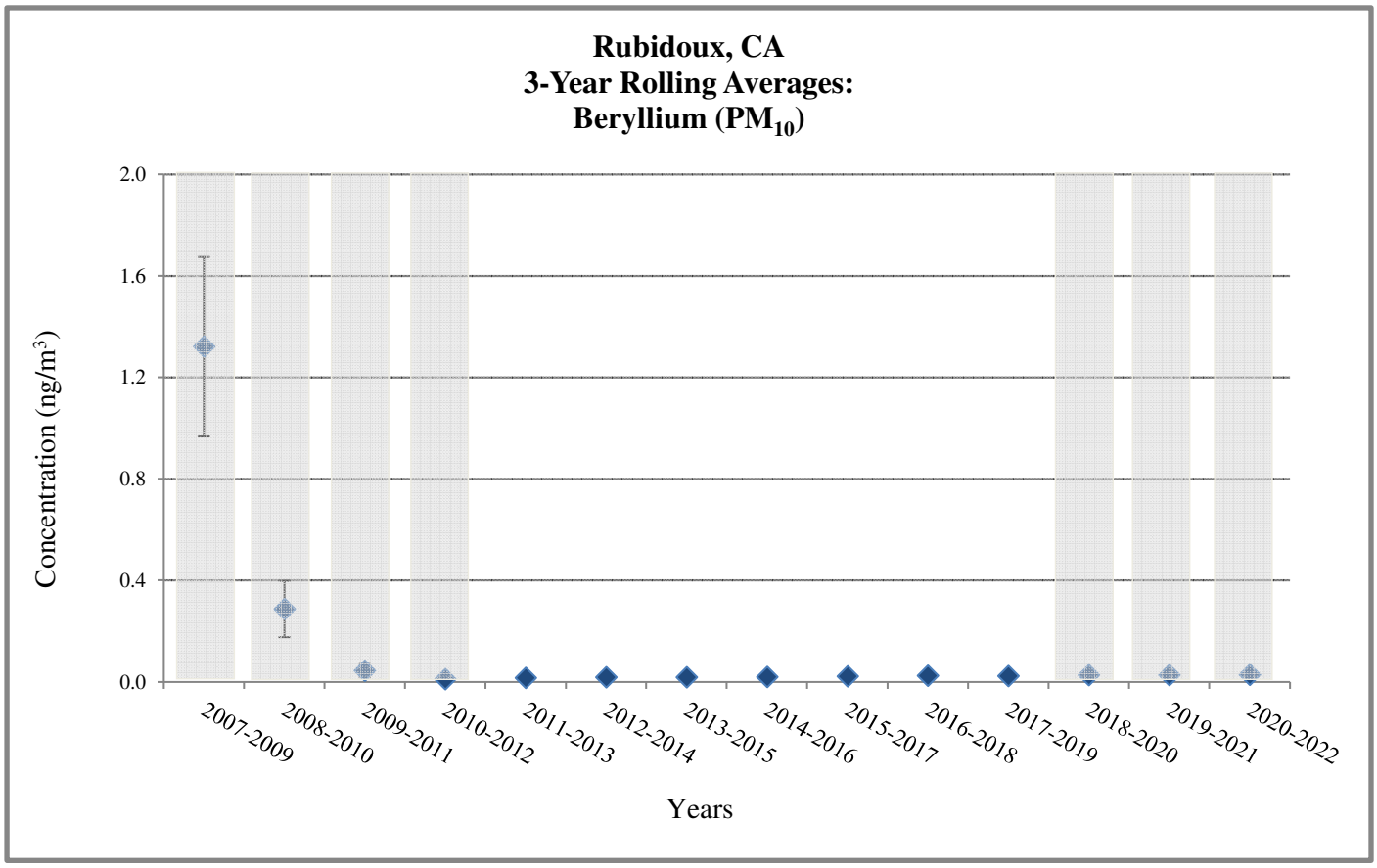
Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations

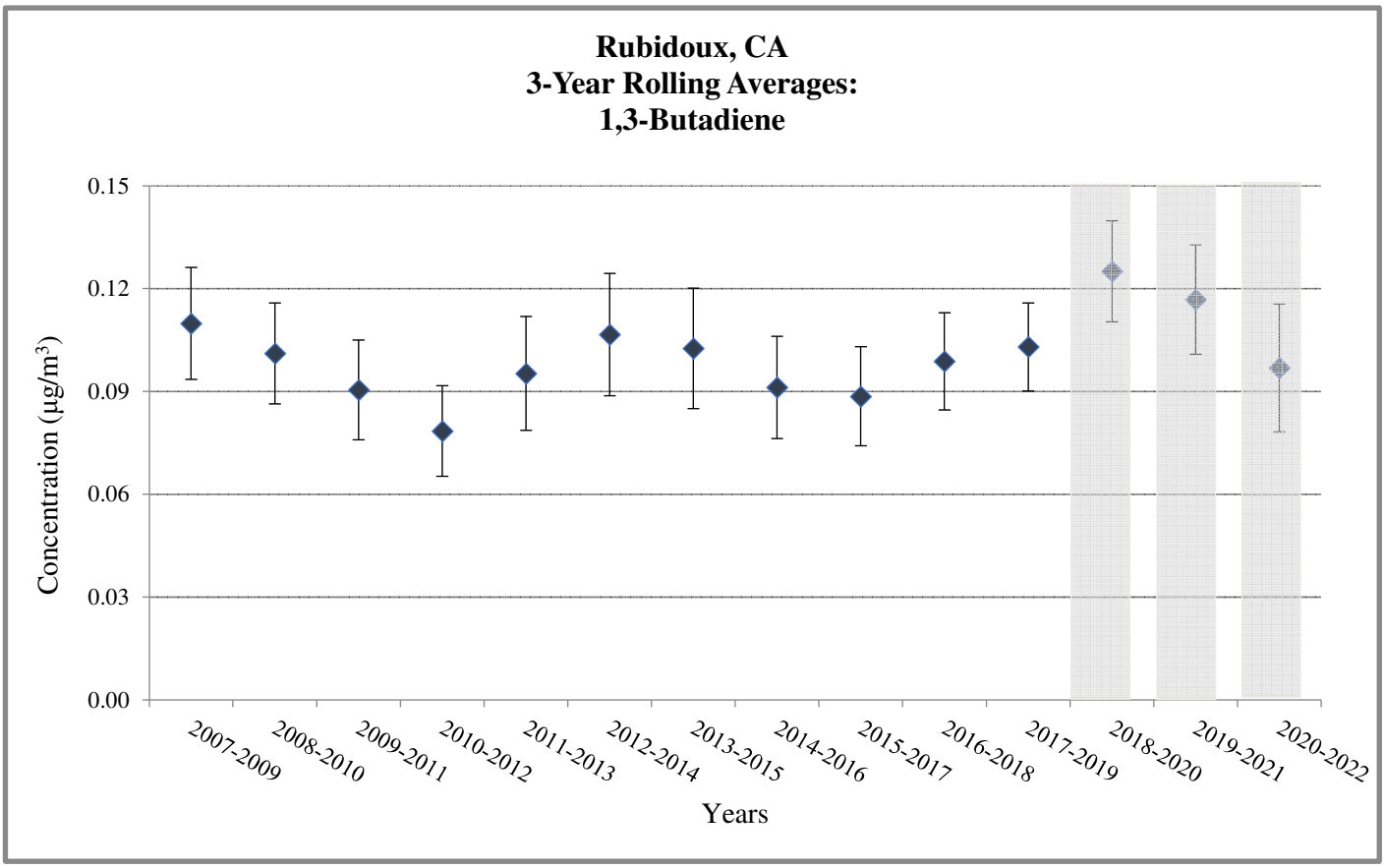




Does not meet MQO or wasn't able to collect enough samples

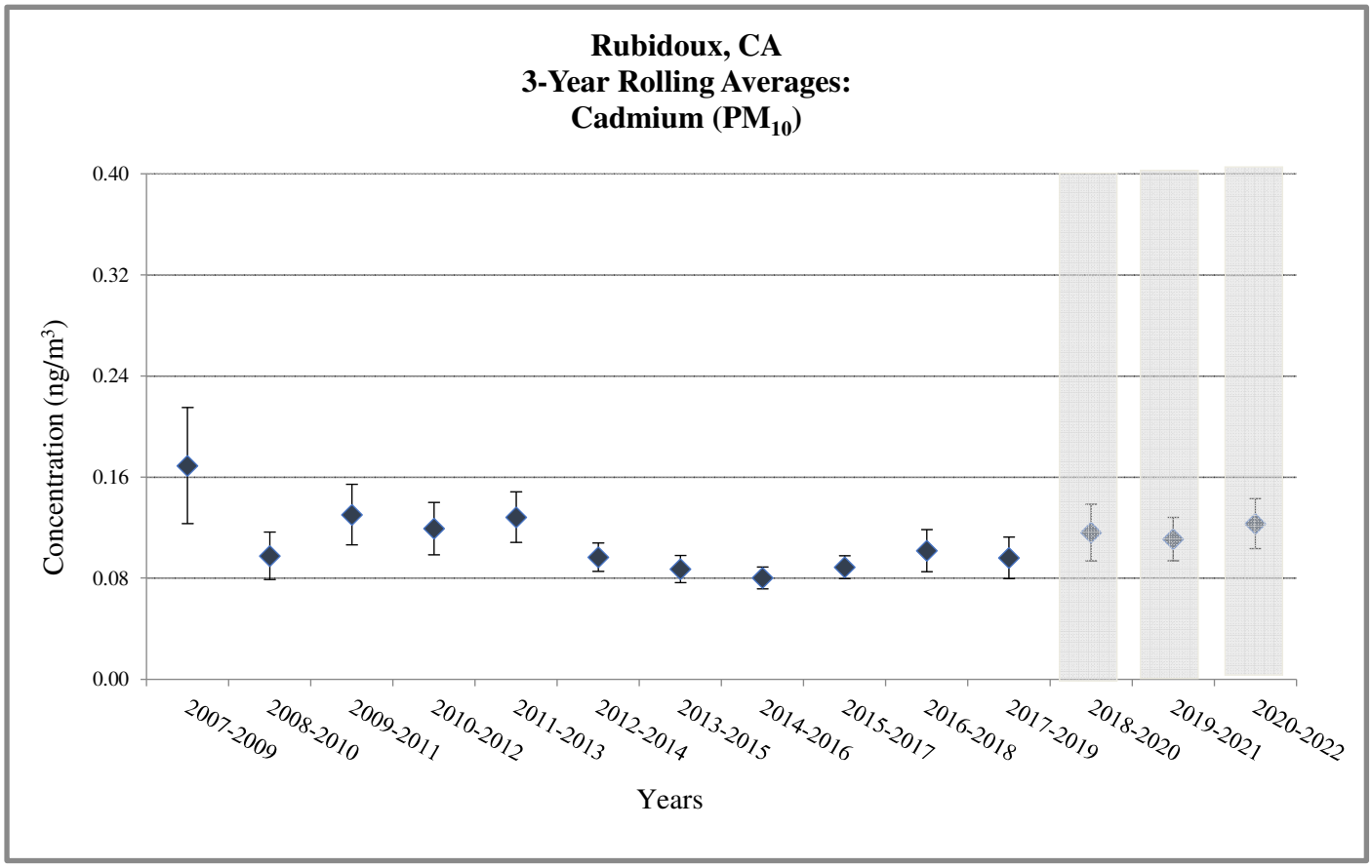
Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations

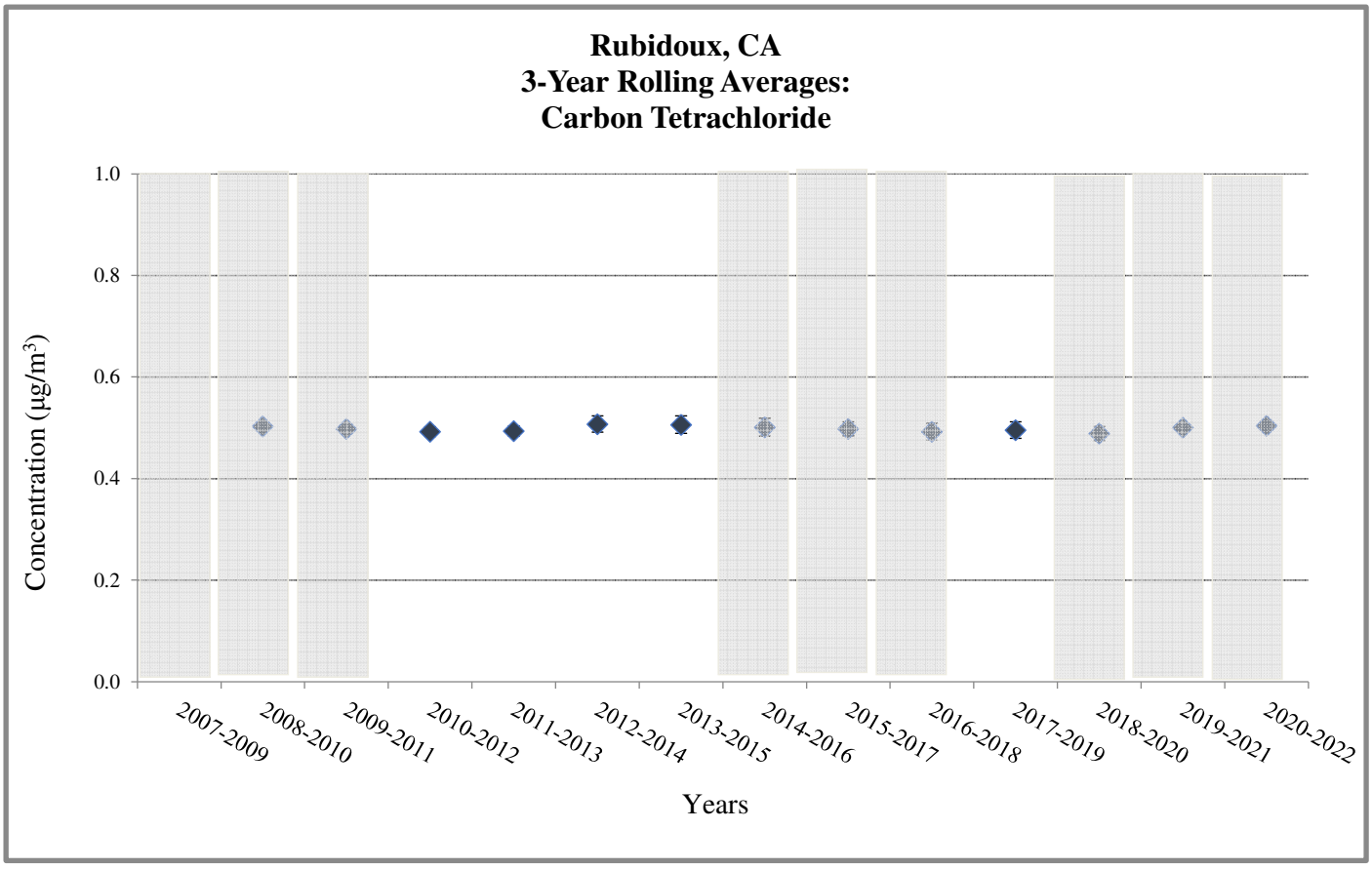




Does not meet MQO or wasn't able to collect enough samples

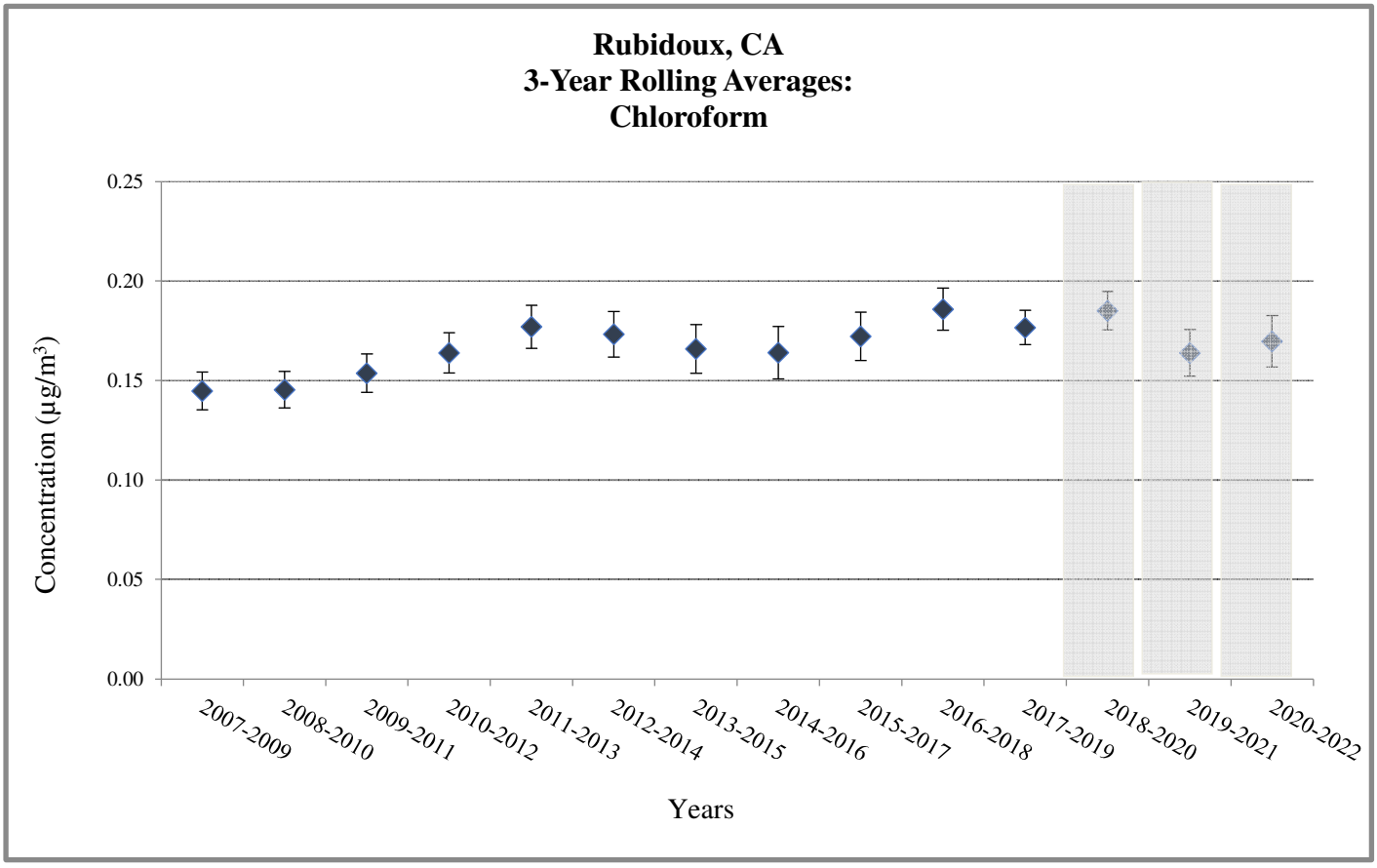
Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations

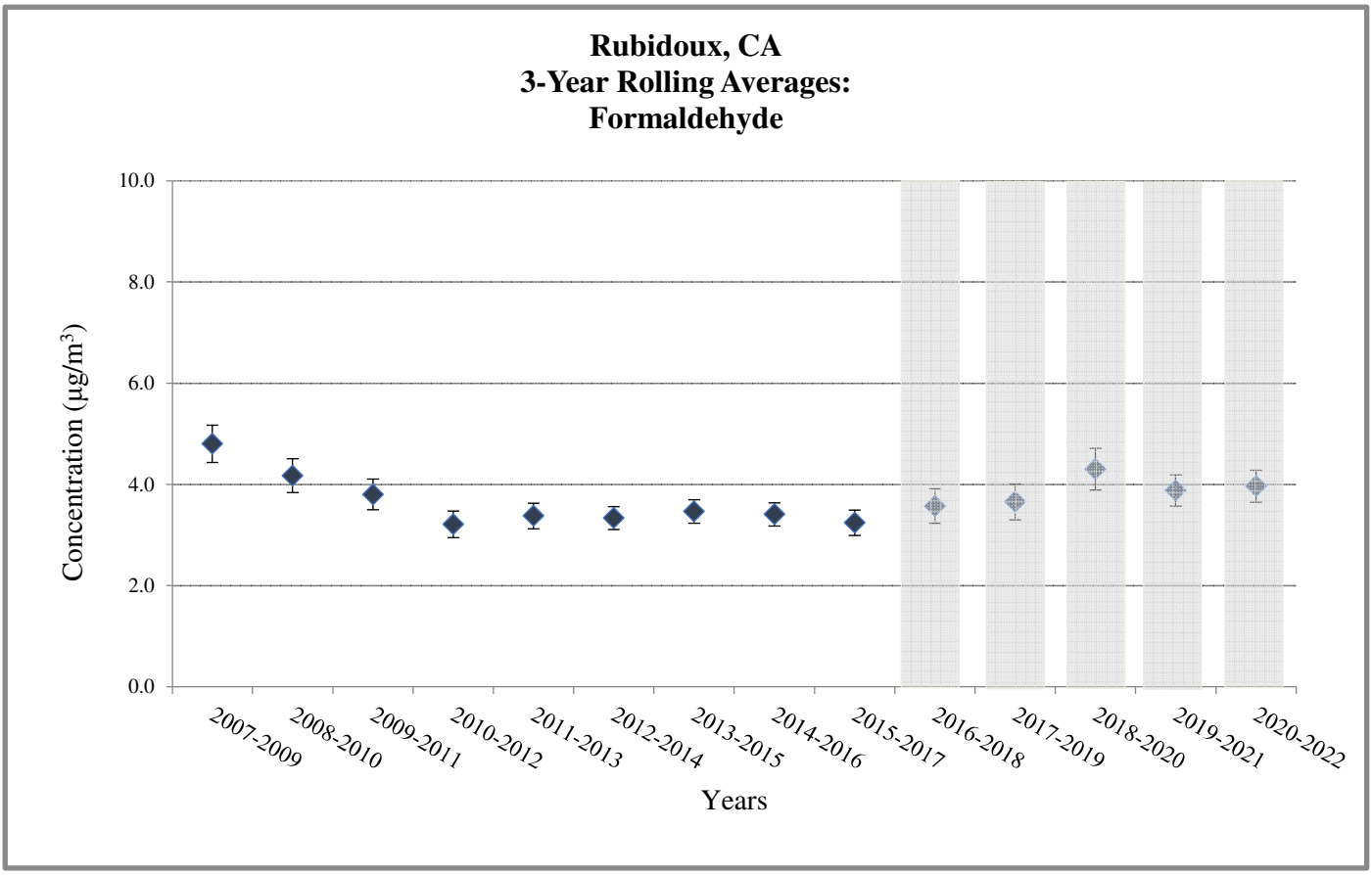




Does not meet MQO or wasn't able to collect enough samples

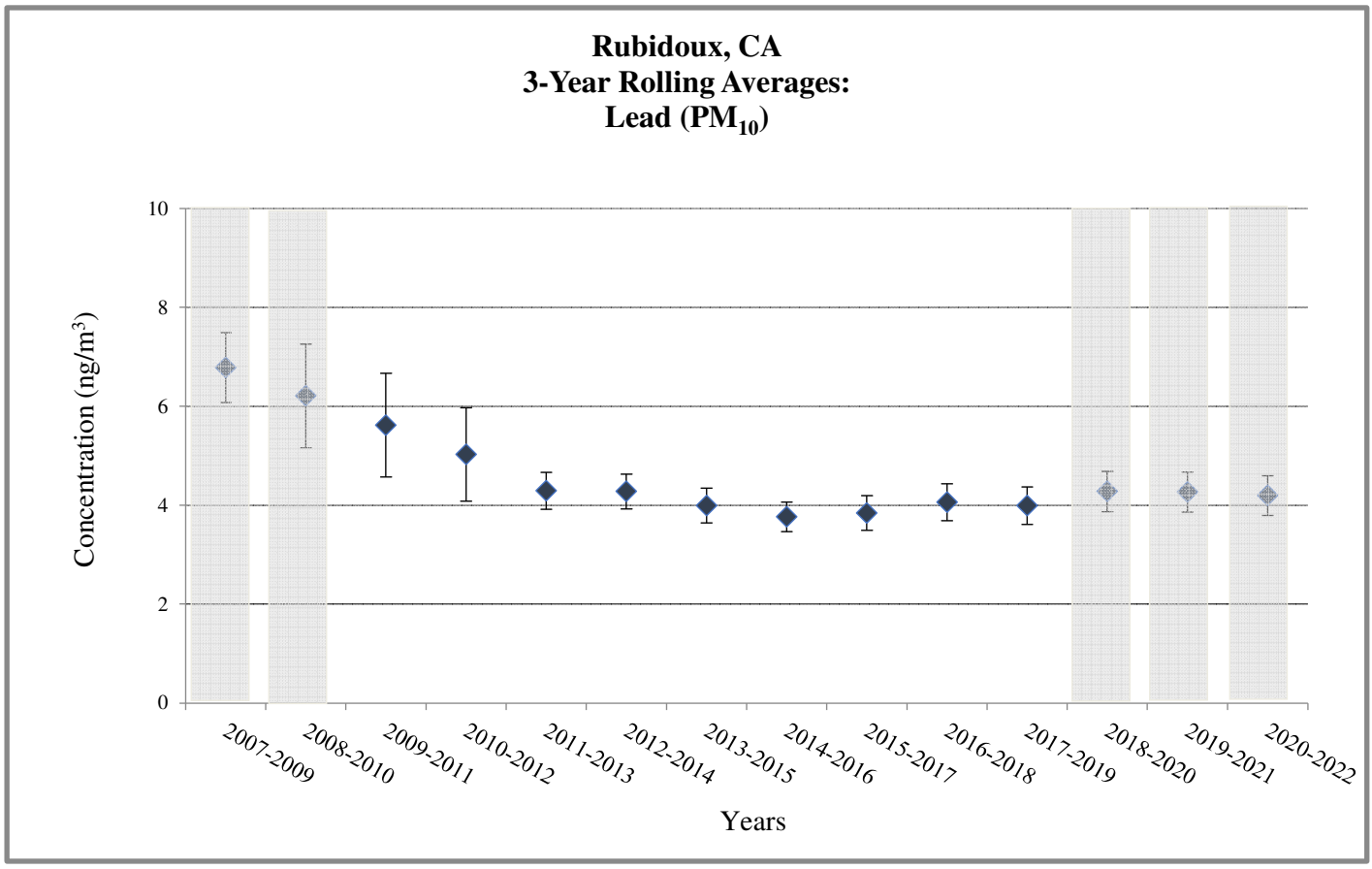
Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations

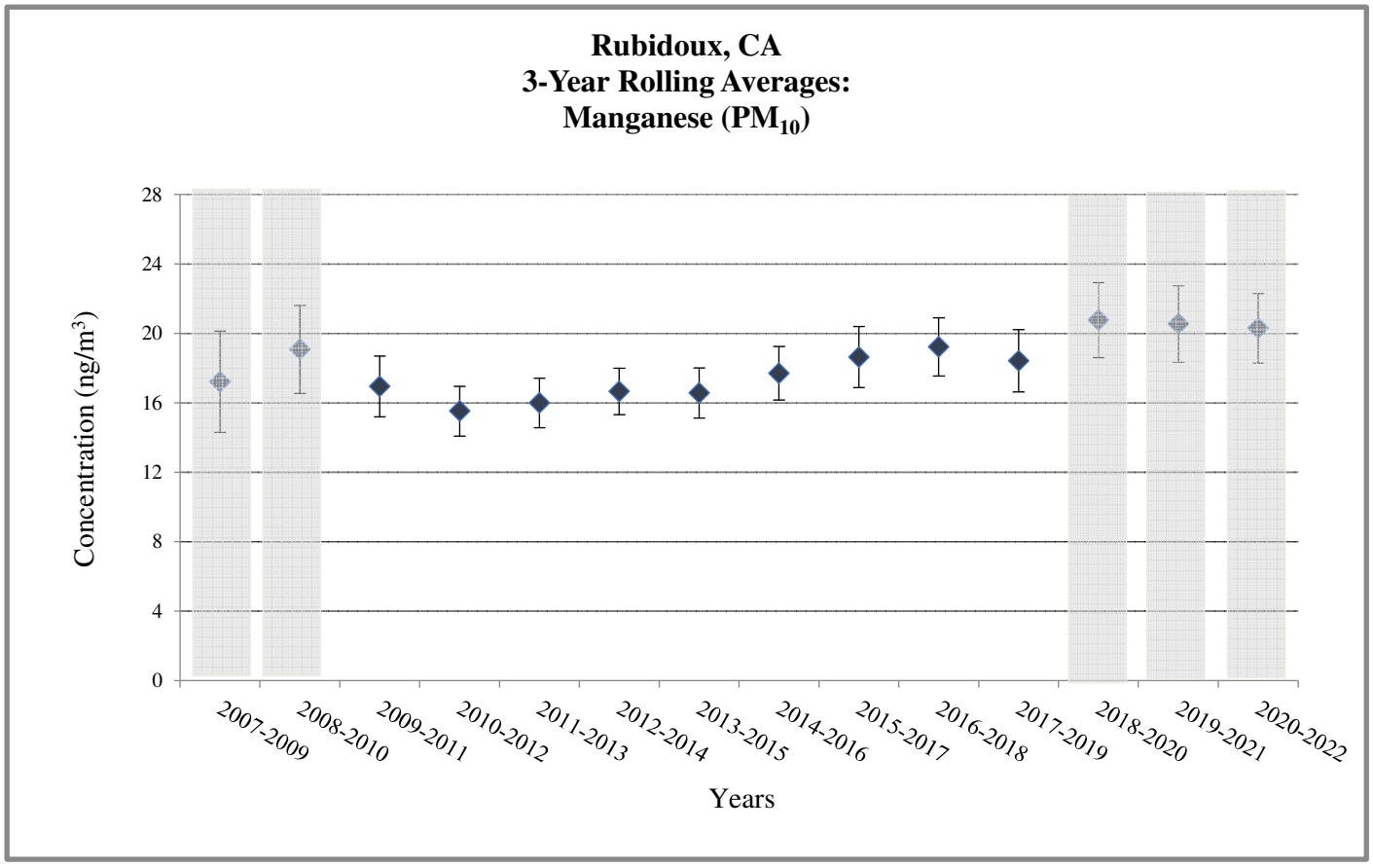




Does not meet MQO or wasn't able to collect enough samples

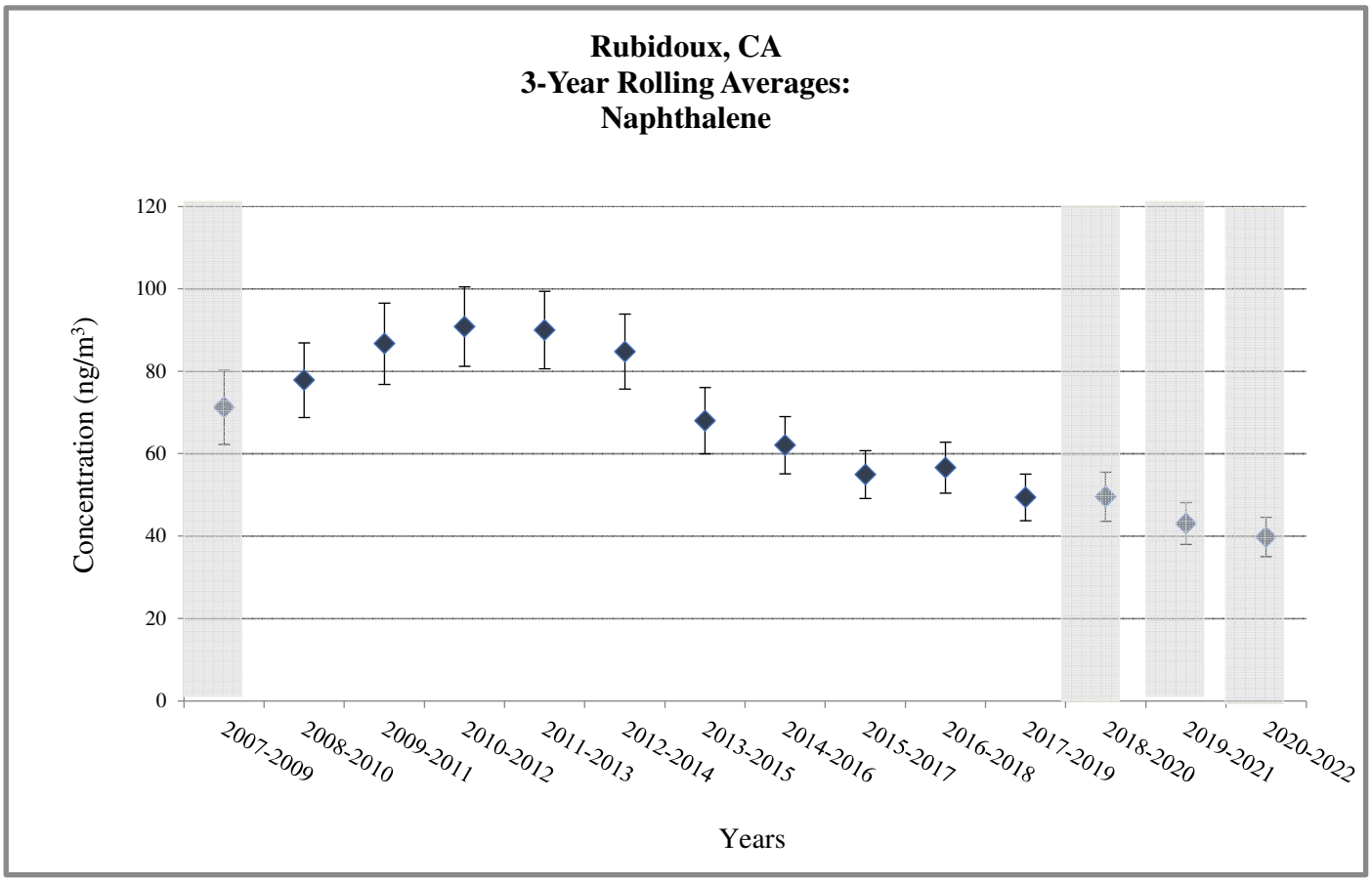
Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations

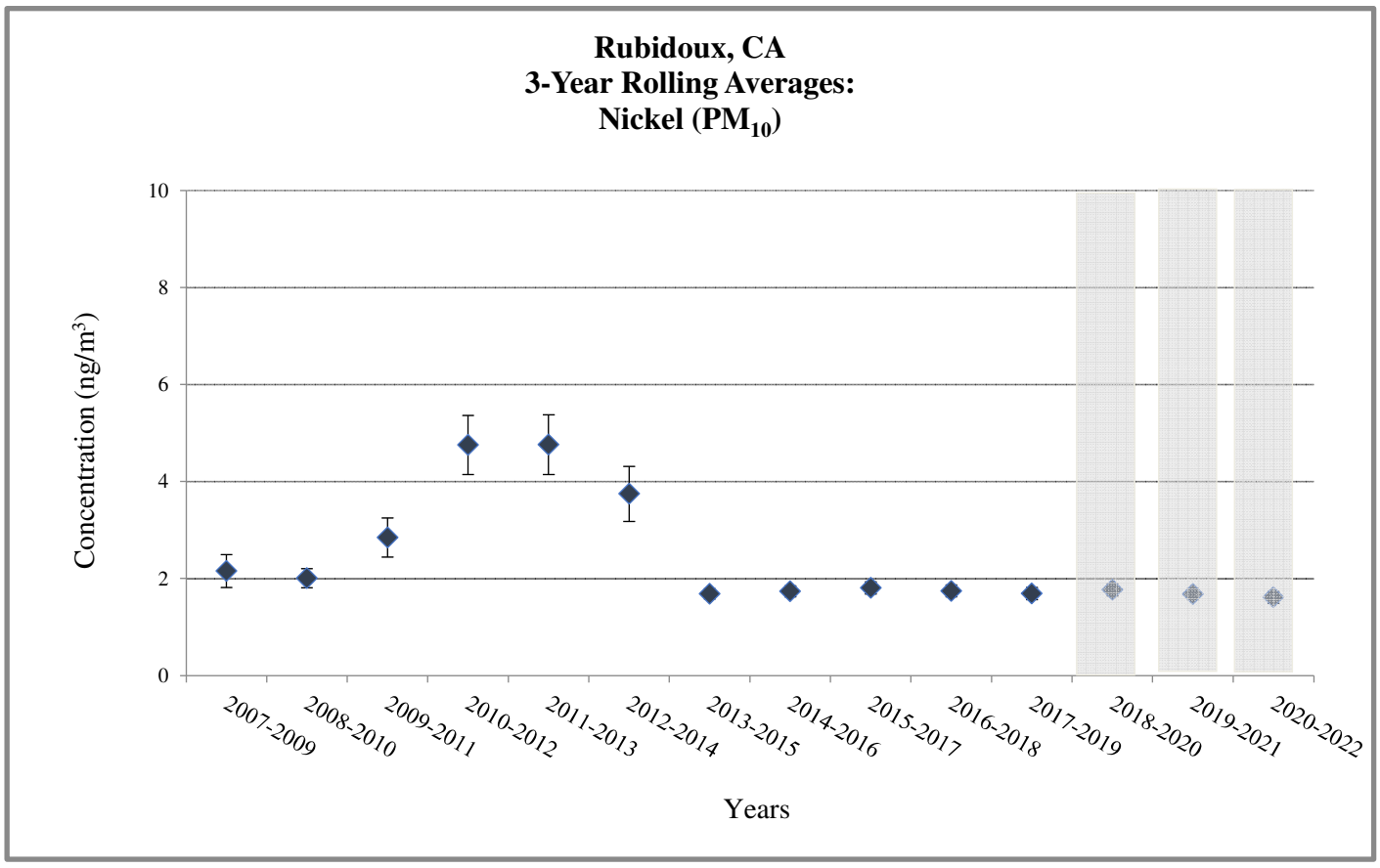




Does not meet MQO or wasn't able to collect enough samples

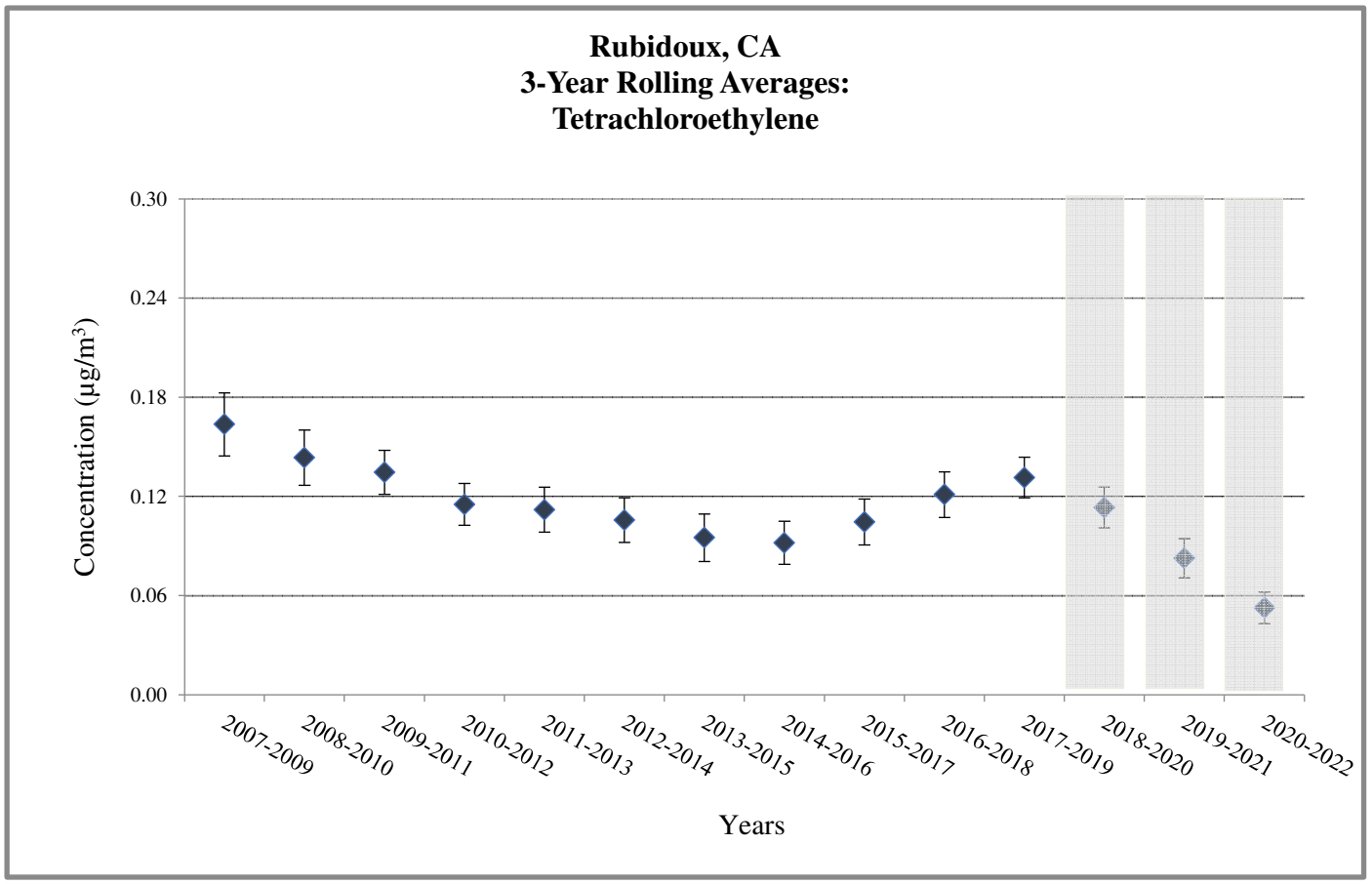
Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations

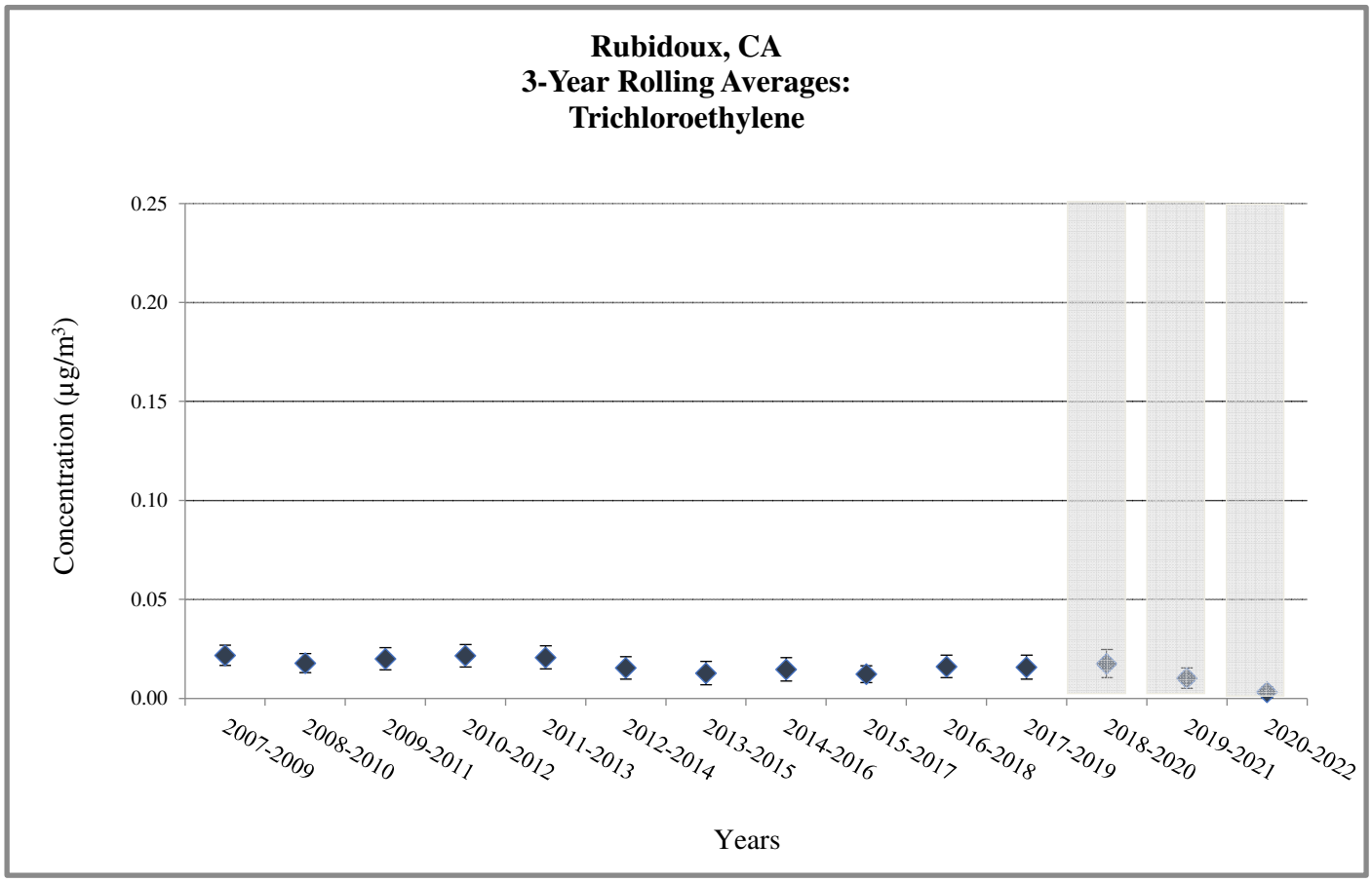




Does not meet MQO or wasn't able to collect enough samples

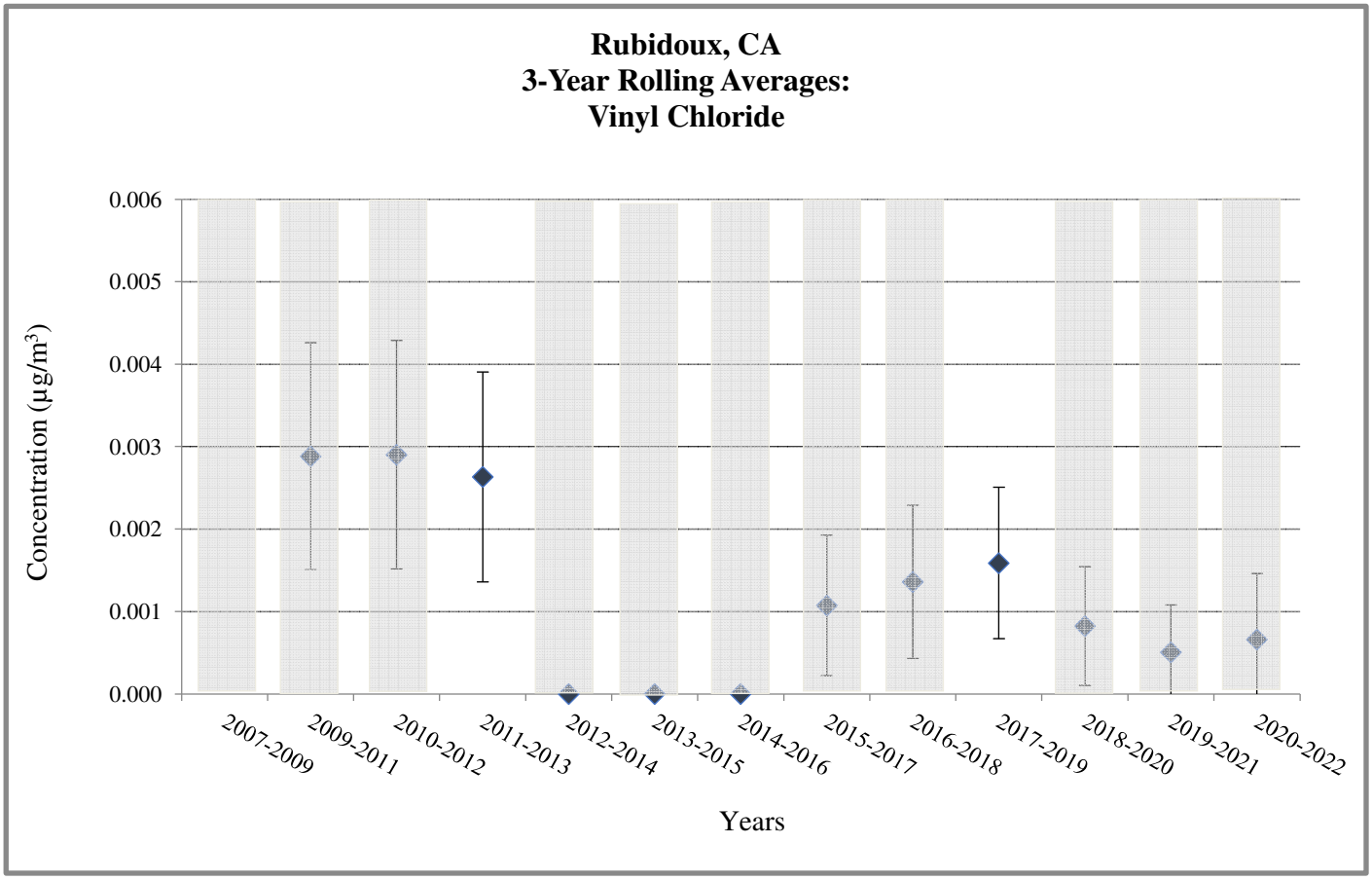
Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations





Does not meet MQO or wasn't able to collect enough samples

Figure 4. Rubidoux, CA - 3-Year Rolling Average Concentrations



Does not meet MQO or wasn't able to collect enough samples

Table 6. NATTS Network Assessment: MQO#1 - Completeness Percentage at Rubidoux, CA

Year	Benzene	Butadiene, 1,3-	Carbon tetrachloride	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs								Carbonyls		PM10 Metals					PAHs	
Rubidoux, CA (AQS Site Code: 06-065-8001)																	
2007	93	93	98	93	93	93	98	92	92	100	100	100	100	100	100	--a	--a
2008	97	97	93	97	97	97	93	98	98	90	90	90	90	90	90	97	97
2009	102	102	97	102	102	102	97	100	100	90	90	90	90	90	90	100	100
2010	95	95	93	95	95	95	87	97	97	102	102	102	102	102	102	98	98
2011	93	93	93	93	93	93	89	98	98	89	89	89	89	89	89	100	100
2012	102	102	102	102	102	102	95	98	98	107	107	107	107	107	107	100	100
2013	93	93	93	93	93	93	82	98	98	98	98	98	98	98	95	95	95
2014	87	87	87	87	87	87	74	103	103	95	95	95	95	95	95	97	97
2015	97	97	97	93	93	93	87	95	95	90	90	90	90	90	90	98	98
2016	75	75	77	77	77	75	52	102	102	93	93	93	93	93	93	97	97
2017	93	93	93	93	93	93	93	97	97	95	95	95	95	95	95	90	90
2018	98	98	98	98	95	98	98	49	49	100	100	100	100	100	100	100	100
2019	98	98	98	98	98	98	98	85	85	98	98	98	98	98	98	95	95
2020	61	61	61	61	61	61	61	72	72	72	72	72	72	72	72	62	62
2021	97	92	95	95	95	95	95	100	100	100	100	100	100	100	100	97	97
2022	97	97	97	97	97	97	97	98	98	93	93	93	93	93	93	97	97

A-rated: ≥85%
B-rated: Between 75% to 85%
Does not meet: ≤75%
-- No data available
Not enough observations due to Covid-19 restrictions

[a]: Scheduled sampling began midway through the year, thus, the site did not have the opportunity to collect enough samples to meet the 85% MQO.

Table 7. NATTS Network Assessment: MQO#2 - Reported Method Detection Limits (MDLs) at Rubidoux, CA

	Benzene	Butadiene, 1,3-	Carbon tetrachloride	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
Year	**VOCs**							**Carbonyls**		**PM10 Metals**						**PAHs**	
Rubidoux, CA (AQS Site Code: 06-065-8001)																	
2007	1.23	0.88	3.70	0.20	0.40	0.21	2.32	0.40	0.13	1.26	1.15	0.19	0.01	2.69	0.10	0.07	0.003
2008	1.23	0.88	3.70	0.20	0.40	0.21	2.32	0.40	0.13	1.25	1.14	0.24	0.01	2.69	0.10	0.06	0.01
2009	1.23	0.88	3.70	0.20	0.40	0.21	2.32	0.40	0.13	1.51	2.55	0.19	0.02	0.16	0.16	0.04	0.01
2010	1.23	0.88	0.74	0.20	0.40	0.21	2.32	0.40	0.13	1.52	2.56	0.19	0.02	0.16	0.16	0.04	0.01
2011	0.64	0.62	0.74	0.20	0.40	0.21	1.19	0.02	0.03	0.04	0.02	0.03	0.001	0.004	0.005	0.04	0.004
2012	0.64	0.62	0.74	0.20	0.40	0.21	1.19	0.02	0.03	0.09	0.05	0.07	0.001	0.01	0.09	0.05	0.004
2013	0.64	0.62	0.74	0.20	0.40	0.54	1.19	0.02	0.31	0.04	0.02	0.03	0.001	0.004	0.05	0.06	0.01
2014	0.64	0.58	0.74	0.20	0.40	0.54	0.79	0.02	0.31	0.04	0.02	0.03	0.001	0.004	0.05	0.03	0.01
2015	0.98	0.58	0.74	0.20	0.40	0.54	0.79	0.04	0.25	0.13	0.07	0.03	0.01	0.03	0.54	0.11	0.00
2016	0.98	0.66	0.74	0.20	0.40	0.54	0.70	0.08	0.36	0.08	0.05	0.03	0.01	0.03	0.22	0.06	0.02
2017	0.49	0.44	0.37	0.29	0.80	0.81	0.93	0.02	0.25	0.08	0.02	0.03	0.003	0.05	0.16	0.02	0.06
2018	0.25	0.44	0.37	0.10	1.20	0.27	0.23	0.08	0.36	0.12	0.02	0.02	0.003	0.04	0.16	0.01	0.06
2019	0.25	0.44	0.37	0.10	1.20	0.27	0.23	0.08	0.30	0.06	0.06	0.02	0.004	0.04	0.27	0.01	0.04
2020	0.25	0.22	0.37	0.10	0.80	0.27	0.23	0.03	0.10	0.04	0.01	0.01	0.01	0.04	0.21	0.01	0.03
2021	0.25	0.22	0.37	0.10	0.40	0.27	0.23	0.08	0.31	0.04	0.01	0.01	0.005	0.04	0.21	0.01	0.03
2022	0.49	0.88	0.74	0.20	0.80	0.54	0.46	0.07	0.38	0.04	0.02	0.01	0.005	0.05	0.32	0.01	0.03

A-rated: MDL to Target MDL ratio ≤ 1

B-rated" MDL to Target MDL ratio between 1 and 2

Does Not Meet MDL to Target MDL ratio>2

-- No data available

Table 8. NATTS Network Assessment: MQO#3 - Bias Percent Difference at Rubidoux, CA

Year	Benzene	Butadiene, 1,3-	Carbon tetrachloride	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs							Carbonyls		PM10 Metals						PAHs	
Rubidoux, CA (AQS Site Code: 06-065-8001)																	
2007	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--b	--b
2008	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--b	--b
2009	-17.6	-30.6	-25.9	-43.8	-19.5	-32.8	-26.8	-14.2	-15.7	-26.0	-35.6	-27.9	-32.2	-40.2	-42.8	-1.7	-7.7
2010	--c	--c	--c	--c	--c	--c	--c	0.8	-3.5	-11.6	-18.0	-9.8	-7.7	-13.7	-11.2	-2.3	-17.1
2011	9.8	1.1	-5.1	-12.4	9.4	-11.7	-3.9	-2.8	-2.1	-15.1	-18.9	-13.8	-10.4	-14.5	-11.1	-2.1	-13.9
2012	--c	--c	--c	--c	--c	--c	--c	--c	--c	-1.6	-1.9	-1.1	8.7	8.5	-8.1	25.2	21.4
2013	1.9	15.2	3.2	14.0	-4.0	-3.7	2.3	41.4	42.6	-16.0	-9.2	227.0	0.3	-10.3	-13.1	-5.7	25.5
2014	5.7	-5.3	-1.7	-4.8	3.6	-6.1	6.7	-2.3	0.7	-9.4	--d	--d	7.3	8.4	--e	-16.3	0.7
2015	-8.8	-25.5	14.8	-10.5	-25.6	-30.6	-5.1	--c	--c	--c	--c	--c	--c	--c	--c	-14.2	-11.4
2016	10.5	-5.6	51.2	14.9	-8.7	-14.0	1.7	-2.9	-12.5	-1.6	-5.5	0.8	2.3	5.5	20.5	-10.5	-9.5
2017	-17.9	-14.4	-4.6	-6.0	10.8	-28.9	-8.5	4.5	0.9	-12.0	-14.1	-15.4	-11.6	-5.5	9.9	-22.4	-11.6
2018	-12.0	-13.6	-8.3	-8.6	-4.7	-26.0	-7.5	-5.3	6.2	-7.2	-9.4	-15.4	-8.3	0.6	10.5	-14.8	-20.7
2019	5.4	7.2	10.6	-1.0	16.5	-17.8	16.2	-2.6	-2.7	-2.4	2.5	-0.7	3.5	6.0	-2.2	29.3	18.5
2020	-20.0	-1.6	-15.3	-6.6	-3.4	-33.5	-7.6	3.2	-0.6	8.5	2.4	1.2	2.6	-1.2	6.0	13.1	15.8
2021	0.4	7.8	5.6	6.8	9.6	7.2	14.9	-2.0	-8.2	9.9	4.9	2.8	2.6	6.6	6.1	0.1	-2.0
2022	3.1	-5.9	-6.9	0.0	7.5	0.0	8.6	1.7	1.3	--b	--b	--b	--b	--b	--b	--b	--b

A-rated:±25%

B-rated: Between 25% to 35% or between -25% to -35%

Does not meet:>35% or <35%

-- No data available

[a]: Due to lab constraints, EPA granted a 2-year waiver from participating the Proficiency Test program until 2009.

[b]: No Proficiency Test samples were sent for this pollutant and year.

[c]: Pollutant was sampled at this site and year, but no bias data were reported.

[d]: The Proficiency Test sample for this pollutant was 0; the site reported a concentration as "< MDL", rather than 0. EPA accepted this result.

[e]: Although a Proficiency Test sample was sent to the lab supporting this site and year, the results were nullified by EPA due to QA issues.

Table 9. NATTS Network Assessment: MQO#4 - Overall Method Precision %CV at Rubidoux, CA

Year	Benzene	Butadiene, 1,3-	Carbon tetrachloride	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs							Carbonyls		PM10 Metals						PAHs	
Rubidoux, CA (AQS Site Code: 06-065-8001)																	
2007	16.3	33.4	--a	--a	12.9	--a	--a	39.3	35.0	42.5	11.7	0.0	22.0	--a	13.0	18.1	40.7
2008	8.5	5.9	--a	--a	62.9	--a	--a	27.1	22.2	7.4	58.2	20.2	7.0	7.8	9.0	7.6	41.8
2009	17.9	17.8	--a	--a	--a	--a	--a	26.5	23.3	27.9	--	0.0	7.3	7.5	19.7	27.0	17.2
2010	6.3	23.4	--a	--a	--a	--a	--a	21.2	29.6	6.4	--a	28.3	4.9	22.2	29.8	32.8	10.2
2011	16.0	50.2	15.3	1.8	--a	--a	--a	34.4	18.3	12.6	--a	42.5	11.4	13.2	47.9	--a	15.5
2012	14.2	25.8	9.1	8.8	--a	--a	--a	51.4	41.4	11.5	27.1	9.9	11.3	12.6	12.4	--a	14.0
2013	10.8	16.2	10.4	8.9	--a	--a	--a	29.2	28.5	12.1	16.3	7.4	6.4	6.6	16.3	1.0	10.3
2014	15.2	24.1	16.1	4.0	0.0	--a	--a	43.3	32.2	11.5	26.4	11.8	3.8	4.2	9.1	--a	12.8
2015	29.2	22.6	17.3	30.2	--a	--a	--a	28.7	34.5	6.9	0.0	5.8	4.4	4.1	5.5	--a	21.8
2016	24.9	37.3	20.4	25.0	12.9	--a	--a	16.3	18.5	4.5	9.1	2.2	5.3	2.0	13.4	17.4	9.0
2017	21.3	18.4	13.6	12.8	36.4	--a	--a	14.2	42.1	4.4	29.3	11.9	7.8	6.6	5.9	13.8	4.3
2018	36.1	22.7	6.2	9.1	0.0	--a	--a	12.8	36.4	5.5	8.9	4.5	4.5	3.7	4.9	1.8	4.8
2019	0.9	7.6	6.0	12.6	0.0	33.3	0.0	9.0	4.4	5.5	--a	7.3	3.8	5.8	4.5	7.4	5.6
2020	8.0	27.7	8.2	0.0	0.0	--a	--a	7.3	9.6	4.1	3.9	2.5	3.5	4.3	2.7	2.6	9.9
2021	20.5	10.3	3.1	7.0	33.3	--a	--a	20.9	15.0	6.6	15.2	11.7	6.1	7.5	4.4	13.4	11.9
2022	24.2	17.4	17.5	27.2	38.5	--a	--	26.0	16.8	4.5	12.0	9.7	6.7	6.0	4.0	13.0	5.2

Green = precision ≤ 15%

Yellow = precision > 15% to ≤ 25%

Red = precision > 25%

-- Gray = dataset was not rated

[a]: The primary and/or replicate value were less than the MDL, so no calculation could be made.

Table 10. NATTS Network Assessment: MQO#4 - Analytical Method Precision %CV at Rubidoux, CA

Year	Benzene	Butadiene, 1,3-	Carbon tetrachloride	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs							Carbonyls		PM10 Metals						PAHs	
Rubidoux, CA (AQS Site Code: 06-065-8001)																	
2007	8.4	--a	--	--a	--a	--a	--	--	--	77.9	59.7	--	53.3	0.5	1.7	4.7	11.2
2008	3.7	8.3	--a	--a	--a	--a	--a	--	--	5.0	--a	--	5.4	0.8	4.2	3.7	3.4
2009	6.7	--a	11.8	--a	--a	--a	--a	--	--	--	--a	--	5.2	3.4	1.5	3.3	4.0
2010	2.7	0.0	--a	--a	--a	--a	--a	1.5	0.1	0.0	--a	--a	0.0	0.0	0.0	1.6	4.5
2011	4.8	20.2	7.9	0.0	--a	--a	--a	1.0	1.8	8.0	--a	11.7	7.2	0.0	3.1	--a	1.4
2012	23.5	25.8	5.3	6.7	--a	--a	--a	1.5	3.5	13.9	11.1	11.0	13.7	15.3	15.0	6.3	15.3
2013	7.3	19.5	11.0	0.0	--a	--a	--a	2.2	1.2	--b	--b	--b	--b	--b	--b	0.7	5.0
2014	4.9	16.4	6.8	6.3	0.0	--a	--a	1.1	0.6	--b	--b	--b	--b	--b	--b	0.5	4.0
2015	5.4	24.8	5.0	9.1	--a	--a	--a	1.7	0.5	6.5	0.0	0.0	3.4	4.2	5.0	--a	1.4
2016	--b	--b	--b	--b	--b	--b	--b	2.5	0.6	3.1	0.0	6.7	2.1	2.6	14.5	2.5	5.3
2017	3.2	10.9	4.9	7.1	20.0	--a	--a	--b	--b	4.2	--a	0.0	1.2	0.3	2.3	2.0	0.9
2018	4.8	17.4	6.0	4.1	8.4	0.0	--a	--b	--b	3.3	20.2	4.0	1.7	0.5	6.9	1.3	2.8
2019	1.8	10.8	4.9	8.8	10.1	0.0	0.0	0.3	0.3	--b	--b	--b	--b	--b	--b	2.0	1.3
2020	5.7	8.3	8.1	5.2	0.0	--a	--a	1.3	1.5	--b	--b	--b	--b	--b	--b	0.6	0.6
2021	1.1	12.0	6.7	0.0	0.0	--a	--a	0.8	0.4	4.9	--b	0.0	5.2	4.7	2.6	3.1	0.2
2022	2.6	14.2	4.6	8.5	14.1	--a	--a	0.6	0.4	--b	--b	--b	--b	--b	--b	8.1	0.5

A-rated:≤ 15% CV

B-rated: Between 15%CV to25% CV

Does Not Meet: >25% CV or did not report Precision (required in the NATTS Workplan Template since 2012)

-- No data available

[a]: The primary and/or replicate value were less than the MDL, so no calculation could be made.

[b]: Per the NATTS Workplan template, analytical replicates were required to be reported to AQS for this sampling year.

Appendix A: Equipment Inventory

Pollutant Type	Year(s)	Manufacturer/Model, Extraction Type, and Year
Sampling Equipment		
Carbonyls	2007-2017	RM Environmental Systems 924 Toxic Air Sampler (Year Deployed: 2004)
	2018-2022	ATEC 8000 (Year Deployed 2018)
PAHs	2007-2015	Thermo Andersen GPS-1 PUF Sampler (Year Deployed: 2004)
	2016-2022	Tisch Puf+ (Year Deployed: 2016)
PM10 Metals	2007-2017	Thermo-Andersen SSI PM10 Hi-VOL; Tisch TE-10557 sampler (Year Deployed: 2007)
	2018-2022	Tisch SSI+ (Year Deployed: 2018)
VOCs	2007-2022	Xontech 910A Canister Sampler (Year Deployed: 2004)
Analytical Equipment		
Carbonyls	2007-2018	Waters Alliance 2690 HPLC/ model 996 PDA (Year Deployed: 1999)
	2019-2022	Thermo UHPLC model VF-P20-A / Multiple Wavelength Diode Array Detector model VH-D10-A (Deployed: 2018)
PAHs	2007-2007	HP/Agilent 5890/5971 GC/MS (Year Deployed: 1990)
	2008-2013	HP/Agilent 5890/5971 GC/MS (Year Deployed: 2008)
	2014-2020	HP/Agilent 7890B/5975C GC/MS (Year Deployed: 2014)
	2021	HP/Agilent 7890B/5975C GC/MS (Year Deployed: 2015); HP/Agilent 6890/5973 GC/MS (Year Deployed: 2021)
	2022	HP/Agilent 6890/5973 GC/MS (Year Deployed: 2021)
PM10 Metals	2007-2010	LECO Renaissance TOF-ICP-MS (Year Deployed: 1998)
	2011-2018	PE ELAN ICP-MS (Year Deployed: 2010)
	2019	PE ELAN ICP-MS (Year Deployed: 2010)/ Thermo iCAP Q ICP-MS (Year Deployed 2019)
	2020-2021	Thermo iCAP Q ICP-MS (Year Deployed 2019)
	2022	Agilent 7900 ICP-MS (Year Deployed 2021)
VOCs	2007-2020	Agilent 6890/5973 GC/MS (Year Deployed: 2006)
	2021-2022	Agilent 7890/5977 GC/MS (Year Depoyed: 2021)
Preconcentrator Equipment		
VOCs	2007-2016	Entech 7100A (Year Deployed: 2006)
	2017-2019	Entech 7200 (Year Deployed: 2017)
	2020-2022	Entech 7200 (Year Deployed: 2017), Entech 7200 (Year Deployed 2020)
Standards Preparation Equipment		
VOCs	2007-2017	Entech 4600 (Dynamic Dilution) (Year Deployed: 2004)
	2018-2022	Entech 4700 (Pressure Dilution) (Year Deployed: 2018)
Canister Cleaning Equipment		
VOCs	2007-2018	Entech 3100A (Hot) (Year Deployed: 2007)
	2019-2022	Entech 3100A (Year Deployed: 2007), Entech 3100D (Year Deployed: 2021)
PM10 Extraction Equipment		
PM10 Metals	2007-2009	CEM Mars5 (Microwave) (Year Deployed: 2002)
	2010-2018	CEM Mars5 (Microwave) (Year Deployed: 2009)
	2019-2022	CEM Mars5 (Microwave) (Year Deployed: 2017)
PAHs Extraction Equipment		
PAHs	2007-2018	Dionex -300 (ASE) (Year Deployed: 2004)
	2019-2022	Dionex -350 (ASE) (Year Deployed: 2019)