

Update on Shafter Community Air Monitoring

Shafter CSC Meeting

December 13, 2021

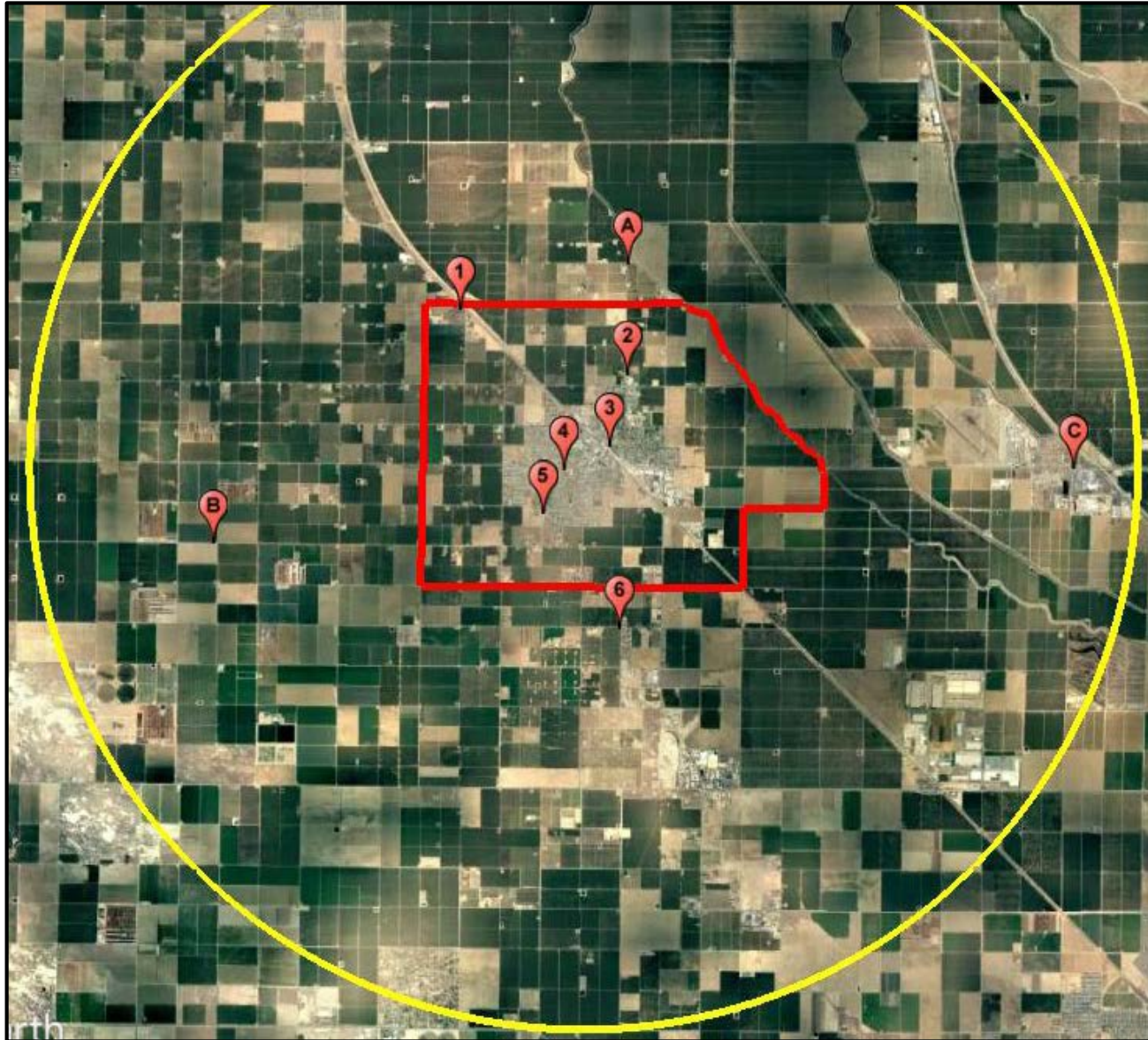
Air Monitoring Update

Status of Community Air Monitoring Plan Implementation

Review Air Monitoring Data Collected

Questions, Comments, And Recommendations

CAMP Implementation Status



#	Location	Monitoring	Done
1	Shafter Farm Labor Center	Air Monitoring Trailer	Y
2	Sequoia Elementary School	Compact Multi-Pollutant	Y
3	Shafter DMV	Real-time PM2.5	Y
4	Golden Oak Elementary	Real-time PM2.5	Y
5	Grimmway Academy	Real-time PM2.5	Y
6	Mexican Colony	Real-time PM2.5	N, Air Monitoring Van
A	North of Shafter in agriculture area	Air Monitoring Van	Y
B	West of Shafter near dairy operations	Air Monitoring Van	Y
C	East of Shafter near industrial/airport area near Highway 99 and Lerdo Highway	Air Monitoring Van	Y

Community Air Monitoring Platforms



Community Air Monitoring Platforms (cont'd)



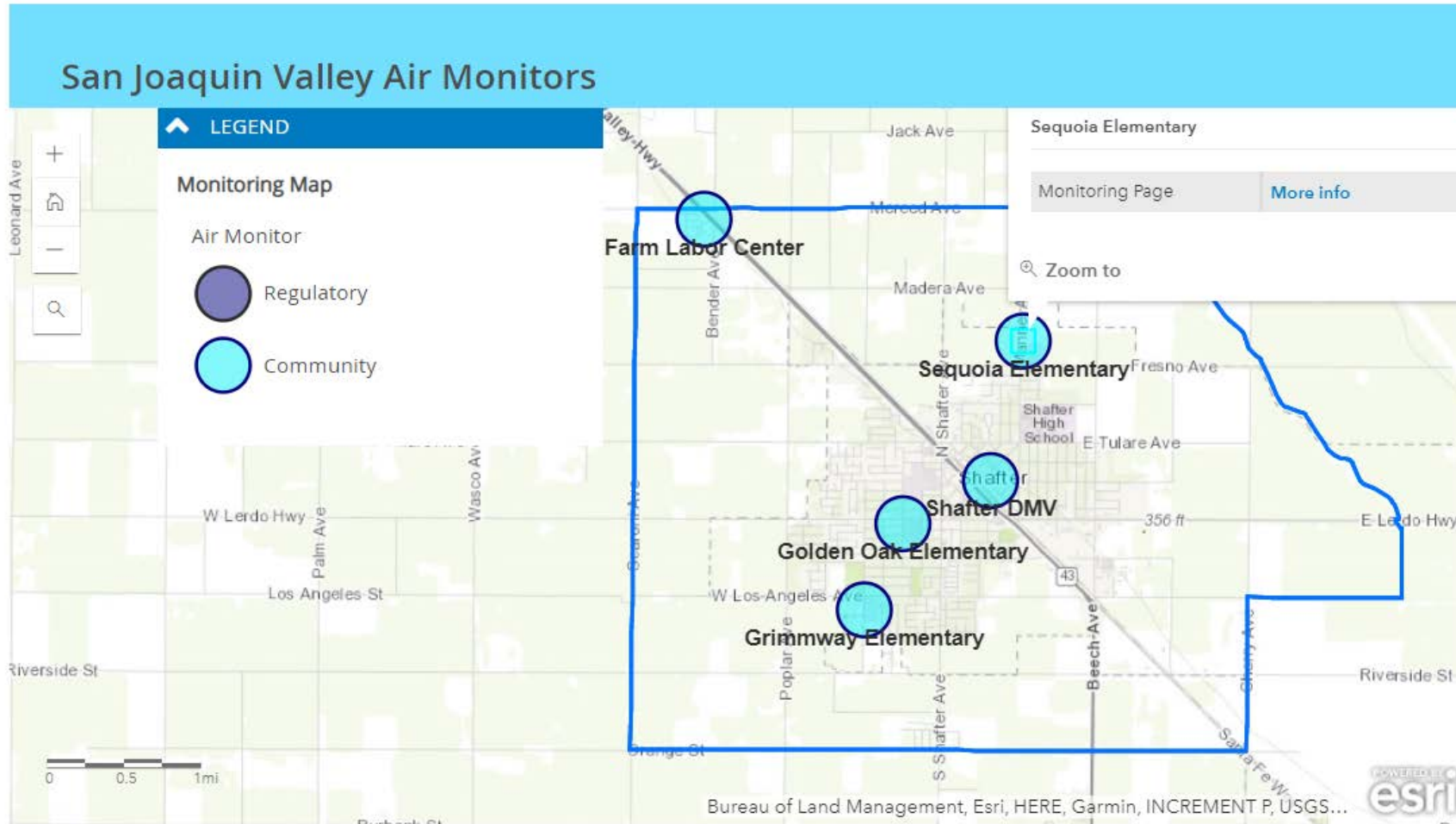
Community Air Monitoring Platforms (cont'd)



Ongoing Community Air Monitoring

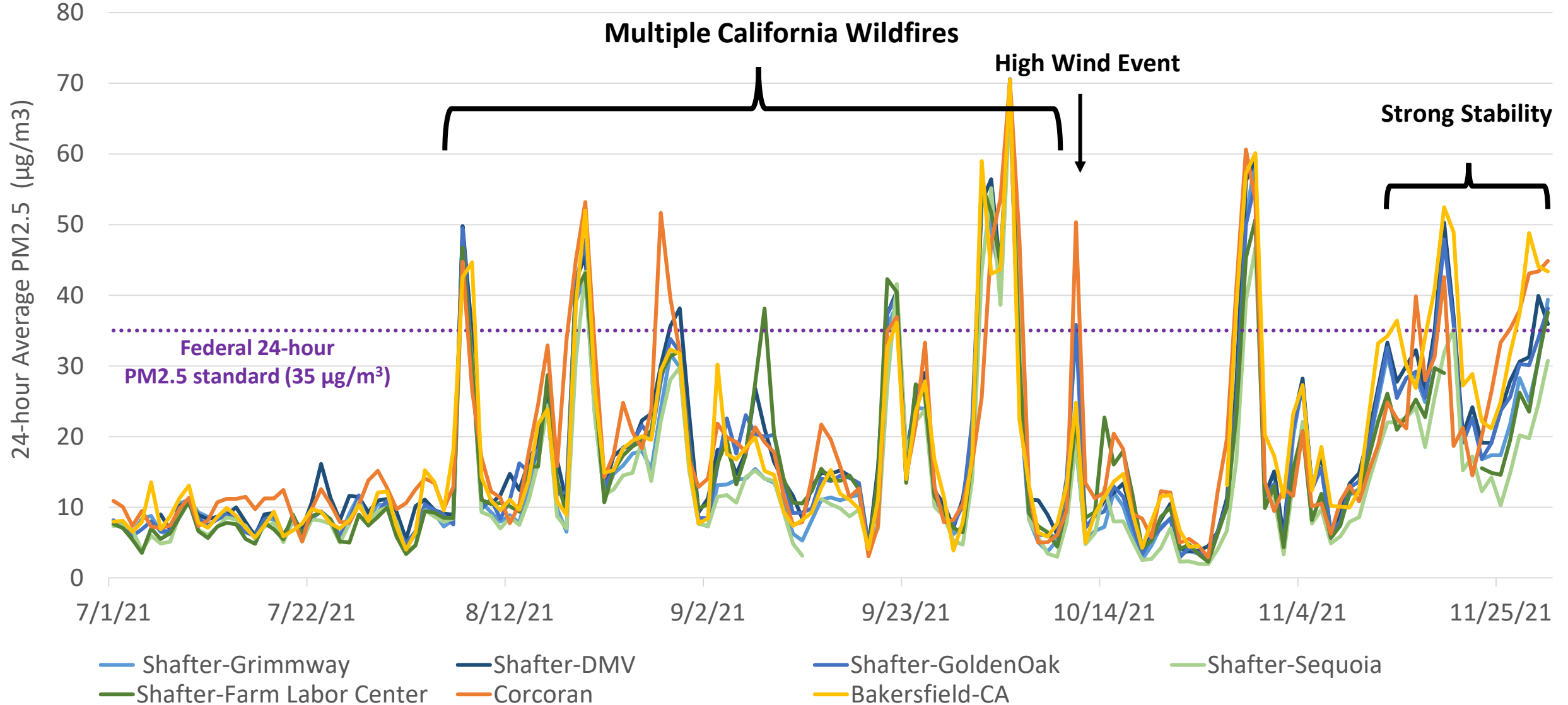
- District continuing to conduct localized air monitoring in the Shafter community
- Working to deploy additional air monitoring platforms across the community, according to Community Steering Committee recommended network design
 - Almost complete except for Mexican Colony
- Air monitoring van actively being used to regularly monitor pollutants in areas of interest of the community and near recommended site locations for network design
- Extensive PM_{2.5} and VOC speciation sampling and laboratory analysis being conducted since late 2019

New Interactive Map



<http://community.valleyair.org/selected-communities/shafter/community-air-monitoring/>

PM2.5 Daily Average Comparison

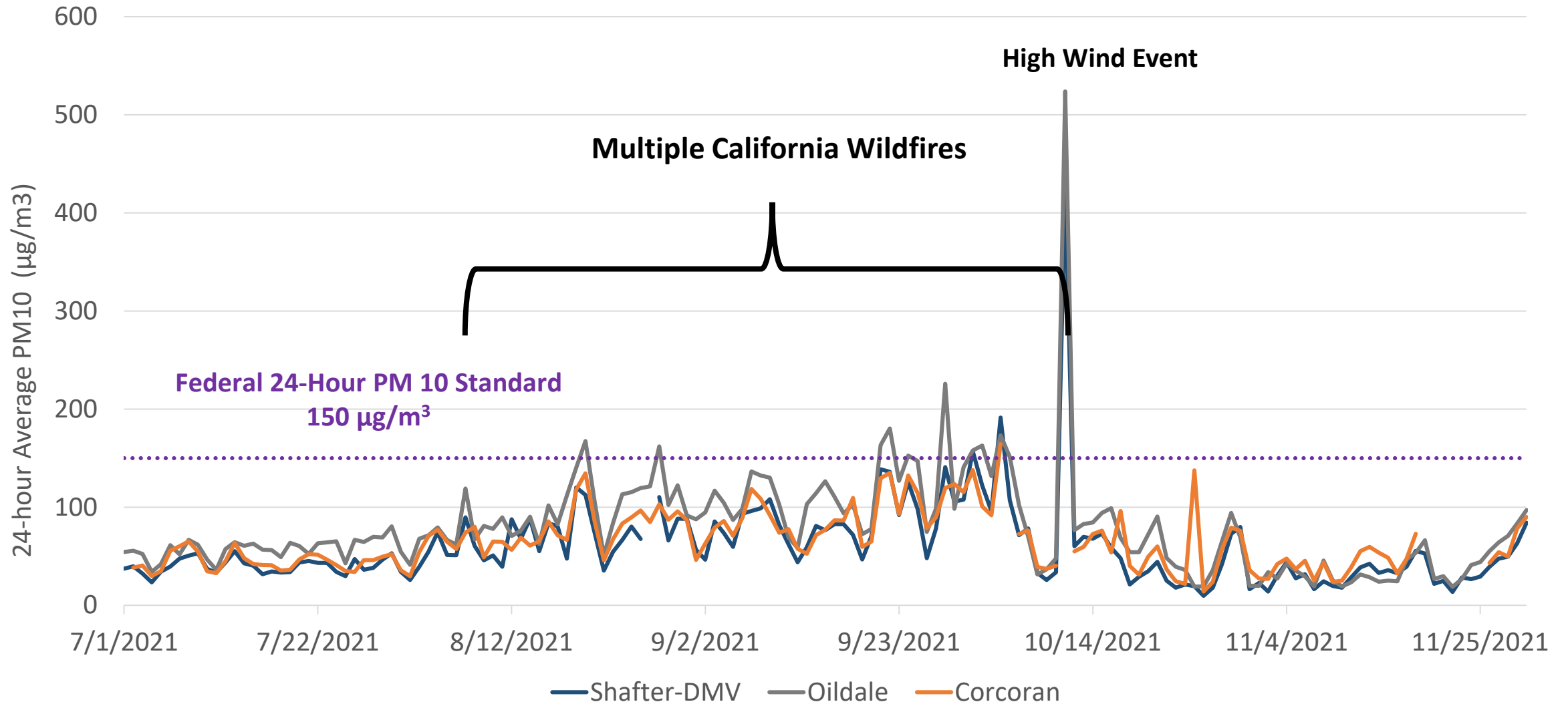


PM2.5 Daily Average Comparison July-November 2021

	Highest 24-hour PM2.5	Jul-Nov Average PM2.5	Average Daily Percent (%) Difference from Bakersfield
Shafter Community Monitors			
Grimmway	68.5*	15.2	-13%
DMV	70.6*	18.5	+4%
Sequoia	67.9*	13.7	-24%
Farm Labor Center (Nov 19)	70.2*	16.0	-7%
Golden Oak	67.9*	17.1	-4%
Nearby Regulatory Monitors			
Corcoran	70.4*	18.9	+13%
Bakersfield	70.5*	18.5	---

* Measured during wildfire impact day during summer months

24-Hr Average PM10 Comparison



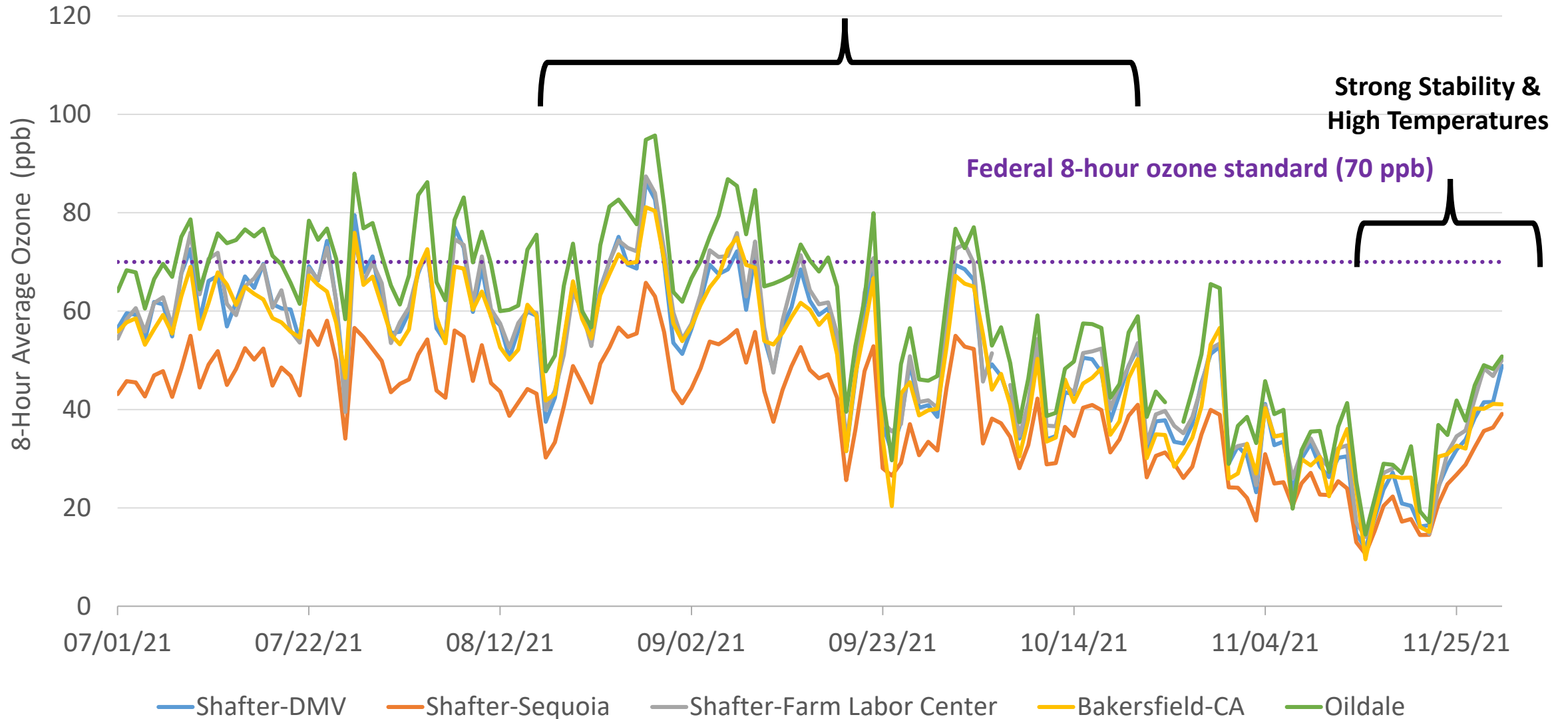
PM10 Daily Average Comparison July-November 2021

	Highest 24-hour PM10	Jul-Nov Average PM10	Average Daily Percent (%) Difference from Corcoran
Shafter Community Monitors			
Shafter-DMV	427.7*	59.5	-12%
Nearby Regulatory Monitors			
Corcoran	164.4*	65.1	---
Oildale	523.9*	79.2	+21%

* Measured during wildfire impact day during summer months

8-Hr Average Ozone Comparison

Multiple California Wildfires



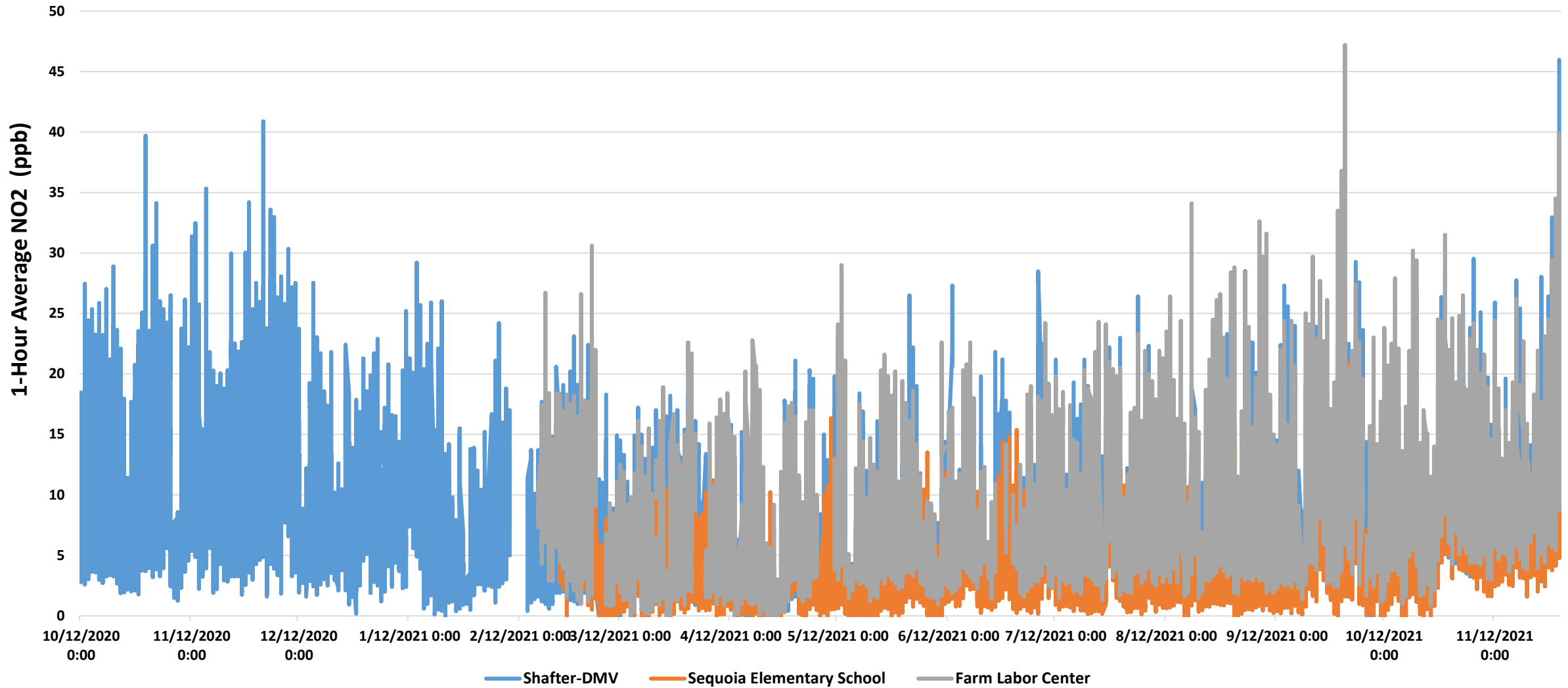
Ozone Daily Average Comparison July-November 2021

	Highest 8-hour Ozone	Jul-Nov Average 8-hour Ozone	Average Percent (%) Difference from Bakersfield 8-hour Ozone
Shafter Community Monitors			
DMV	86.2*	32.3	+2%
Sequoia	65.8*	25.4	-19%
Farm Labor Center	87.4*	32.4	+5%
Nearby Regulatory Monitors			
Oildale	95.7*	45.8	---
Bakersfield	81.1*	32.7	---

* Measured during wildfire impact day during summer months

1-Hr Average NO2 Comparison

Federal 1-hour NO2 standard (100 ppb)



Summary of Air Monitoring Van Data

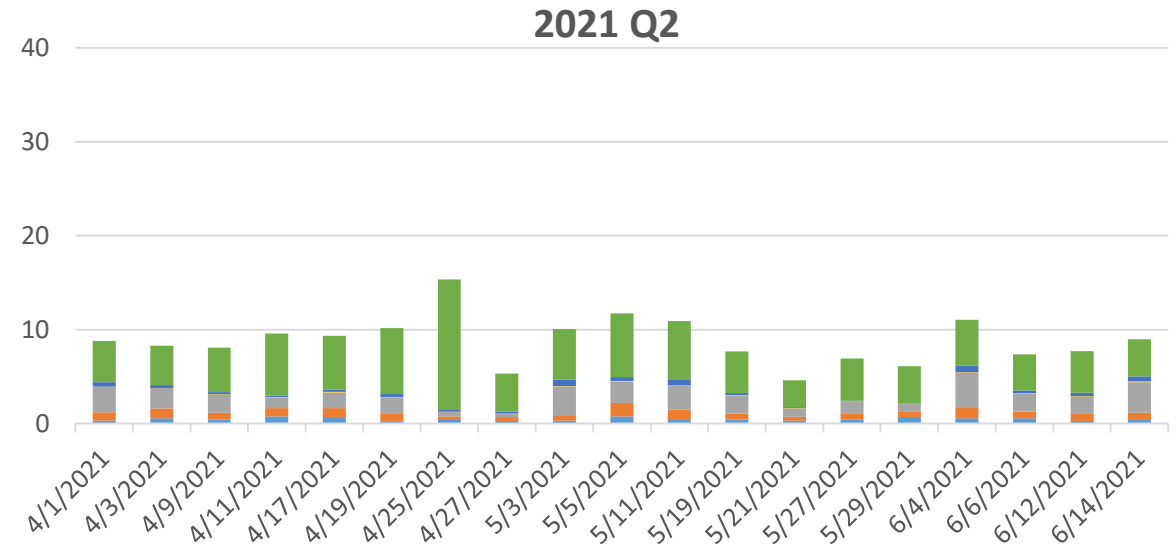
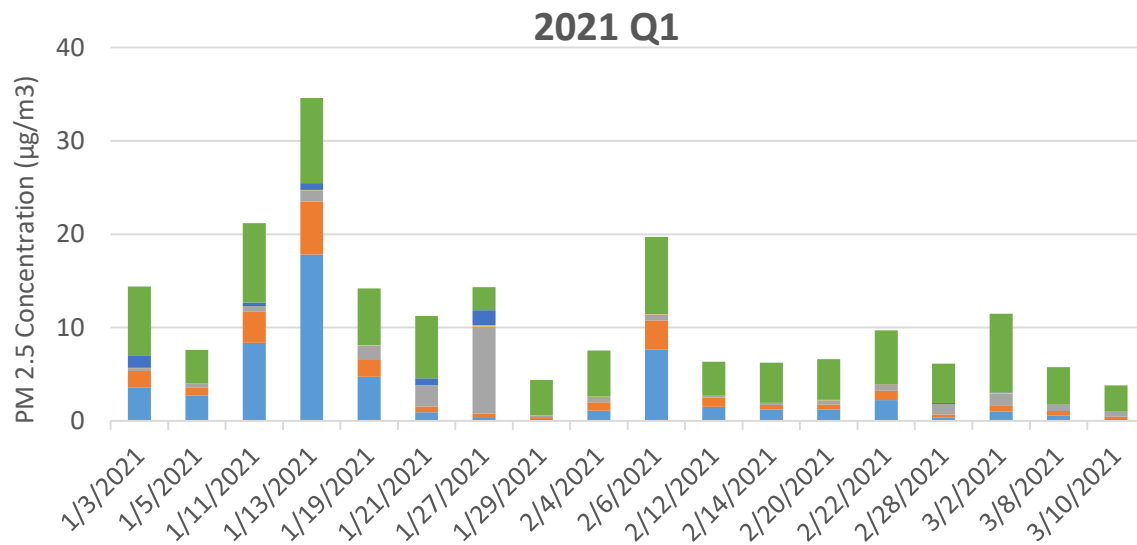
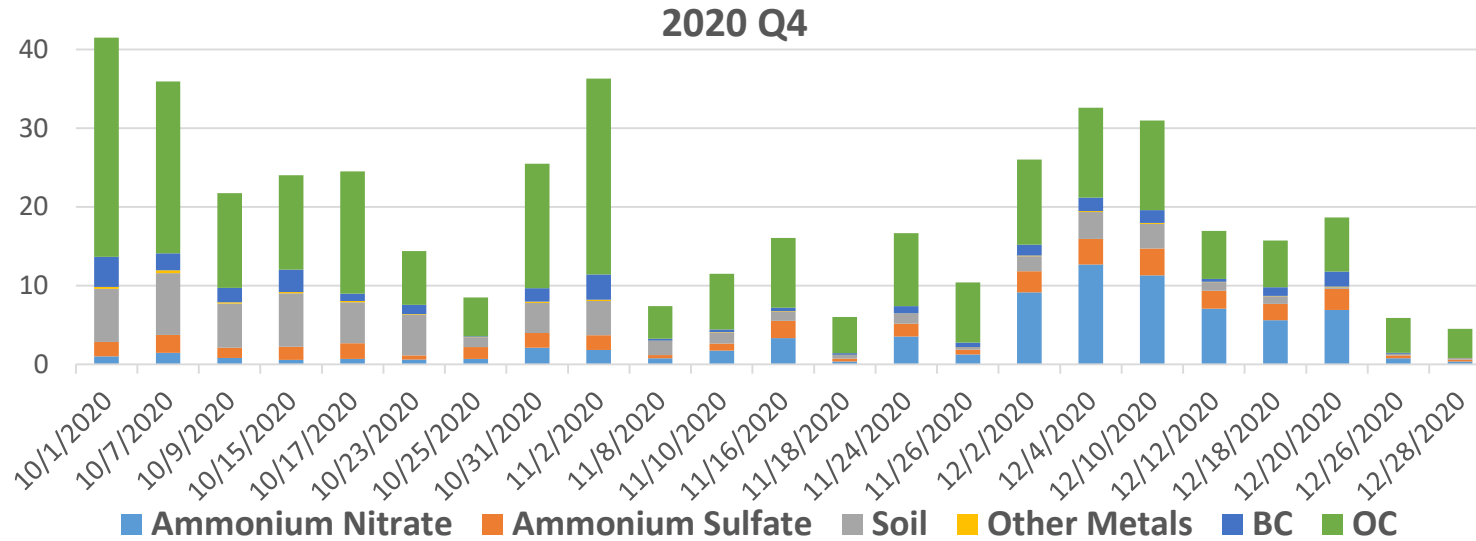
January 2021–November 2021

Pollutant	Average Value (hourly)	Peak Value (hourly)	Applicable Standard
BTEX	0.0	0.0	111 ppb for Toluene (chronic Risk Exposure Level)
PM2.5	10.9 µg/m ³ (wildfire)	42.0 µg/m ³ (wildfire)	35 µg/m ³ (24-hr average)
Ozone	39.4 ppb	73 ppb (63.2 ppb 4-hr avg)	70 ppb (8-hr average)
CO	0.20 ppm	0.56 ppm	35 ppm (1-hr average)
NO2	4.8 ppb	46.7 ppb	100 ppb (1-hr average)
SO2	1.3 ppb	2.9 ppb	75 ppb (1-hr average)

PM2.5 Speciation

- Collected samples sent to laboratory for analysis to determine types and sources of PM2.5
- January 2020, sampling began at Shafter-DMV site near intersection of Walker Street and Pacific Avenue
- Primarily Ammonium Nitrate in Winter and Organic Carbon in Summer
 - **Ammonium Nitrate:** Formed from reaction of ammonia and nitric acid, where nitric acid is formed from nitrogen oxides. Key sources of nitrogen oxides is from burning of fuel.
 - **Organic carbon:** Organic carbon (OC) are generated as primary organic aerosol, predominantly through combustion of fuel. In summer 2021, much of the PM2.5 is OC from wildfire emissions. OC also includes cooking, industrial processes, mobile source exhaust, tire wear, and wood burning.

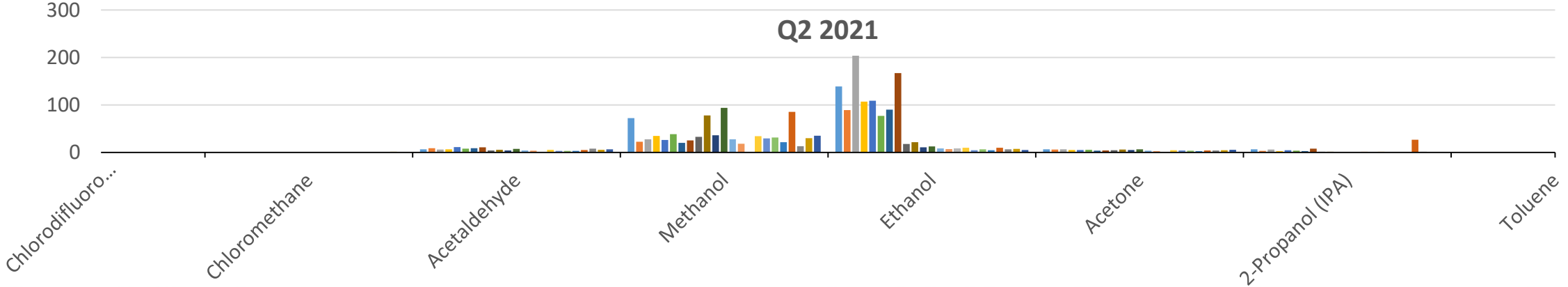
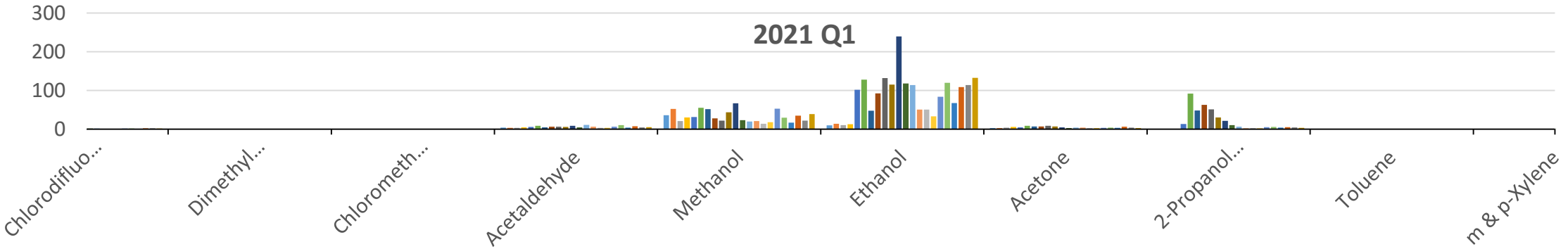
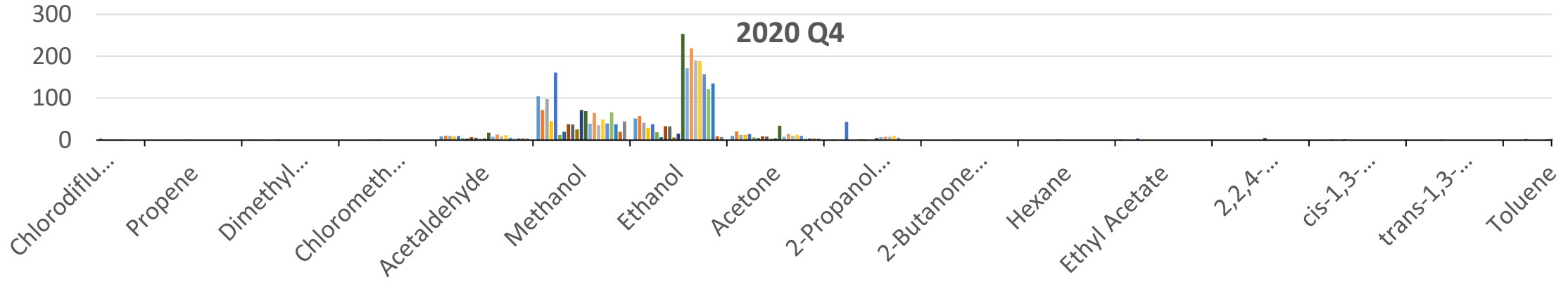
PM2.5 Speciation Sampling



VOC Speciation

- Collected samples sent to third-party laboratory for analysis to determine various specific VOC detected in atmosphere
 - Capable of isolating 68 to 86 different VOCs from each air sample
- December 2019, sampling began at Shafter-DMV site near intersection of Walker Street and Pacific Avenue
- Recent VOC Speciation results summarize in next slide
 - Acetaldehyde, methanol, ethanol, 2-Propanol, and acetone were the primary VOCs detected.
 - Only acetaldehyde and methanol have an associated Reference Exposure Level (REL), a health risk metric established by the OEHHA
 - Methanol detected were well below OEHHA REL chronic value of 3,000 ppb
 - Acetaldehyde detected were well below OEHHA REL chronic value of 80 ppb

VOC Speciation



Community Air Quality Data

- District AB 617 webpage at: <http://community.valleyair.org/community-air-monitoring>
 - Real-time community air monitoring data
 - Air monitoring data from vans
 - Quarterly reports
 - Weekly air monitoring updates
- CARB's statewide air quality data portal (AQview) displays and provides community air monitoring data from AB 617 communities
 - AQview website located at: <https://ww2.arb.ca.gov/es/community-air-quality-portal>
 - Air quality data from Valley AB 617 communities available at this website
 - Development ongoing, new features to be added

Comments/Questions?