Fenceline Air Monitoring Plan for the Phillips 66 Refinery in Wilmington, California

Prepared for:
Phillips 66 Los Angeles Refinery
Wilmington Operations
Wilmington, CA

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Fenceline Air Monitoring Plan for the Phillips 66 Refinery in Wilmington, California

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Document Control

Revision No.	Revision Date	Description
0	11/15/2019	Initial submission to South Coast AQMD
1	8/5/2024	Updated in response to the January 5, 2024, adoption of amended Rule 1180
2	12/5/2025	Updated in response to South Coast AQMD's comments on September 9, 2025

1. Introduction

1.1 Background

Petroleum refineries in the South Coast Air Basin are required to conduct real-time fenceline monitoring of numerous air pollutants according to Rule 1180, first adopted in December 2017 by the South Coast Air Quality Management District (South Coast AQMD). The purpose of this Rule is to provide air quality information to the public about levels of various air pollutants at or near the property boundaries of petroleum refineries and in nearby communities through continuous measurements and real-time display on a publicly accessible website.

Amendments to Rule 1180 were adopted by South Coast AQMD Governing Board on January 5, 2024, which has expanded the target compound list based on a report by the California Office of Environmental Health Hazard Assessment (OEHHA), which defined a "priority list" of compounds associated with refinery processes that have adverse health effects.

This fenceline air monitoring plan (FAMP) for the Phillips 66 (P66) Wilmington Refinery (LARW) was developed in accordance with amended Rule 1180[1] and Fenceline Air Monitoring Plan Guidelines[2] (Guidelines).

LARW is anticipated to begin idling before the end of 2025, at which point cleaning of all operational units in the refinery will commence using the same techniques and methodologies that have regularly occurred every three-to-five years for a rolling subset of units as part of routine maintenance activities. Consistent with the technical methodologies previously imposed during the aforementioned maintenance work, all units will remain in an idled and preserved condition throughout the project's environmental review and entitlement process. LARW's operating air, water and waste permits will also be maintained during this environmental review and entitlement process. The project site will also maintain access for all utilities that currently serve the project site (power, water, etc.).

[1] https://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1180.pdf
[2] https://www.aqmd.gov/docs/default-source/rule-book/support-documents/1180/rule-1180-guidelines.pdf

1.2 Plan Summary

According to South Coast AQMD Rule 1180 and the Guidelines, a FAMP shall meet the following key objectives:

- Provide measurements of various air pollutant levels (i.e., air pollutant concentration) in real-time (when feasible) and in short enough time resolutions to adequately address significant emissions changes from facility operations;
- Gather accurate meteorological data to identify factors that may impact air pollutant levels near facility operations;
- Track long-term air pollutant levels, variations, and trends over time at or near the property boundaries of refineries;
- Provide context to the data so that local communities can understand differences (if any) in air quality in their location from other locations in the Basin and understand the potential health impacts associated with local air quality near facility operations;
- Notify subscribers when fenceline concentrations exceed pre-determined thresholds (e.g., the relevant health-based notification standards or information-based notification standards listed in the rules); and
- Provide quarterly reports summarizing the measurements, data completeness, and quality assurance.

1.2.1 Current Fenceline Monitoring System

The P66 Wilmington Refinery is an existing Rule 1180 facility and therefore actively monitors according to Rule 1180. Benzene, toluene, ethylbenzene, xylenes (BTEX), and sulfur dioxide (SO_2) are measured by ultraviolet differential optical absorption spectroscopy (UV-DOAS) open-path analyzers. The UCLA Optical Tent UV-DOAS system is also being utilized (see Sect. 1-2-3). UV-DOAS analyzers at the P66 Wilmington Refinery are installed in a bistatic configuration, meaning the emitter and detector are at opposite ends of the sampling path. Hydrogen cyanide, nitrogen dioxide (NO_2), 1,3-butadiene, ammonia, acrolein, formaldehyde, acetaldehyde, carbonyl sulfide, styrene, and total volatile organic compounds (Total VOCs, a sum of ethane, propane, butane, and pentane concentrations, each normalized to the molecular weight of propane – this update is planned and will be implemented) are measured by Fourier transform infrared (FTIR) open-path analyzers. FTIR analyzers at the P66 Wilmington Refinery are installed in a monostatic configuration, meaning the emitter and detector are on the same side of the sampling path with a mirror at the opposite end (referred to as a retroreflector). FTIR analyzers are also installed on auto-positioners that rotate between adjacent paths to allow one analyzer to cover two separate sampling paths. These open-path instruments transmit light across a given path and detect the amount of energy absorption at specific wavelengths to identify and quantify the concentration of target compounds.

A visibility sensor is used to assess low-visibility conditions that cause invalid or missing measurements from open-path analyzers.

Hydrogen sulfide (H_2S) and black carbon (BC) are measured by point monitors. A meteorological station provides measurements of wind speed and direction.

Fenceline monitoring sampling locations are shown in Figure 1. The location for PM2 will be moved upon FAMP approval, as previously submitted to South Coast AQMD.

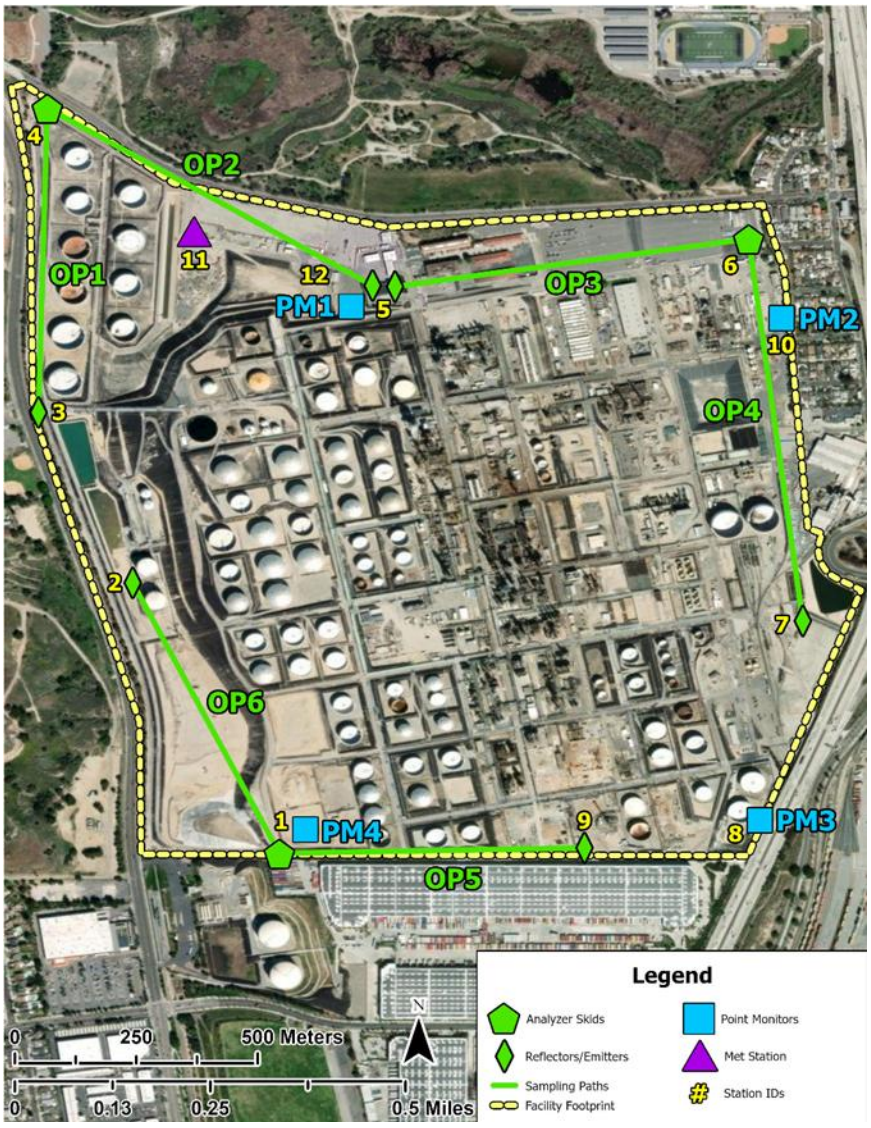

Figure 1. Fenceline monitoring sampling locations for the P66 Wilmington Refinery.

Table 1 details the monitoring equipment inventory, latitude and longitude, and elevation above ground level of each fenceline monitoring site at the P66 Wilmington Refinery. The corresponding lengths for each sampling path are shown in Table 2.

Table 1. Equipment inventory, latitude and longitude, and elevation of each fenceline monitoring site.

Station ID	Equipment	Latitude	Longitude	Elevation (ft)
1	Open-Path Analyzer Skid (Paths 5 & 6) Optical Tent System Point Monitor Cabinet (PM4)	33.7668070	-118.2911540	15
2	UV-DOAS Retroreflector (Path 6) FTIR Retroreflector (Path 6)	33.7718100	-118.2938673	30
3	UV-DOAS Emitter (Path 1) FTIR Retroreflector (Path 1)	33.7749639	-118.2956102	30
4	Open-Path Analyzer Skid (Paths 1 & 2) Visibility Sensor	33.7805970	-118.2954480	10
5	UV-DOAS Emitter (Path 2) UV-DOAS Retroreflector (Path 3) FTIR Retroreflectors (Paths 2 & 3)	33.7773130	-118.2894280	33
6	Open-Path Analyzer Skid (Paths 3 & 4) Optical Tent System	33.7781788	-118.2824691	15
7	UV-DOAS Retroreflector (Path 4) FTIR Retroreflector (Path 4)	33.7711050	-118.2814670	25
8	Point Monitor Cabinet (PM3)	33.7674170	-118.2822620	0.5
9	UV-DOAS Retroreflector (Path 5) FTIR Retroreflector (Path 5)	33.7669070	-118.2855060	41
10	Point Monitor Cabinet (PM2)[a]	33.7767089	-118.2818590	0.5
11	Meteorological Sensors	33.7783080	-118.2927290	30
12	Point Monitor Cabinet (PM1)	33.7779971	-118.2905073	0.5

[a] This site will be relocated to a more representative location along the facility fenceline. GPS coordinates are pending the final placement of the point monitor cabinet.

Table 2. Physical lengths of each sampling path at the P66 Wilmington Refinery.

Path	Physical Path Length (m)
OP1	625
OP2	666
OP3	614
OP4	790
OP5	523
OP6	609

All instruments are operated following manufacturer specifications, including necessary bump tests, which challenge instruments with known gas concentrations to confirm accurate response. Data completeness is calculated during quarterly reporting and removes time periods when low visibility conditions beyond the control of the refinery resulted in invalid open-path data.

Raw measurements from open-path analyzers, point monitors, and meteorological sensors are averaged to 5-min resolution by the data acquisition system at each site, and then transmitted to a cloud-based data management system (DMS) in real time. Data undergoes automated quality control (AutoQC) and is made available on a public website within 10–15 minutes of collection. The website also calculates a rolling hourly concentration to allow comparison to hourly notification thresholds.

Data are reviewed daily and final data sets are provided to South Coast AQMD no later than 60 days after the end of each calendar quarter. Furthermore, and as required by the amended Rule, the most recent 5 calendar years of hourly data will be made available for public download in an easily downloadable, accessible, and interpretable electronic format. Additional details regarding data analysis and reporting are provided in the Quality Assurance Project Plan (QAPP; Appendix B).

1.2.2 Additional Monitoring Under Amended Rule 1180

The amended Rule requires monitoring of additional compounds, unless facilities are exempt. Polycyclic aromatic hydrocarbons (PAHs) will not be monitored because real-time monitoring of PAHs is not currently feasible.

Naphthalene will be monitored by the existing UV-DOAS analyzers. Monitors for particulate matter and metals are not planned to be installed, as the P66 Wilmington Refinery (LARW) is anticipated to begin idling before the end of 2025.

Rule 1180 requires monitoring for particulate matter, and metals for those refineries with an FCC Unit, unless a FAMP provides a technical justification for not including particulate matter monitoring in the plan (Rule 1180(d)(1)(B).). The Rule 1180 and Rule 1180.1 Fenceline Air Monitoring Plan Guidelines ("FAMP Guidelines") provide that a facility can request to exclude compounds identified for monitoring in Rule 1180 if the "compounds are not associated with the processes at the facility" (FAMP Guidelines, p. 12.). While LARW is idled in a preserved condition, there will be no processes at the facility generating particulate matter or metals emissions. Accordingly, monitors for particulate matter or metals are not planned to be installed while the facility is in an idle state.

In accordance with Rule 1180 section (f)(1)(C), if the P66 facility resumes operations after being idled, the fenceline monitoring equipment will be in place beforehand. This includes the installation of Particulate Matter monitors and Metals monitors at the PM locations shown in Section 2.3, as well as replacing the UCLA System with P66's own UV-DOAS system as needed, and the addition of Naphthalene to the reported compounds list.

Furthermore, Rule 1180 exempts the refinery from operating the fenceline monitoring system for 96 hours in a calendar year provided that:

- The operation of the existing fenceline monitoring system is disrupted by the required installation of new fenceline air monitoring equipment; and
- The refinery complies with downtime notifications requirements (see Section 3.3).

1.2.3 UCLA Optical Tent System

The P66 Wilmington Refinery includes an optical tent monitoring system run by UCLA, which provides open-path monitoring using UV-DOAS instruments along four fenceline paths. This system was installed as part of the Multiple Air Toxics Exposure Study (MATES) V, conducted by South Coast AQMD in 2018-2019 to collect information on air toxics and their associated health risks throughout the South Coast Air Basin through long-term monitoring. The optical tent at the Wilmington Refinery was authorized by the South Coast AQMD Governing Board as an advanced monitoring project, and it was adopted as part of the fenceline air monitoring system after the MATES V study ended.

2. Fenceline Monitoring System

This FAMP was developed in consideration of the following elements:

- Amended Rule 1180 and the Guidelines.
- Monitoring objectives, which were established by amended Rule 1180 and the Guidelines.
- Assessment of potential source areas, target compounds, annual and seasonal meteorology, and overall fenceline monitoring coverage requirements.
- Technical and engineering feasibility related to available monitoring technologies and instrument siting.
- Data management and Quality Assurance/Quality Control (QA/QC) requirements.

2.1 Key Elements of Amended Rule 1180 and the Guidelines

According to South Coast AQMD Amended Rule 1180 and the Guidelines, a FAMP shall include details of the following:

- An evaluation of routine emission sources at the facility (e.g. health risk assessment modeling);
- An analysis of the distribution of operations and processes within the facility to determine potential emission sources and their location;
- An assessment of potential air pollutant distribution in surrounding communities (e.g., health risk assessment modeling);
- A summary of fenceline air monitoring instruments and ancillary equipment that are proposed to continuously measure, monitor, record, and report air pollutant levels in real-time near the facility perimeter;
- A summary of instrument specifications, detectable pollutants, minimum and maximum detection limits for all air monitoring instruments;
- Proposed monitoring equipment siting and selected pathways (when applicable) for fenceline instruments, including the justification for selecting specific locations based on the assessments mentioned above;
- Operation and maintenance requirements for the proposed monitoring systems;
- An implementation schedule consistent with the requirements of Amended Rule 1180;
- Procedures for implementing quality assurance and quality control of data;

- A web-based system for disseminating information collected by the fenceline air monitoring system;
- Details of the public notification system; and
- Independent audit.

2.2 Design of the Monitoring System

2.2.1 Facility Processes and Location

The P66 Wilmington Refinery (LARW) is anticipated to begin idling before the end of 2025, at which point cleaning of all operational units in the refinery will commence using the same techniques and methodologies that have regularly occurred every three-to-five years for a rolling subset of units as part of routine maintenance activities. Consistent with the technical methodologies previously imposed during the aforementioned maintenance work, all units will remain in an idled and preserved condition throughout the project's environmental review and entitlement process. LARW's operating air, water and waste permits will also be maintained during this environmental review and entitlement process. The project site will also maintain access for all utilities that currently serve the project site (power, water, etc.).

LARW previously took the intermediate products (e.g., naphtha and treated/untreated gas oil) from the P66 Carson Refinery for further refining processing, including conversion, treating, and blending, to produce finished products such as gasoline, diesel, and jet fuel. These products were ultimately blended and sold to the general public and industry as transportation fuels.

Operating units at the Wilmington refinery included fluid catalytic cracking, alkylation, isomerization, reforming, hydrocracking, hydrogen production, sulfur recovery, sulfuric acid unit, and hydrotreating.

There are numerous industrial facilities near the P66 Wilmington Refinery which could contribute to local emissions. The fenceline monitoring system at the P66 Wilmington Refinery may detect emissions originating from offsite sources. If an offsite source is suspected to have affected the P66 Wilmington fenceline, P66 personnel will notify South Coast AQMD.

2.2.2 Dispersion Modeling

Fenceline monitoring site locations at the P66 Wilmington Refinery were determined through dispersion modeling of annual emissions and evaluation of downwind impact on local communities, in addition to analysis of the local wind patterns. The modeling included all emission sources at the refinery and followed guidelines outlined by South Coast AQMD. The emission source information was compiled from the Hotspots Analysis and Reporting Program (HARP) and used to determine source location. A map of the emission sources for the P66 Wilmington Refinery is shown in **Figure 2**.

Seasonal wind roses were generated using 5 years of meteorological data from meteorological station onsite at the P66 Wilmington Refinery, and are shown in Figure 3.

Figure 2. Map showing the location of emission sources at the P66 Wilmington Refinery.

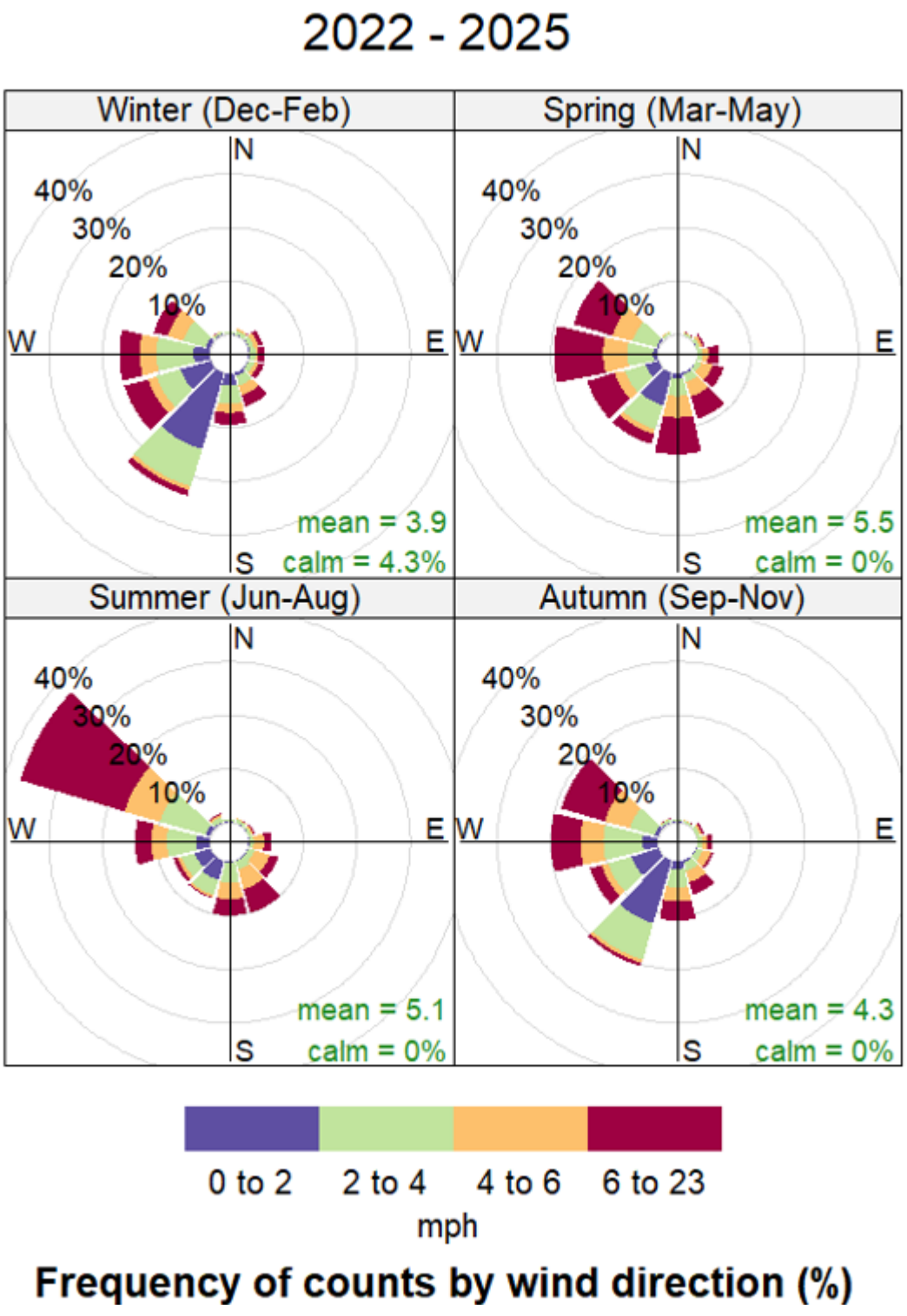

Figure 3. Seasonal wind roses for the P66 Wilmington Refinery.

Wind roses indicate two main flow patterns: northwesterly winds emanating from the Pacific Ocean and traveling to the southeast, and south to southeasterly winds emanating from Long Beach and

traveling to the north. These winds would tend to transport any facility emissions toward other nearby industrial facilities to the north and southeast.

AERMOD (AERMIC Dispersion Model) was used to estimate impacts of any emissions released from the facility. Modeling was performed in two different modes using data from the Long Beach Airport from January 1, 2012, through December 31, 2016. Emission source data were generated using the P66 Harp2 database, which included 127 emission sources at the P66 Wilmington Refinery.

First, an initial downwind community impact analysis was performed by modeling an annual average unit release from the center of the refinery to identify the predominant wind directions for the dispersion of emissions. This also indicated which fencelines were expected to receive the major impact. The result of this modeling is shown in **Figure 4**.

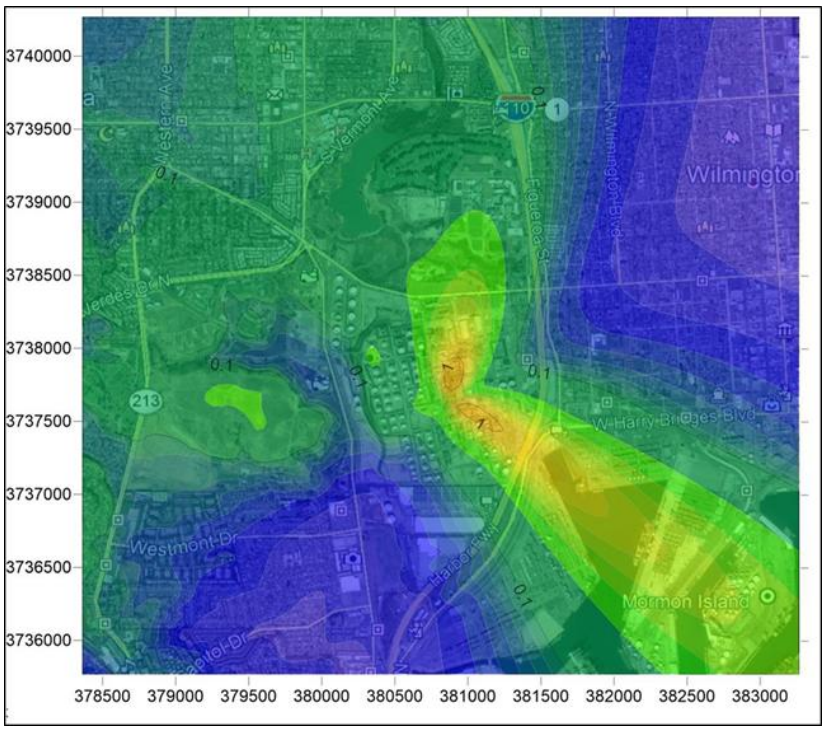

Figure 4. Downwind emissions impact from the P66 Wilmington Refinery.

The emissions were then modeled using AERMOD as described above. The modeling output gave annual and highest daily average concentrations of modeled pollutants for receptors outside of the refinery boundary. The following were considered when assessing the potential impact of the pollutants at the refinery fenceline:

- The compound is emitted at >5,000 pounds per year
- The compound can be detected by open-path analyzers
- The compound presents a potential health risk

- The source of the compound is primarily fugitive in nature (not stack)

The compounds that met these criteria are listed in Table 3. The corresponding modeling results are shown in Figures 5 through 16 (hourly) and Figures 17 through 28 (annual).

Table 3. Compounds included in modeling.

Compounds	>5,000 lbs/year***	Detectable by Open-Path	Presents a Potential Health Risk	Primarily Fugitive
Ammonia	Y	Y	Y	Y
Benzene	N	Y	Y	Y
Cyclohexane	N	Y	N	Y
BC*	N	N	Y	Y
Ethylbenzene	N	Y	Y	Y
Hexane	Y	Y	N	Y
Hydrogen Cyanide	Y	Y	Y	Y
H_2S**	N	N	Y	Y
Methanol	Y	Y	N	Y
Propylene	Y	Y	Y	Y
Toluene	N	Y	Y	Y
Xylene	N	Y	Y	Y

* BC was modeled as diesel particulate matter (DPM), and the monitoring technology is a point sample method.
** The monitoring technology for H_2S is also a point sampling method.
*** The facility is not expected to be emitting more than 5,000 lbs. per year of each of those compounds when idle.

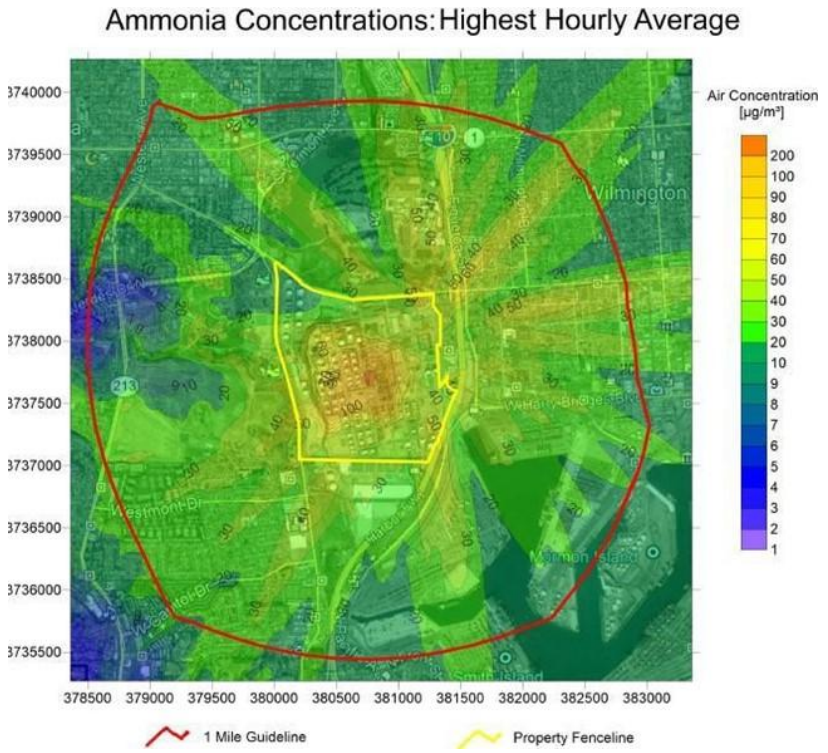

Figure 5. Maximum hourly ammonia emission concentrations.

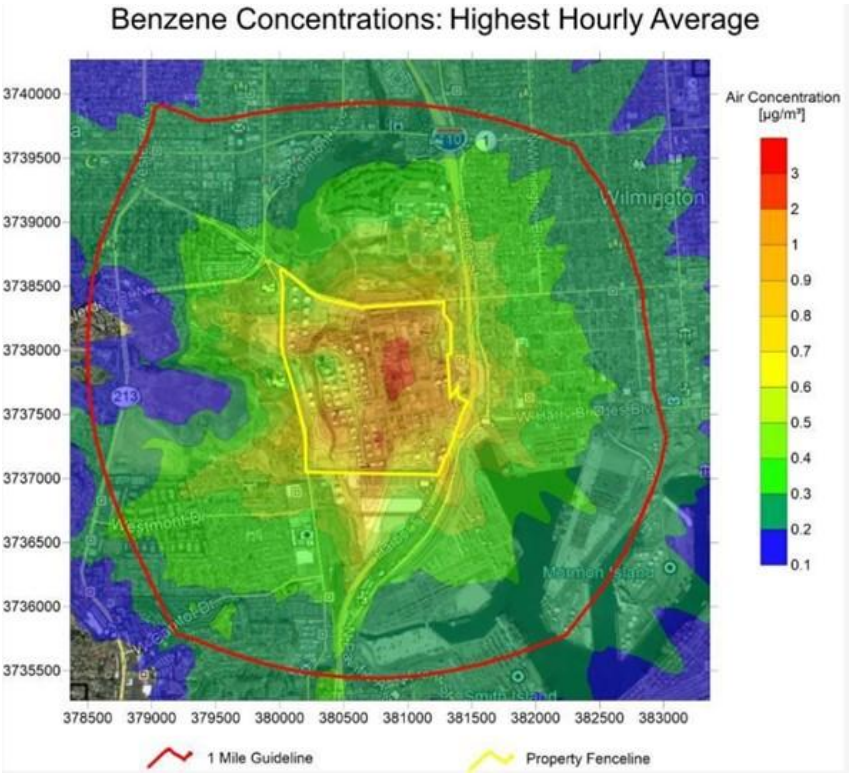

Figure 6. Maximum hourly benzene emission concentrations.

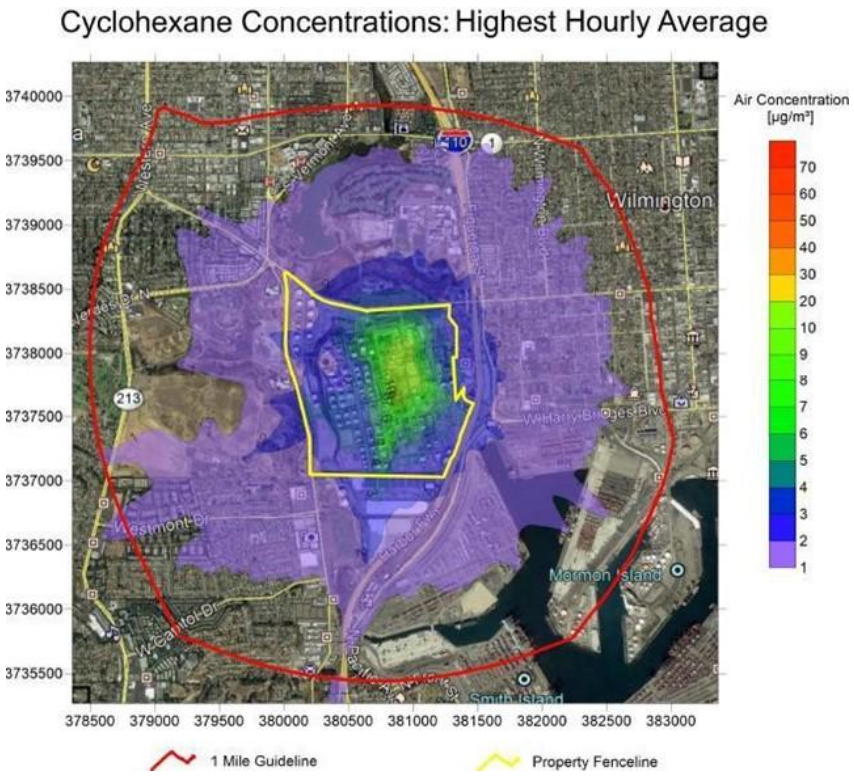

Figure 7. Maximum hourly cyclohexane emission concentrations.

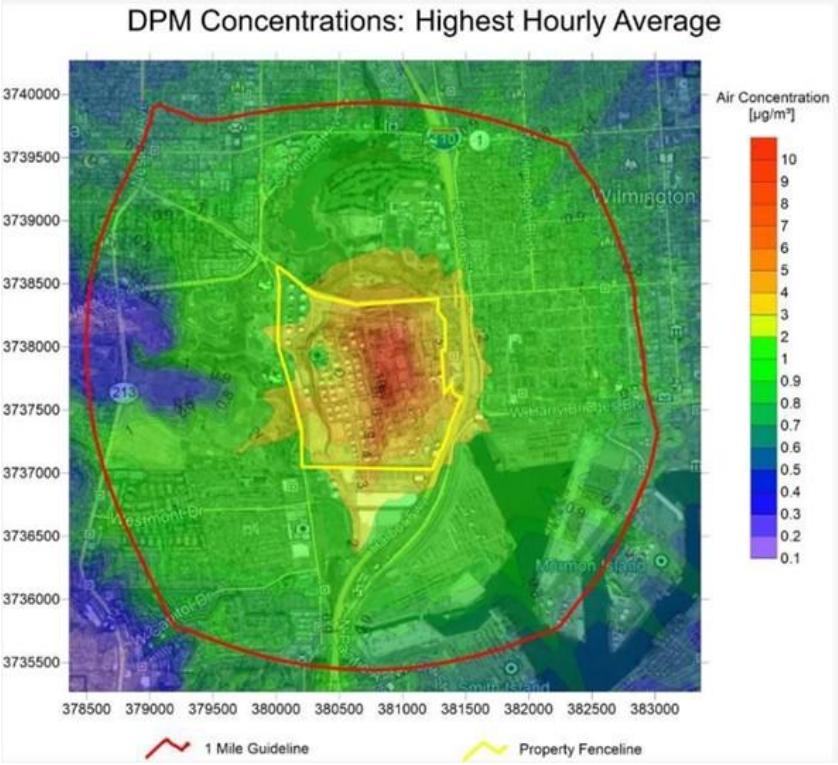

Figure 8. Maximum hourly DPM emission concentrations.

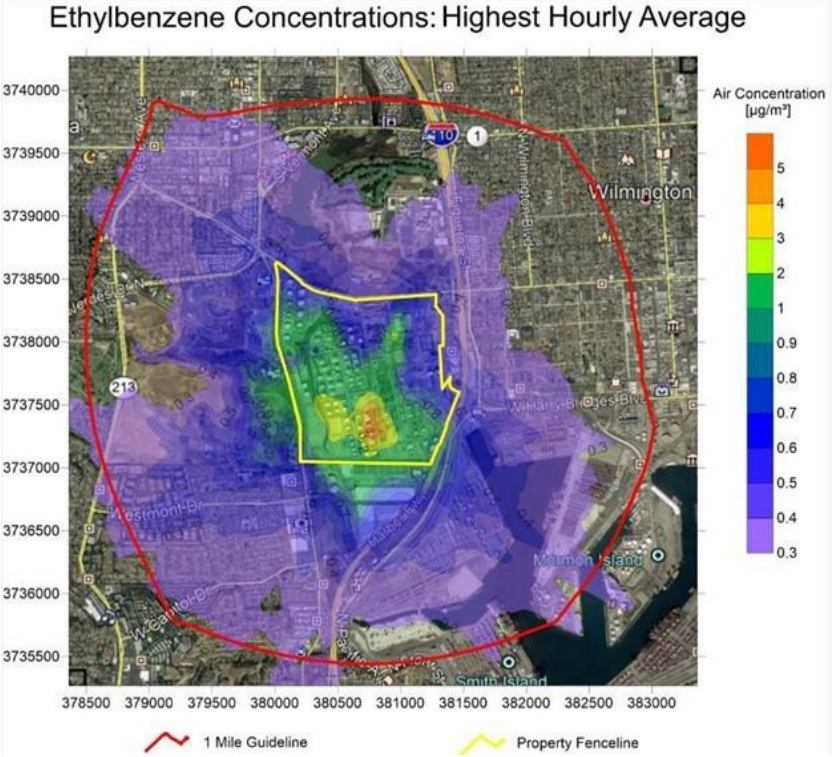

Figure 9. Maximum hourly ethylbenzene emission concentrations.

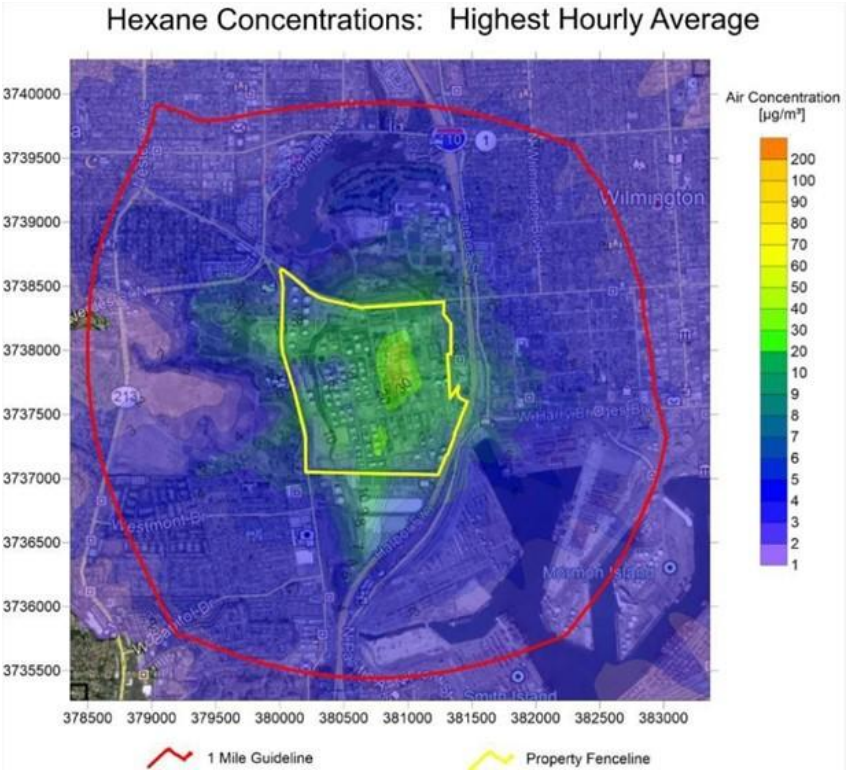

Figure 10. Maximum hourly hexane emission concentrations.

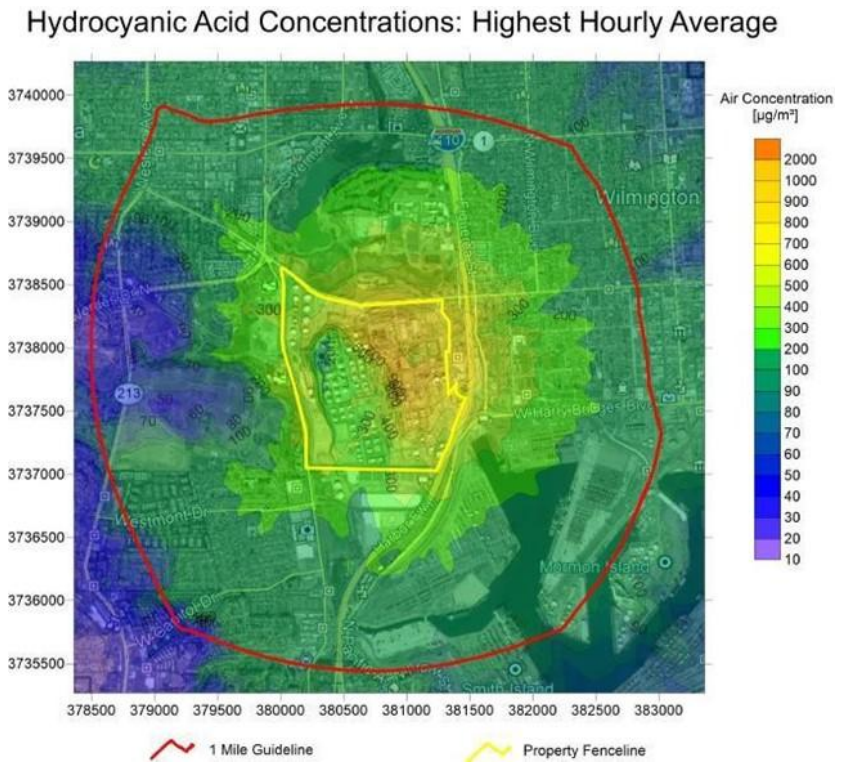

Figure 11. Maximum hourly hydrogen cyanide (hydrocyanic acid) emission concentrations.

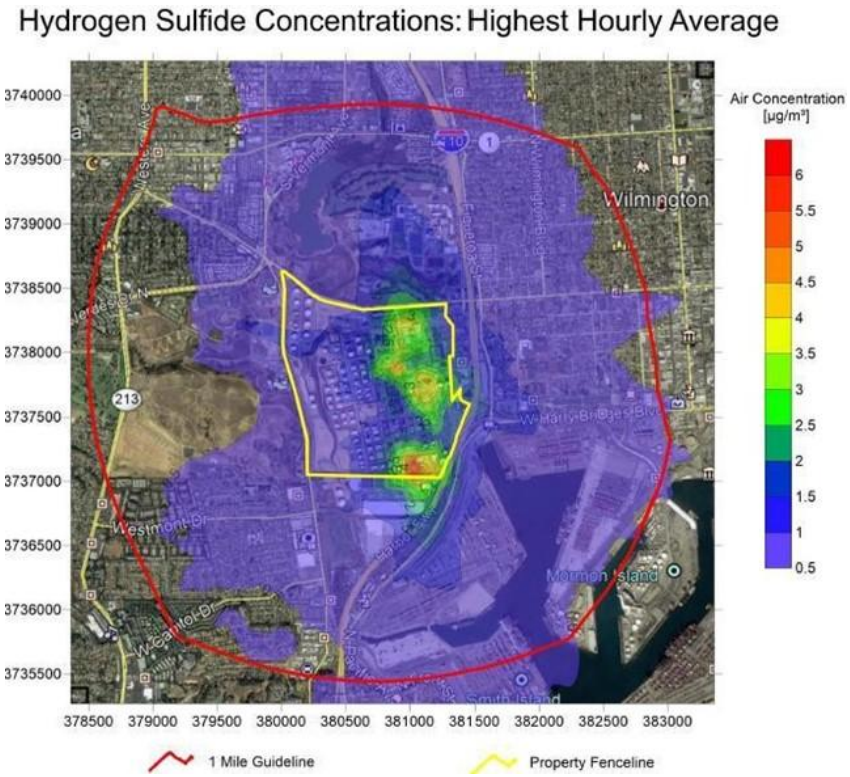

Figure 12. Maximum hourly H_2S emission concentrations.

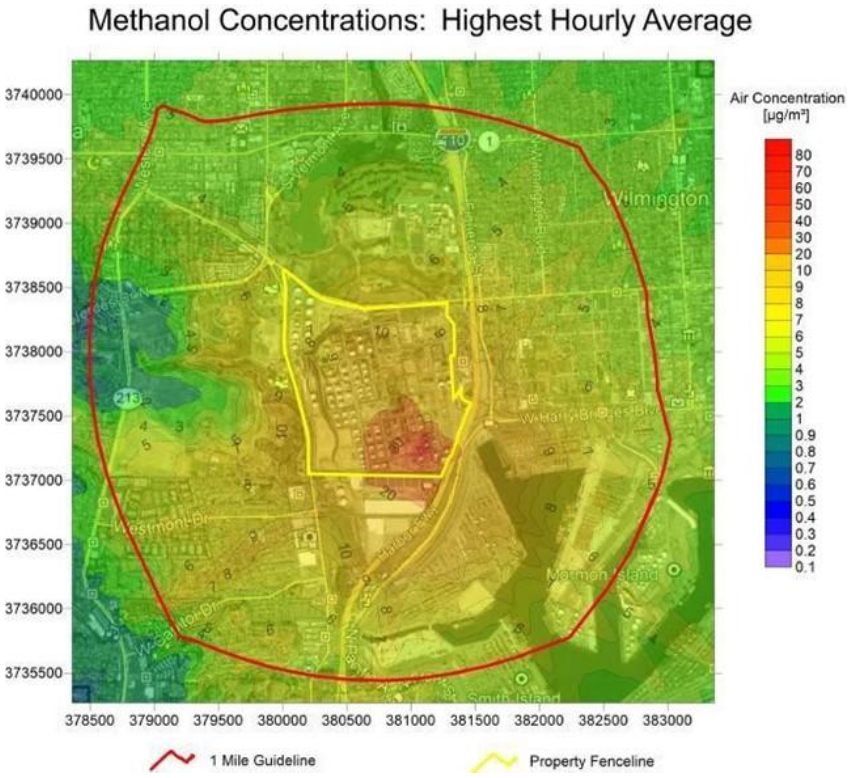

Figure 13. Maximum hourly methanol emission concentrations.

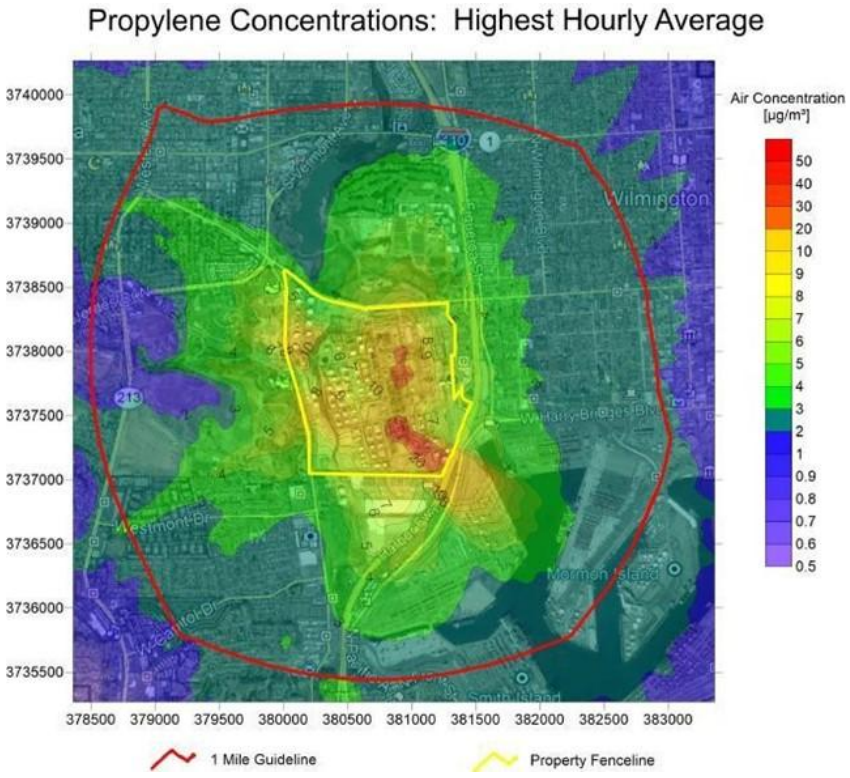

Figure 14. Maximum hourly propylene emission concentrations.

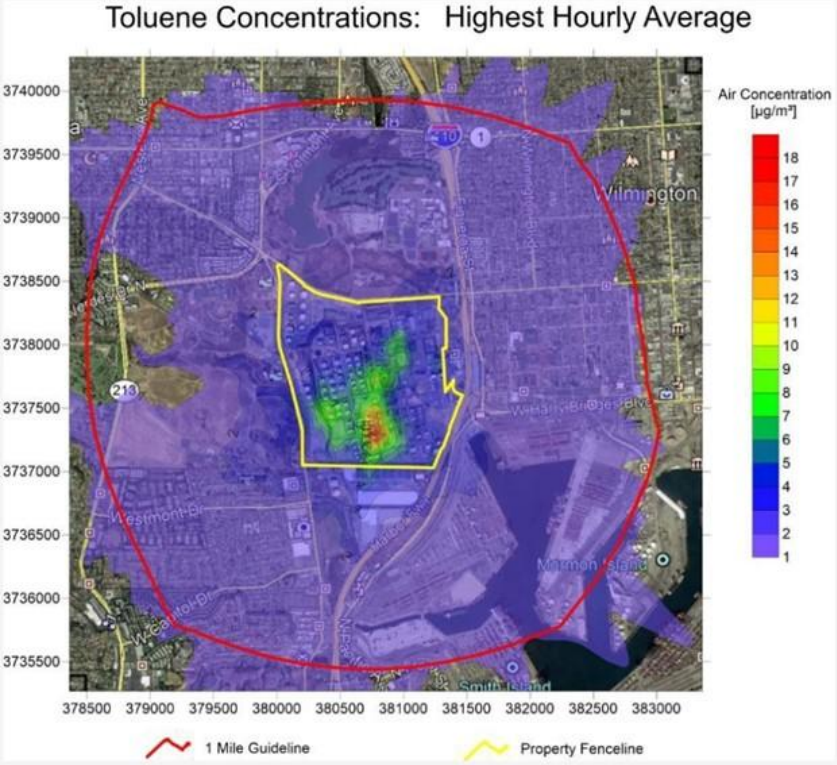

Figure 15. Maximum hourly toluene emission concentrations.

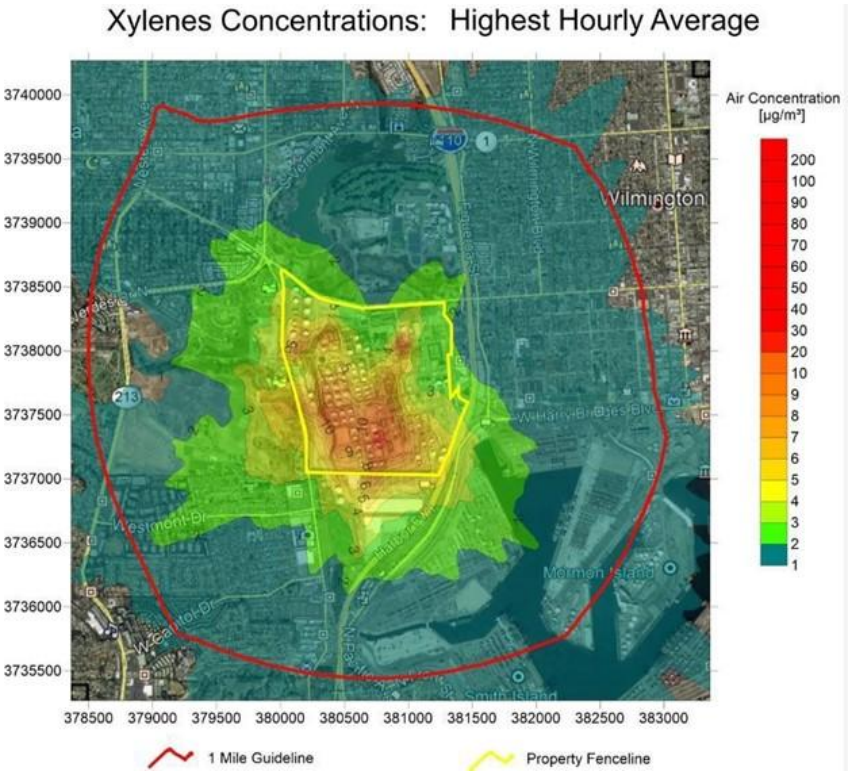

Figure 16. Maximum hourly xylene emission concentrations.

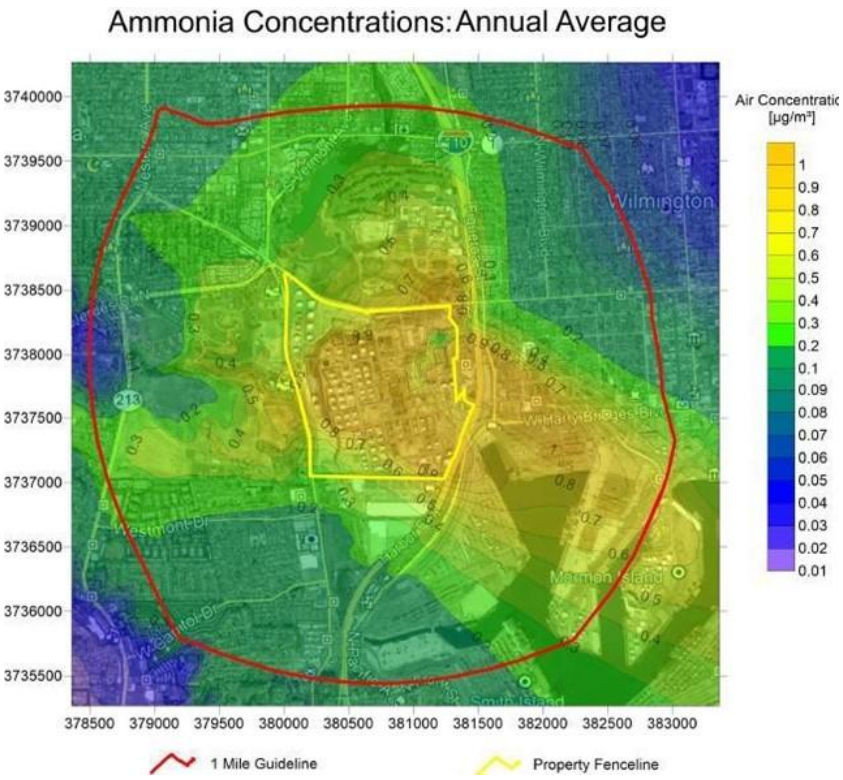

Figure 17. Annual ammonia emission concentrations.

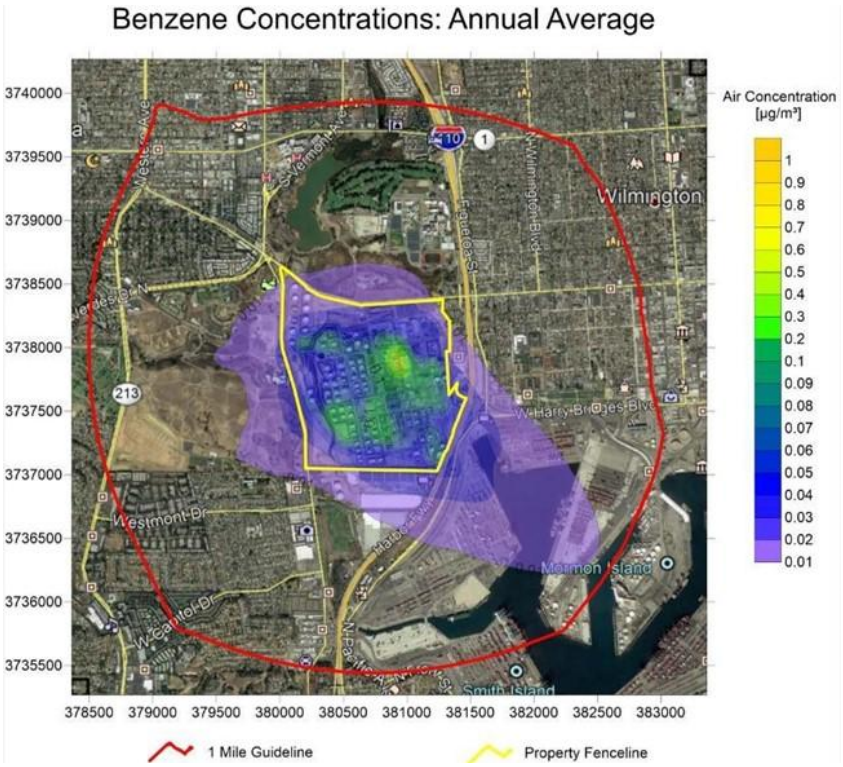

Figure 18. Annual benzene emission concentrations.

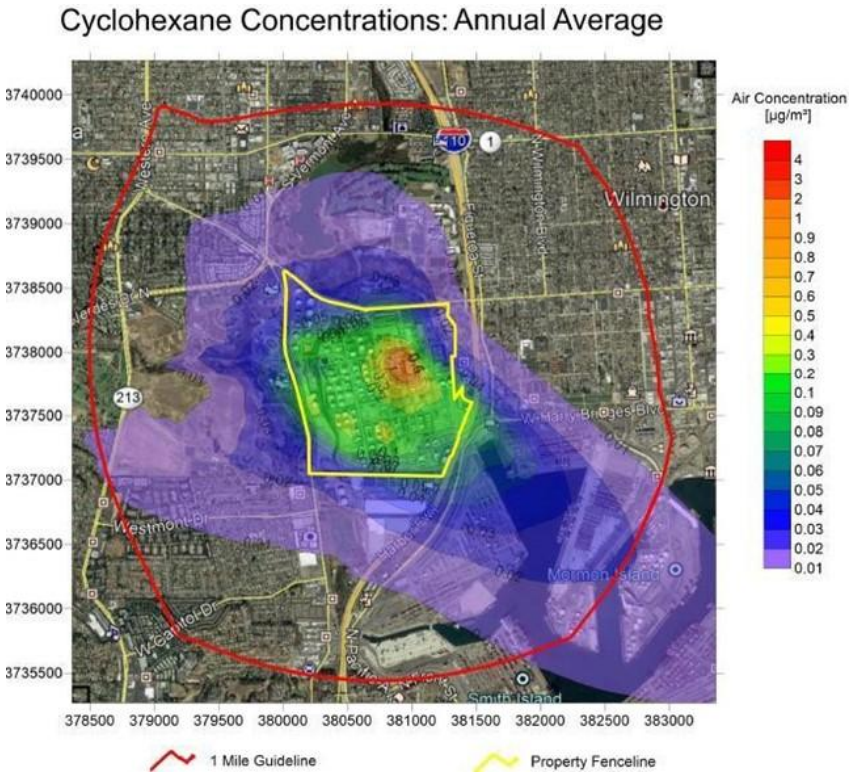

Figure 19. Annual cyclohexane emission concentrations.

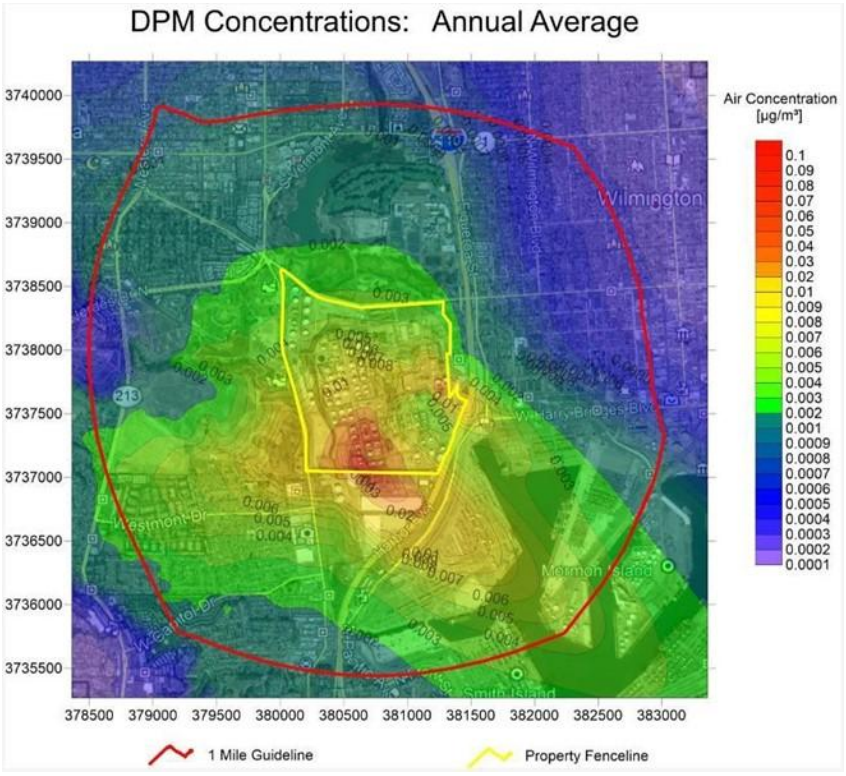

Figure 20. Annual DPM emission concentrations.

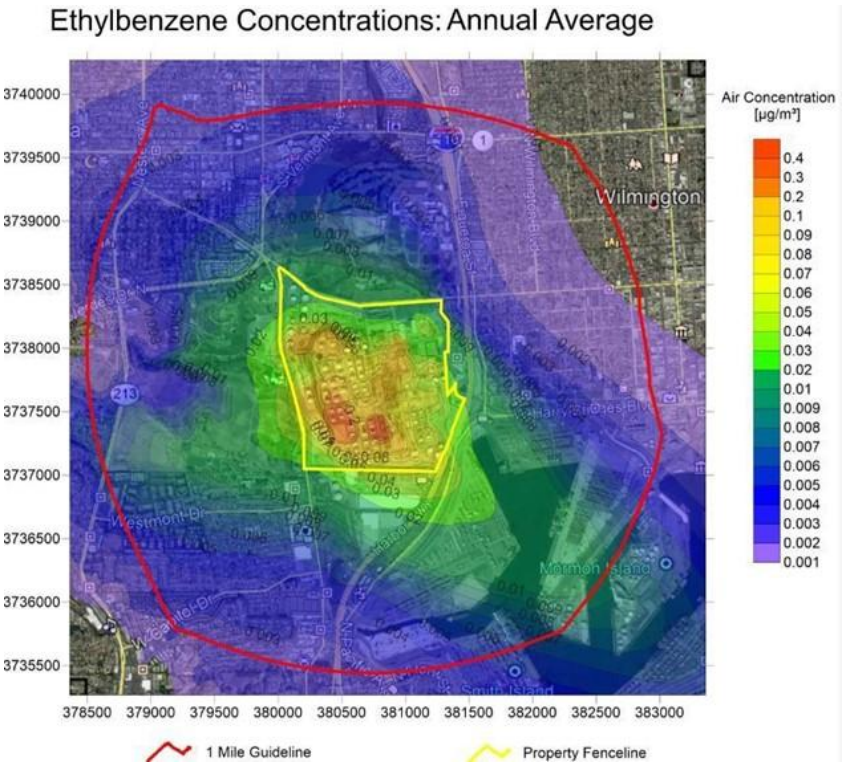

Figure 21. Annual ethylbenzene emission concentration.

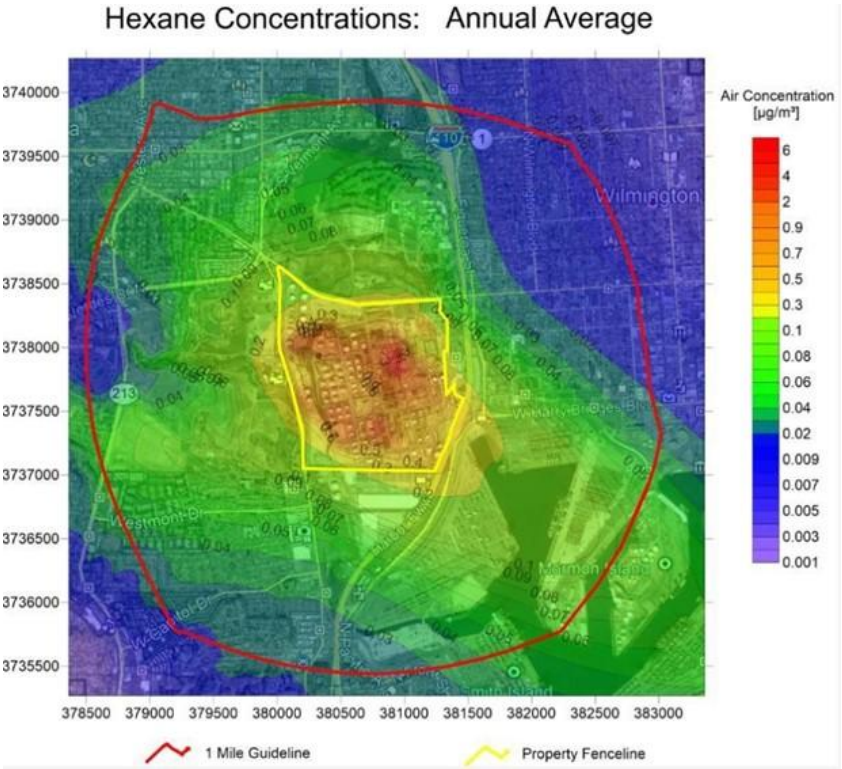

Figure 22. Annual hexane emission concentrations.

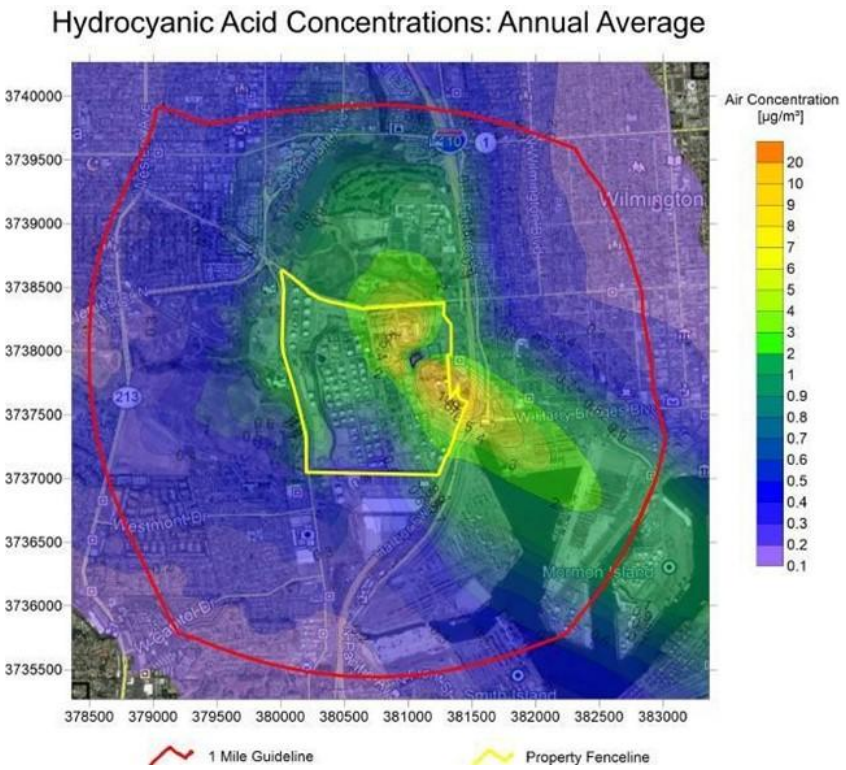

Figure 23. Annual hydrogen cyanide (hydrocyanic acid) emission concentrations.

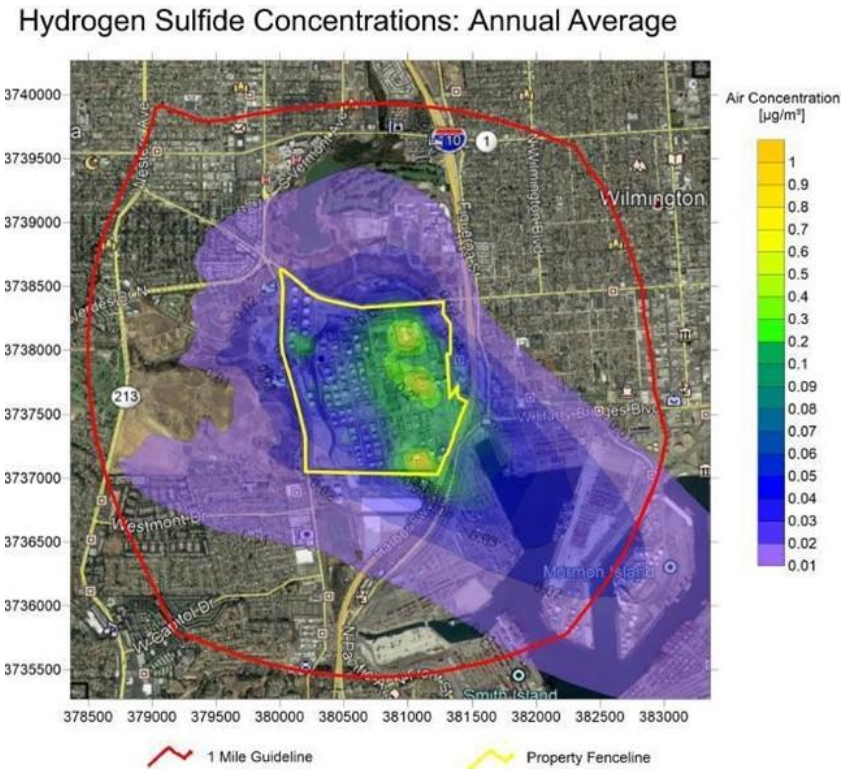

Figure 24. Annual H_2S emission concentrations.

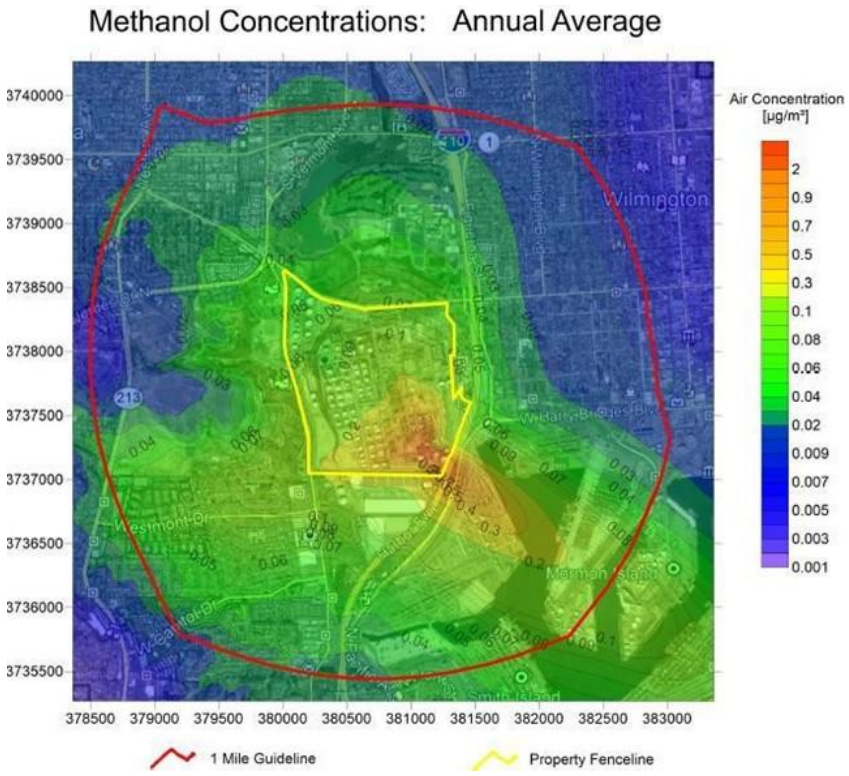

Figure 25. Annual methanol emission concentrations.

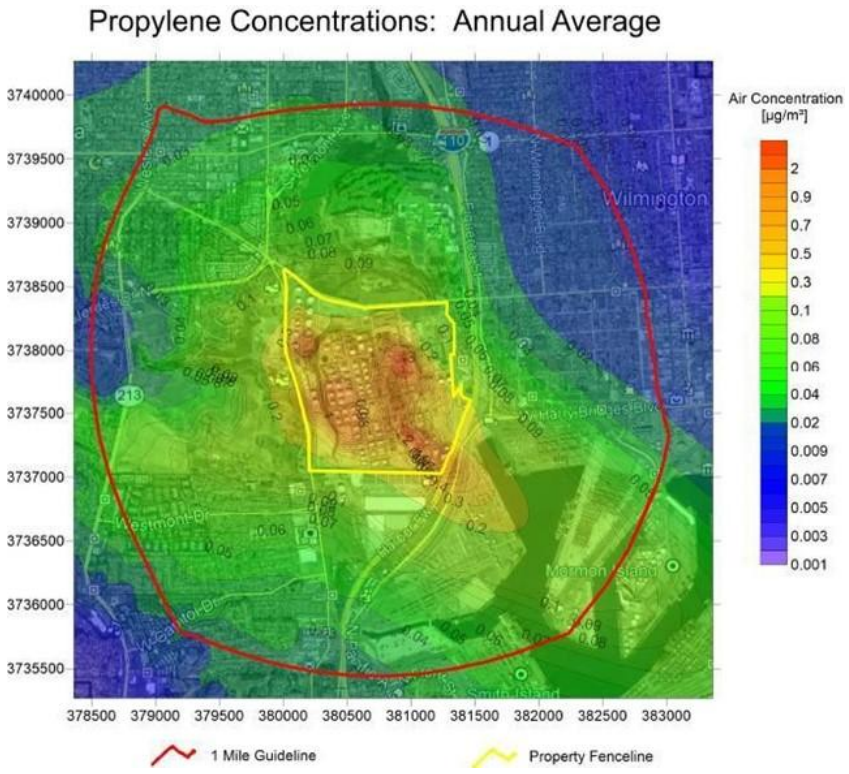

Figure 26. Annual propylene emission concentrations.

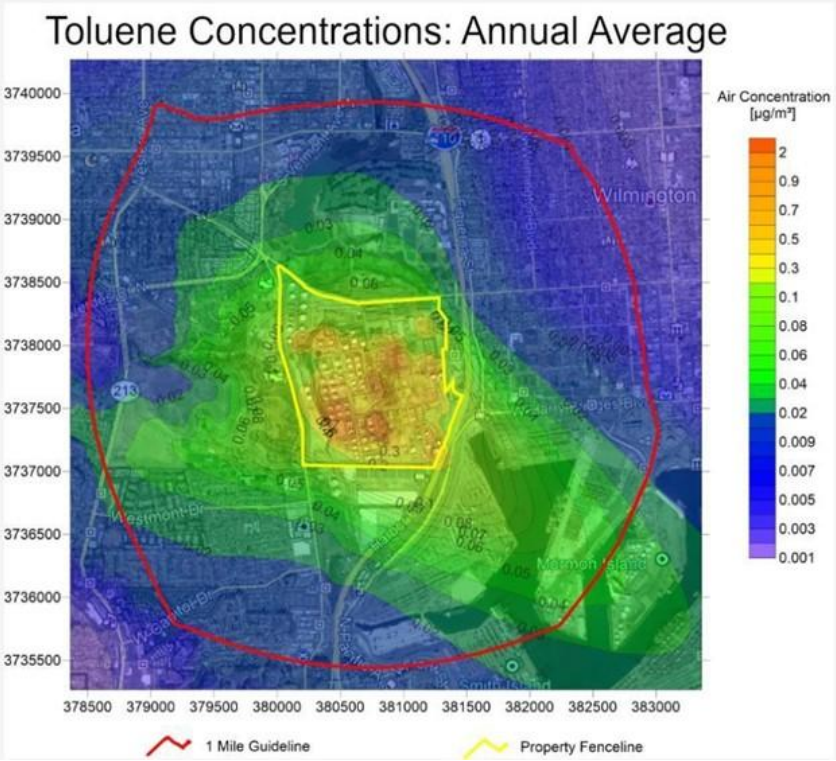

Figure 27. Annual toluene emission concentrations.

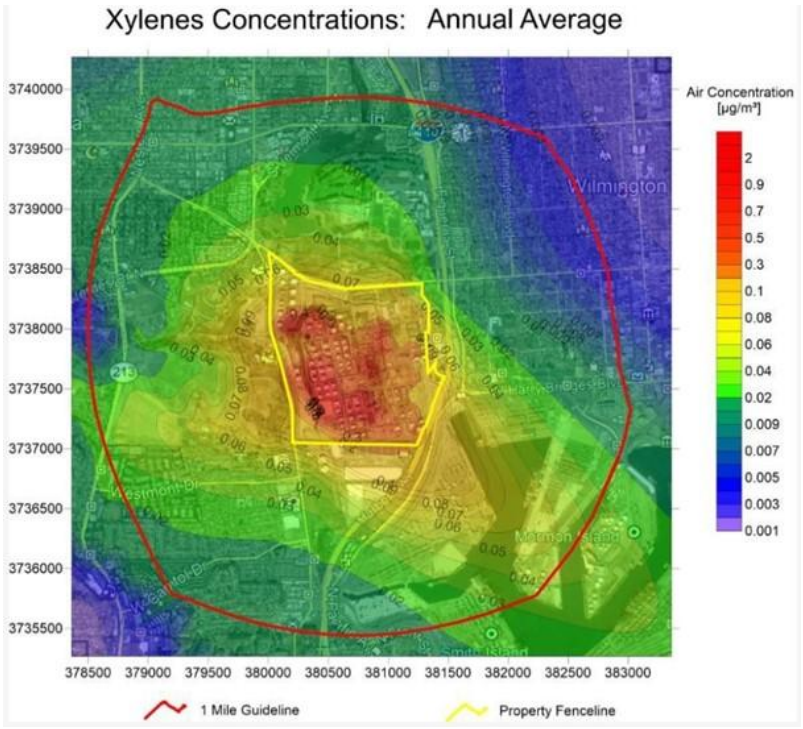

Figure 28. Annual xylene emission concentrations.

2.2.3 Sensitive Receptors

P66 performed an extensive search of individuals and organizations who might be considered sensitive receptors within one mile of the Wilmington refinery. The public website enables sensitive receptors and individuals in the community to observe detection events from the fenceline system (see Section 4.1.2). Table 4 summarizes potential sensitive receptors based on direction from the refineries.

Table 4. Sensitive receptor groups within one mile of the Wilmington refinery fenceline.

Direction	Schools/Daycare	Recreation Areas	Hospitals	Residential
Northwest	Y	Y	Y	Y
North	Y	N	N	Y
Northeast	Y	N	N	Y
East	Y	Y	N	Y
Southeast	N	Y	Y	N
South	N	N	N	N
Southwest	Y	N	N	Y
West	Y	Y	N	N

Table 5 presents a list of sensitive receptors located within one mile of the P66 Wilmington Refinery fenceline.

Table 5. Sensitive receptors within one mile of the P66 Wilmington Refinery.

Receptor	Address	GPS Coordinates
St Peter-St Paul School	706 Bay View Ave., Wilmington, CA 90744	33.7785910, -118.2699730
Los Angeles Harbor College	Harbor College, Wilmington, CA 90744	33.7839750, -118.2840400
Hawaiian Ave Early Education Center	501 Hawaiian Ave., Wilmington, CA 90744	33.7749620, -118.2765130
Gulf Ave STEAM Elementary and Magnet School	828 W L St., Wilmington, CA 90744	33.7749620, -118.2765130
Hawaiian Ave STEAM Magnet Elementary School	540 Hawaiian Ave., Wilmington, CA 90744	33.7754634, -118.2763544
Wilmington Gardens Nursing Home	1311 W Anaheim St., Wilmington, CA 90744	33.7793389, -118.2741576

Receptor	Address	GPS Coordinates
Ken Mallory Harbor Regional Park	25820 Vermont Ave., Harbor City, CA 90710	33.7889370, -118.2935130
Banning Landing Community Center	100 E Water St., Wilmington, CA 90744	33.7666148, -118.2603958
Will Hall Park	325 N Neptune Ave., Wilmington, CA 90744	33.7740829, -118.2686025
Reece Family Day Care	King Ave., Wilmington, CA 90744	33.7782381, -118.2753685
Gomez Family Child Care	1156 Ronan Ave., Wilmington, CA 90744	33.7808464, -118.2723692
Yvette's Daycare	815 W Opp St., San Pedro, CA 90731	33.7824630, -118.2720110
Kaiser Permanente South Bay Medical Center	25825 S Vermont Ave., Harbor City, CA 90710	33.7879151, -118.2963498
Wilmington Urgent Care and Family Clinic	714 N Avalon Blvd., Wilmington, CA 9074	33.7788249, -118.2622416
George Da Le Torre Junior Elementary School - School	500 Island Ave, Wilmington, CA 90744	33.776214, -118.266168
Little Sprouts Preschool	1921 N Gaffey St, San Pedro, CA 90731	33.762359, -118.293573
Field of Dreams - Recreation	501 Westmont Dr, San Pedro, CA 90731	33.762583, -118.290865
Taper Avenue Elementary School - School	1824 N Taper Ave, San Pedro, CA 90731	33.762389, -118.298507
Mary Star of the Sea High School - School	2500 N Taper Ave, San Pedro, CA 90731	33.766799, -118.300112
Park Western Place Elementary School - School	1214 Park Western Pl, San Pedro, CA 90732	33.752953, -118.304084
William J Johnston Community Day - School	2210 N Taper Ave, San Pedro, CA 90731	33.765086, -118.298905
San Pedro Girls Softball Fields - Recreation	2981 N Gaffey St, San Pedro, CA 90731	33.773503, -118.295863
Marymount California University San Pedro Campus - School	1600 Palos Verdes Dr. N, San Pedro, CA 90732	33.779137, -118.304259
Rolling Hills Preparatory School - School	1 Rolling Hills Prep Way, San Pedro, CA 90732	33.779031, -118.301838

Figure 29 shows the location of several types of sensitive receptors with respect to the refinery, including schools and childcare facilities, adult health facilities, recreation areas, and residential areas.

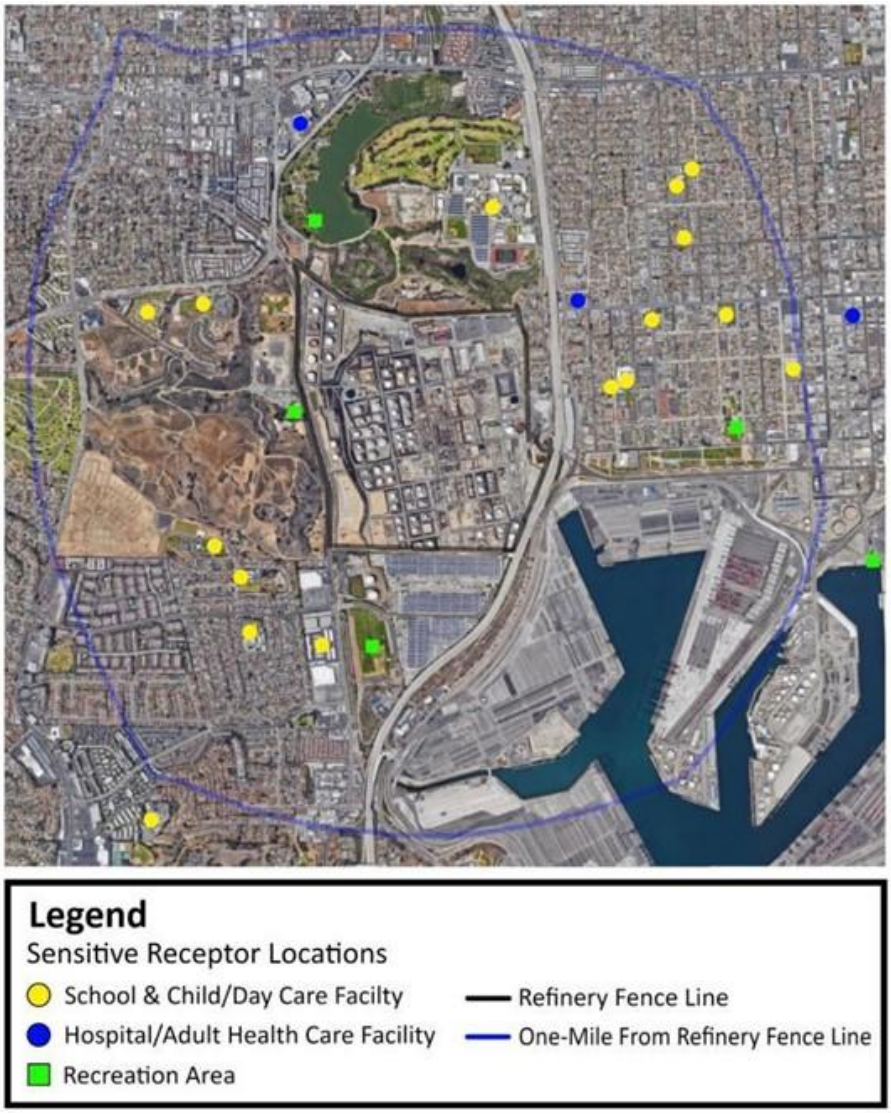

Figure 29. Sensitive receptors within one mile of the P66 Wilmington Refinery fenceline.

2.2.4 Siting Justification

Based on the modeling analysis, potential emissions are most often transported from the refinery in either a northwesterly or a southerly direction, and worst-case scenario shows little transport from the facility or to the southeast. Nonetheless, fenceline monitors provide coverage around the perimeter of the P66 Wilmington Refinery. Monitoring stations are positioned at the corners of the refineries with open-path air monitoring systems projecting beams of light along the fenceline boundary. In addition, 4 point monitors are located on the perimeter of the facility. The following analysis presents the siting evaluation for each sector of the refinery:

West side of refinery – Emissions from the refinery may potentially impact the community northwest of the refinery. For this reason, fenceline monitoring equipment is installed along paths covering the west side of the refinery.

North side of the refinery – There are no communities located within one mile north or northeast of the refinery, but there is a community college. For this reason, fenceline monitoring equipment is installed along paths covering the north side of the refinery.

East side of refinery – Emissions from the refinery may potentially impact the community to the east of the refinery. For this reason, fenceline monitoring equipment is installed along paths covering the east side of the refinery.

South side of the refinery – The area to the south of the refinery is not predominantly downwind and the modeled pollution concentrations are below the detection limits for fenceline monitoring systems. However, there is a community located less than 0.5 miles due southwest of the refinery. For this reason, fenceline monitoring equipment is installed along paths covering the south side of the refinery.

2.2.5 Assessment of Target Compounds

Table 6 presents the maximum hourly concentration of each modeled compound (see Table 3 in Section 2.2.2) and which fenceline sampling path is most likely to be impacted.

Table 6. Maximum hourly impact of modeled compounds modeled.

Compound	Health Threshold Acute REL (ppb)	Max Hourly Conc. Community (ppb)	Max Hourly Conc. Fenceline (ppb)	Relevant Fenceline
Ammonia	4,571	57	71	Path 4
BC	--	46	184	PM1
Benzene	8.45	0.16	0.3	Path 4
Cyclohexane	--	0.58	1.45	Paths 2, 3, 5
Ethylbenzene	460	0.12	0.23	Paths 1, 5, 6
Hexane	1,986	2	2.8	Paths 1, 5, 6
Hydrogen Cyanide	283	250	417	Path 4
H_2S	30	0.7	2.9	PM3, PM4
Methanol	21,367	7.6	22.9	Path 5
Propylene	1,743	2.9	11.6	Paths 1, 5, 6
Toluene	9,819	0.5	1.3	Path 5
Xylene	5,066	0.69	2.07	Paths 1, 6

The modeled concentrations—both at the fenceline and at the nearest community—were below the acute REL from OEHHA. Nonetheless, fenceline monitoring equipment was installed along the entire perimeter of the P66 Wilmington Refinery (LARW) and all 1180 compounds (which does not include cyclohexane, methanol, or propylene) were added for monitoring unless they were exempted, as described below.

According to the Guidelines, facilities can request to exclude a compound from the fenceline monitoring system if:

- The compounds are not associated with the processes at the facility (i.e., a facility that does not store or use hydrogen fluoride)
- A facility that does not have an FCCU (i.e., the FCCU is considered the only potential source of high concentrations of cadmium, manganese, and nickel, which could be emitted as part of spent catalyst)
- Technologies are not yet developed to perform real-time monitoring for the compound (i.e., South Coast AQMD is not presently aware of any real-time monitoring technology for polycyclic aromatic hydrocarbons (PAHs)
- Other technical justifications are proposed to and approved by the South Coast AQMD Executive Officer

LARW is anticipated to begin idling before the end of 2025, at which point cleaning of all operational units in the refinery will commence using the same techniques and methodologies that have regularly occurred every three-to-five years for a rolling subset of units as part of routine maintenance activities. Consistent with the technical methodologies previously imposed during the aforementioned maintenance work, all units will remain in an idled and preserved condition throughout the project's environmental review and entitlement process. LARW's operating air, water and waste permits will also be maintained during this environmental review and entitlement process. The project site will also maintain access for all utilities that currently serve the project site (power, water, etc.).

Rule 1180 requires monitoring for particulate matter, and metals for those refineries with an FCC Unit, unless a FAMP provides a technical justification for not including particulate matter monitoring in the plan (Rule 1180(d)(1)(B).). The Rule 1180 and Rule 1180.1 Fenceline Air Monitoring Plan Guidelines ("FAMP Guidelines") provide that a facility can request to exclude compounds identified for monitoring in Rule 1180 if the "compounds are not associated with the processes at the facility" (FAMP Guidelines, p. 12.). While LARW is idled in a preserved condition, there will be no processes at the facility generating particulate matter or metals emissions. Accordingly, monitors for particulate matter or metals are not planned to be installed while the facility is in an idle state.

Table 7. Summary of compounds measured by the P66 Wilmington Refinery fenceline monitoring system.

Compound	Included	Justification
Criteria Air Pollutants		
SO_2	Y	SO_2 is not measured at paths monitored via the optical tent system
Oxides of Nitrogen	Y	NO_2 is included
Particulate Matter	N	The P66 Wilmington Refinery is anticipated to begin idling before the end of 2025, so particulate matter monitors will not be needed. Refer to the corresponding text in Section 2.2.5.
Volatile Organic Compounds [a]		
Total VOCs	Y	Total VOCs are measured as the sum of ethane, propane, butane, and pentane concentrations, each normalized to the molecular weight of propane – this has been planned and will be implemented
Formaldehyde	Y	--
Acetaldehyde	Y	--
Acrolein	Y	--
1,3–Butadiene	Y	--
Naphthalene	Y	Naphthalene will be included as part of the Rule 1180 expansion
Styrene	Y	--
Benzene	Y	--
Toluene	Y	--
Ethylbenzene	Y	--
Xylenes	Y	--
Metals		
Cadmium	N	The P66 Wilmington Refinery is anticipated to begin idling before the end of 2025, so metals monitors will not be needed. Refer to the corresponding text in Section 2.2.5.
Manganese	N	
Nickel	N	

Compound	Included	Justification
Other Compounds		
H_2S	Y	--
Carbonyl Sulfide	Y	--
Ammonia	Y	--
BC	Y	--
Hydrogen Cyanide	Y	--
Hydrogen Fluoride	N	The P66 Wilmington Refinery does not use hydrogen fluoride so it will not be included

[a] This FAMP will be revised when the South Coast AQMD Executive Officer determines that real-time monitoring of PAHs is feasible.

2.2.6 Description of Monitoring Technology

Open-Path Analyzers

Open-path analyzers send a beam of light across open air and receive it at a detector. In a bistatic configuration, the detector is positioned at the opposite end of the pathway. In a monostatic configuration, a mirror (retroreflector) is positioned at the opposite end of the pathway and reflects the beam of light back to a detector positioned with the open-path instrument (Figure 30). When gases are present in the beam, some of that light is absorbed. The detector can distinguish between a beam received in clean air versus a beam in which gases are present. Gases have their own distinct way of absorbing light and may absorb light at several different wavelengths in the light spectrum. These gas-specific absorption characteristics serve as a unique fingerprint for each gas. By comparing known reference standards to the results from field measurements, the system can identify the gas based on which wavelength absorption patterns are present. Likewise, the quantity of light that was absorbed is a direct function of the concentration of the gas in the air. By analyzing the amount of light lost due to gas absorption, the system can quantify the average concentration of various compounds along the beam path. A single, open-path analyzer can continuously monitor path lengths from several hundred to>1,000 meters, making them ideal for use as a fenceline monitoring system when covering a significant linear distance is required. The P66 Wilmington Refinery contains bistatic and monostatic (optical tent) UV-DOAS and monostatic FTIR analyzers.

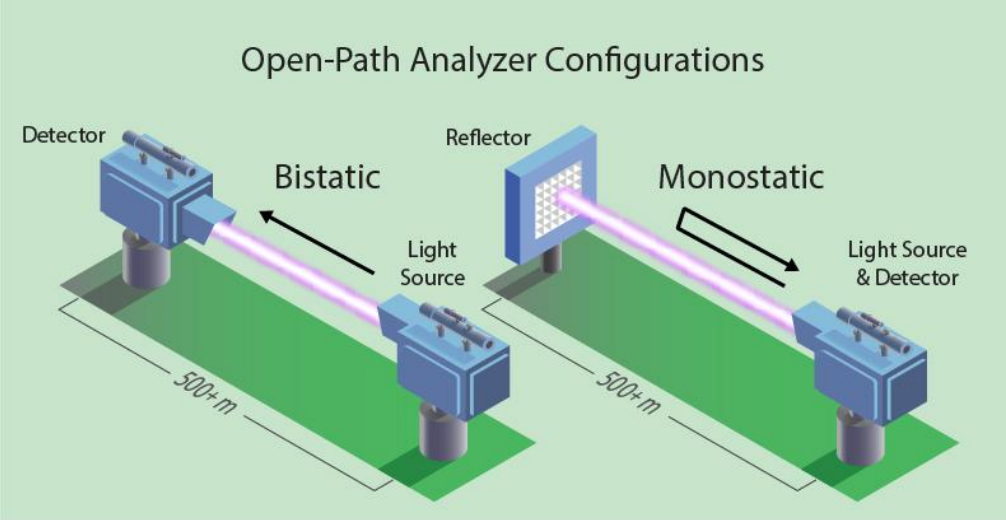

Figure 30. Open-path analyzer configurations.

Analyzers installed at the P66 Wilmington Refinery measure in real time, with FTIR analyzers recording a raw data point every 5 minutes and UV-DOAS analyzers recording a data point every 30 seconds. Furthermore, these analyzers record and store measured spectra, background and reference spectra, additional data used for concentration retrievals, and associated average concentrations of measured pollutants for retrospective investigations.

Table 8 presents the expected minimum detection limits (MDLs) at two representative path lengths for compounds measured by open-path analyzers at the P66 Wilmington Refinery and compares them to the required public notification threshold values. MDLs must be sufficiently below notification thresholds for the monitoring technology to be considered appropriate for this application. These theoretical MDLs are provided by instrument manufacturers and are based on both the spectroscopic specifications and estimated sampling path length. In reality, MDLs of open-path systems are dynamic and depend on atmospheric conditions (e.g., MDL will increase as atmospheric visibility decreases), the presence of interfering or unknown compounds, the unique characteristics of each spectroscopic system, the atmospheric path length, and equipment performance. Actual MDLs can be higher or lower than theoretical values and can also change with time.

Table 8. Expected MDLs for compounds measured by open-path analyzers at two representative sampling path lengths.

	Compound	MDL at 700 meters (ppb)	MDL at 600 meters (ppb)	Notification Threshold (ppb)
FTIR	1,3–Butadiene	10	11	297
	Acrolein	27	30	1.1[a]
	Acetaldehyde	29	33	260
	Ammonia	2	4	4,507
	Carbonyl Sulfide	3	5	270
	Formaldehyde	6	5	44
	Total VOCs	150	32	730[b]
	Hydrogen Cyanide	17	50	309
	Nitrogen Dioxide	52	34	100
	Styrene	18	33	5,000
UV-DOAS	Benzene	1	2	8
	Toluene	3	3	1,300
	Ethylbenzene	17	20	--[c]
	Xylenes	1	2	5,000
	Sulfur Dioxide	2	3	75
	Naphthalene	1	1	--[c]

[a] The notification threshold for acrolein is lower than the MDL of available open-path technology, so public alerts are not sent for this compound.
[b] This notification threshold for Total VOCs is an information-based value prescribed by Rule 1180.
[c] No notification threshold is defined for this compound.

Point Monitors

H_2S, BC, and particulate matter are detected and quantified with point monitors. At the P66 Wilmington Refinery, H_2S concentrations are measured through UV-induced fluorescence – whereby H_2S is converted to SO_2, exposed to UV light, and the resulting photon is measured in real time. The manufacturer-stated detection limit for these systems is 0.4 ppb, which is below the odor threshold for humans and the Rule 1180 public alert threshold of 30 ppb.

BC is measured with aethalometers, which draw air through permeable tape and measure the absorbance at a defined wavelength of the deposited samples. The manufacturer-stated detection limit for these systems is 0.1 $\mu g/m^3$ and there is no Rule 1180 public alert threshold. This system

detects particles in the air commonly associated with vehicle emissions (diesel exhaust) and wood burning (soot).

Meteorological and Visibility Sensors

A meteorological station measures wind speed and direction. This supporting data are helpful in determining where potential detections by the fenceline monitoring system may have originated.

A visibility sensor is used to assess low-visibility conditions that cause invalid or missing measurements from open-path analyzers. Heavy fog may entirely block the signal from an open-path instrument and prevent data collection, but even light fog can absorb the signal partially and interfere with monitoring. Measurements are generally impacted when visibility is <2.5 miles, as this results in marginal operating conditions for the analyzer (e.g., decreased signal strength or increased integration time). If data from open-path analyzers are invalid due to low signal return, and visibility is also low, data are flagged as invalid due to low visibility.

2.3 Monitoring Action Plan Prior to Restart from Idling

In the event that the refinery returns to operations after idling, prior to restart, the following actions will be taken at the Wilmington facility:

- Install four particulate matter monitors as shown in the figure on the next page.
- Install three metals monitors at PM1, PM2, and PM4 as shown in the figure on the next page.
- Replace the UCLA System with P66 Los Angeles Refinery's own UV-DOAS system if UCLA contract is no longer in effect or has not been extended.
- Add Naphthalene to the reported compounds list on the public website.

Figure 31. Fenceline monitoring sampling locations for implementation prior to restart of refinery operations from idling for the P66 Wilmington Refinery. Yellow squares indicate proposed point monitor (PM) locations as proposed by South Coast AQMD.

3. Routine Operations

Instrument operations, maintenance, and bump tests include daily checks to ensure data are flowing from all instruments, as well as monthly, quarterly, and annual maintenance activities. Further details are provided in the QAPP and individual instrument standard operating procedures (SOPs) (Attachments 1–8).

3.1 System Maintenance

Automated system status indicators will alert data reviewers to operational issues on an ongoing basis. Sonoma Technology's after-hours on-call staff additionally respond to alerts for operational issues 24 hours per day, 7 days per week. Routine maintenance activities, including planned schedules and estimated downtime for completion, are detailed in the QAPP and individual instrument SOPs.

3.2 Backup Air Monitoring System

A backup air monitoring system composed of one extractive FTIR point monitor, one extractive UV-DOAS point monitor, one BC point monitor, and one H_2S point monitor are available for use at the P66 Wilmington Refinery. The backup system will be deployed in the event that the fenceline monitoring system is offline for an extended period of time due to equipment malfunction, power outage, weather events, and/or other unplanned outages. This backup air monitoring system is shared with the P66 Carson Refinery. Additional details regarding troubleshooting and emergency maintenance is provided in the QAPP.

3.3 Fenceline Downtime or Malfunction

According to Rule 1180, downtime for the fenceline monitoring system will be reported as follows:

- A call will be made to 1-800-CUT-SMOG at least 48 hours prior to planned maintenance or modification of the fenceline monitoring system;
- A call will be made to 1-800-CUT-SMOG within 2 hours of discovering (12 hours if the UCLA system is involved), and no more than 8 hours after the start of downtime, that the fenceline monitoring system failed to provide continuous, real-time data for more than 1 hour;
- A written notification will be submitted to the South Coast AQMD Executive Officer within 24 hours of discovering, and no more than 30 hours after the start of downtime, that the

fenceline monitoring system failed to provide continuous, real-time data for more than 24 hours; and

- The public website will be updated to indicate that continuous, real-time data are unavailable when the fenceline monitoring system is experiencing known downtime.

4. Public Website and Notification System

4.1 Real-Time Data Dissemination

Raw measurements from open-path analyzers, point monitors, and meteorological sensors are averaged to 5-min resolution by the data acquisition system at each site, and then transmitted to a cloud-based DMS in real time. Data undergoes AutoQC before being made available on the public website within 10–15 minutes of collection. Additional details regarding data flow and quality control processes are described in the QAPP.

4.1.1 Data Quality Assurance and Control (QA/QC)

Data generated by the fenceline monitoring equipment undergo review throughout the measurement and reporting process. The QA/QC plan ensures that data produced by the fenceline monitoring system are representative and defensible. Clear definitions and procedures for QA/QC are also necessary to inform the public on why data may be missing, suspect/questionable, or invalid. Data review processes are detailed in the QAPP. QC flags assigned through AutoQC logic and screening checks are reviewed during daily data checks and quarterly analysis. During quarterly analysis, data are downloaded from the database, analyzed, validated, and then backfilled into the DMS as final data sets. Final quarterly data sets will be (1) made available for public download; and (2) made available to be transmitted electronically to the South Coast AQMD Executive Officer.

4.1.2 Public Website

As required by Rule 1180, a public website displays and stores at least 5 calendar years of the most recent data collected from the fenceline air monitoring system. In addition, the following information will be made publicly available on the fenceline air monitoring website:

- A description of the air pollutants monitored by the fenceline monitoring system, including their general health impacts, and a link to the OEHHA Air Chemical database website;
- A description of measurement techniques;
- A description of notification thresholds,
- Access to view all instances when an air pollutant was measured above a notification threshold;
- Real-time and historic concentrations of all air pollutants and wind speed and direction measured by the fenceline monitoring system with corresponding data quality flags;
    - Historic data will be accessed via a calendar date picker, which will allow the public to select a range of dates for data display. Data will be returned in a time series format

with an option to download the data in a text file (e.g., comma separated value [csv] format).

- Definitions of data quality flags; and
- Documentation for the fenceline monitoring system, including the most recently approved (or partially approved) FAMP, report(s) generated from independent audits, specific cause analysis (SCAs), quarterly reports, and corrective action plans (CAPs).
  - The most recently approved (or partially approved FAMP) will be prominently labeled to indicate the approval status of each section.

The public fenceline monitoring website for the P66 Wilmington Refinery is shared with the P66 Carson Refinery and can be found at https://www.p66losangeles1180.com. A representative screen capture is shown in Figure 31.

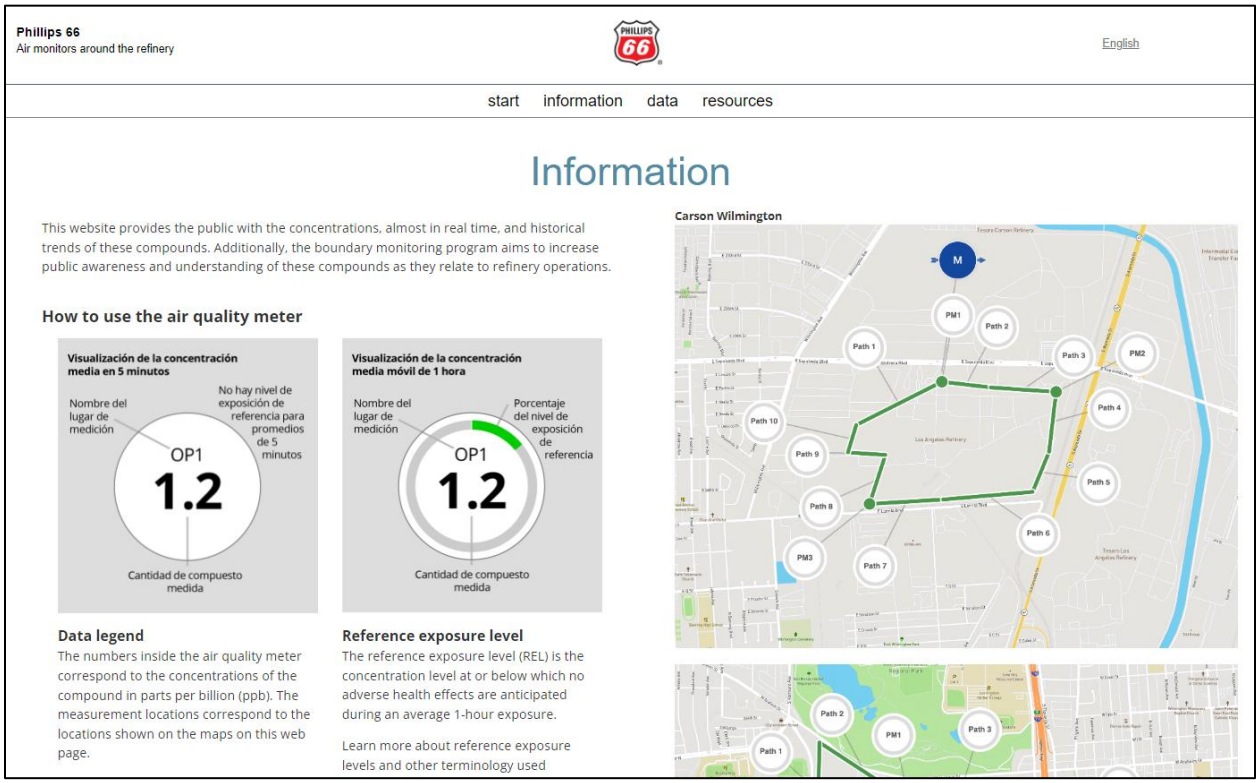

Figure 32. A screen capture of the public fenceline monitoring website for the P66 Wilmington and Carson Refineries.

Real-Time Data

Data are displayed using real-time, 5-min data points and rolling hourly averages. The website also includes functionality to notify the public with custom messaging about instrument maintenance activities, potential issues with the monitoring network, or any other relevant information affecting

the use of data. Preliminary, quality-controlled data are presented as a time series, color-coded by sampling site, and annotated for quality (valid, invalid, suspect, missing).

Historical Data

Historical data are made available on the public website as time series plots of 5-min and rolling hourly concentrations and can be viewed with a date selector. Furthermore, and as required by amended Rule 1180, the most recent 5 calendar years of hourly data will be made available for public download in an easily downloadable, accessible, and interpretable electronic format.

Learning Center

For the public website, key components include visual display of data in real time, context for the public to better understand the concentrations displayed, and a mechanism for feedback on the website.

The collected data are high time resolution, spatially variable, and chemically complex. To provide context to this complex dataset for the public, the following information is included through a combination of links, graphics, and captions:

- Information about the species measured and the measurement techniques
- Context of what fenceline measurements represent compared to other regional air quality measurements
- Health data provided on the web page sourced from OEHHA official information, where applicable
- Discussion of sources outside the refinery that could affect measured concentrations
- Definitions of abbreviations
- Discussion of data below detection
- Definition of data QC flags and their meaning
- Frequently asked questions (FAQs; to be developed over time)
- Quality procedures

Information is written at a public-friendly level. Clarity and thoroughness help to reduce the number of questions that arise. To facilitate public feedback, a feedback button is provided on the web page. When a user clicks on the button, an email form will pop up for the user to submit comments about the website. The email will be reviewed by Refinery personnel and/or a designated contractor and archived. Although not all comments need to be addressed, all comments will be made available to South Coast AQMD upon request. Some of the comments may aid in the creation of FAQs.

Documentation

The most recently approved FAMP and QAPP will be made available on the public website.

Quarterly reports will continue to be available on the public website. Additional information regarding quarterly reports is provided in Section 4.2.1.

SCAs, independent audit reports, and CAPs will continue to be available on the public website. Additional information on these documents is provided in Sections 4.2.2 through 4.2.4.

4.1.3 Public Notification System

As required by Rule 1180, the publicly accessible website includes a web-based notification program that automatically generates and sends a notification whenever:

- The rolling hourly concentration of any compound that exceeds the applicable notification threshold, along with the following information:
  - A unique identification number for each notification generated;
  - Refinery name;
  - Location, site, date, and time of the exceedance;
  - Air pollutant name, concentration measured, and the notification threshold; and
  - A link to the OEHHA Air Chemical database website to the specific air pollutant detected above the threshold, where applicable.
- The rolling hourly concentration of any compound exceeds 2, 4, 8, 16, and 256 times the initial applicable notification thresholds, as defined by Rule 1180, along with the following information
  - The corresponding unique identification number;
  - Refinery name;
  - Location, site, date, and time of the exceedance;
  - Air pollutant name, concentration measured, and the notification threshold; and
  - A link to the OEHHA Air Chemical database website to the specific air pollutant detected above the threshold, where applicable.
- An exceedance event has concluded. This is after an exceedance notification was generated for a given compound and the hourly concentration has been continuously detected below the applicable notification threshold for a minimum of 30 minutes. This notification will contain the following information:
  - The corresponding unique identification number;
  - The maximum concentration of the air pollutant, detected during the period the notification threshold was exceeded, using the same averaging time as the notification threshold; and

- The duration for which the notification threshold was exceeded; or, if the exceedance notification was sent in error, the follow-up notification will include an explanation as to the cause of the erroneous notification.

Notifications are sent as soon as technically feasible, up to 15 minutes after the exceedance or follow-up event occurs. The web-based notification program includes a mechanism for the public to (1) opt-in to receive notifications, (2) opt-out of fenceline notifications, (3) select separate email and/or text message notification options, and (4) provide comments or feedback to the Refinery, as well as a mechanism for the Refinery to respond to these comments.

4.2 Reports, Audits, and Corrective Actions

4.2.1 Quarterly Reports

Quarterly reports are submitted to the South Coast AQMD Executive Officer and made available on the public website within 60 calendar days after the conclusion of each quarter. Reports include the following:

- Summary of the air pollutant concentrations indicating the concentration trend for each air pollutant;
- Data processing calculations, such as conversion calculations of instrument signal to pollutant concentration;
- Summary of calibration data;
- Description of data completeness, accuracy, and precision;
- QA/QC measures;
- Instrument maintenance and performance checks;
- Any instance when an air pollutant was measured above a notification threshold;
- Any instance when a fenceline air monitoring system downtime or malfunction required a notification to the South Coast AQMD Executive Officer or corrective action(s); and
- Review and resolution of any data quality flags, including finalization of data.

4.2.2 Specific Cause Analyses

When the hourly concentration of any air pollutant is measured above an applicable notification threshold, an SCA will be initiated no later than 24 hours after discovery to determine the source(s) of the air pollutant.

If the specific cause was determined to be from an on-site source, corrective action(s) will be initiated no later than 24 hours after determination to stop the exceedance or prevent a similar exceedance. An SCA report will be submitted to South Coast AQMD and made available on the public website within 14 calendar days of determination. If corrective action was required, a reinspection of the source will be conducted within 14 calendar days of completion and an updated SCA will be submitted to South Coast AQMD and made available on the public website within 28 calendar days of completion.

If the specific cause was determined to be from an off-site source, South Coast AQMD will be notified no later than 24 hours after determination with the basis of determination and the suspected off-site source. SCAs will also be initiated if the South Coast AQMD Executive Officer notifies the refinery that it is the suspected off-site source of an exceedance event measured by another fenceline monitoring system.

A single SCA event is defined as hourly concentrations measured above applicable notification thresholds within 7 calendar days. If three SCA events occur for the same pollutant and fenceline monitor within a given calendar year and indicate either the same cause or that the cause cannot be determined, the refinery will cause a qualified independent party with relevant technical expertise in refinery operations or fenceline monitoring systems to initiate a SCA within 14 calendar days of the most recent event. The qualified independent party will produce an SCA report, which will be submitted to South Coast AQMD and made available on the public website in accordance with Rule 1180. Corrective actions and CAPs will be completed as detailed in Section 4.2.4.

4.2.3 Independent Audits

In accordance with amended Rule 1180, an independent audit will be completed by January 1, 2029, and once every 36 calendar months thereafter. These audits will include a systematic review of the entire fenceline air monitoring network and ensure that the collected facility data meet the stringent quality assurance criteria of the QAPP.

Based on the results of a recent Request for Proposals (RFP), South Coast AQMD selected a qualified contractor to develop an auditing protocol and implement the first independent audit of all fenceline air monitoring systems subject to Rule 1180.

Independent audits will be performed by a qualified independent party and identify any deficiencies in the fenceline air monitoring system and quality assurance procedures. Audit reports will be signed by the qualified independent party, submitted to South Coast AQMD, and made available to the public via the public website within 90 days after the audit has been performed.

If corrective actions are required following an independent audit, a follow-up independent audit will be completed within 3 calendar months of completion of corrective actions. Follow-up audits will determine whether all corrective actions were completed and if they successfully resolved deficiencies identified in the independent audit. Follow-up audit reports will be signed by the

qualified independent party, submitted to South Coast AQMD, and made available to the public via the public website within 90 days after the follow-up audit has been performed.

4.2.4 Corrective Action Plans

If the independent audit report identifies deficiencies in a fenceline monitoring system, a CAP will be developed within 3 calendar months of the audit report. The CAP will describe actions to address all deficiencies, as well as any proposed exemptions from corrective action that will negatively affect safety. The CAP will be submitted to the South Coast AQMD Executive Officer for review and made available on the public website within 1 business day of approval.

All corrective action(s) will be completed pursuant to the schedule in the approved CAP and records indicating when the corrective action(s) have been completed will be kept.

4.2.5 Recordkeeping

The P66 Wilmington Refinery maintains records of all information required under Rule 1180 for at least 5 calendar years and will make the information available to South Coast AQMD upon request. Data are copied to two separate external solid-state drives (SSDs) on a routine basis and stored at Sonoma Technology's Southern California office. Site visit logs are updated after maintenance activities and kept in eSIMS™ (Electronic Site Information Management System).

Appendix A: FAMP Checklist

South Coast AQMD provided a checklist for key elements to be included in the FAMP as part of the Guidelines. This completed checklist, along with references to where in this document the element is addressed, is included in **Table A-1** below.

Table A-1. FAMP Checklist provided by South Coast AQMD in the Guidelines and applicable section in this FAMP.

Fenceline Air Monitoring Plan Checklist		Applicable Section in FAMP
Fenceline Air Monitoring Coverage (or Spatial Coverage)		
☒	Identify the facility's proximity to sensitive receptors affected by the refinery operation and provide the information below.	Section 2.2
	• Distance from facility to closest sensitive receptor(s) • Location of downwind and upwind communities • Significant sources of non-refinery emissions surrounding the facility (e.g. non-refinery industrial facilities) • Dispersion modeling†	

Fenceline Air Monitoring Plan Checklist		Applicable Section in FAMP
☒	Describe historical facility emission patterns and pollutant hotspots based on the following:	Section 2.2
	• On-site location of operations and processes within the facility's perimeter • On-site location of emissions sources and level of emissions • Facility plot plans and topography • Dispersion modeling†	
☒	Select sampling locations along the perimeter of the facility based on the information above. Also, provide the following:	Sections 1.2 and 2.2
	• Locations where equipment is sited (e.g. GIS coordinates) and measurement pathways • Elevations of equipment and pathways • A description of how the monitoring system will provide adequate coverage, especially for all nearby downwind communities	
Fenceline Air Monitoring Equipment Description		
☒	Select fenceline air monitoring equipment that is capable of continuously monitoring air pollutants in real-time and provide the following:	Sections 2.2 and 3.1, and Appendix B (QAPP)
	• Specifications for the fenceline instruments (e.g., detection limits, time resolution, etc.) • Explanation of the operation and maintenance requirements for selected equipment • Justification to use alternative technologies	

	Fenceline Air Monitoring Plan Checklist	Applicable Section in FAMP
☒	Monitor for the pollutants listed in Table 1 of Rule 1180 and include the following:	Section 2.2
	• Pollutant detection limits for all instruments and the defining factors, such as paths measured for open-path systems • Justification of any exclusion of chemical compounds listed in Table 1 of Rule 1180 or measurement of a surrogate compound	
	Quality Assurance	
☒	Develop a QAPP that describes the following:	Sections 3 and 4, and Appendix B (QAPP)
	• Quality assurance procedures for data generated by the fenceline air monitoring system (e.g. procedures for assessment, verification and validation data) • Standard operating procedures (SOP) for all measurement equipment • Routine equipment and data audits	

Fenceline Air Monitoring Plan Checklist		Applicable Section in FAMP
Data Presentation to the Public		
☒	Design a data display website that includes the following:	Sections 4.1 and 4.2
	• Educational material that describes the objectives and capabilities of the fenceline air monitoring system • A description of all pollutants measured and measurement techniques • A description of background levels for all pollutants measured and provide context to levels measured at the fenceline • The most recently approved, or partially approved, FAMP and QAPP • Definition of each data quality flag • Reports generated from independent audit(s), including corrective action plan(s) or revised corrective action plan(s) if applicable • Specific cause analysis • Hyperlinks to relevant sources of information • A means for the public to provide comments and feedback; Procedures to respond • Real-time and at least five years of historic concentration data of all air pollutants measured on the fenceline air monitoring system including data quality flags, quarterly reports, audits, etc. • Real-time and at least five years of historic wind speed and wind direction data • Quarterly data summary reports, including relationship to notification thresholds, data completeness, instrument issues, and quality control efforts	

Fenceline Air Monitoring Plan Checklist		Applicable Section in FAMP
Notification System		
☒	Design a notification system for the public to voluntarily participate in that includes the following:	Section 4.1
	• Notifications for activities that could affect the fenceline air monitoring system (e.g. planned maintenance activities or equipment downtime) • Notifications for the availability of periodic reports that inform the community about air quality • Notifications for exceedances of thresholds • Communication methods for notifications, such as automated emails, text messages, and other approved communication methods	

† Dispersion modeling shall be conducted using U.S. EPA's Preferred and Recommended Air Quality Dispersion Model (e.g., Health Risk Assessment)

Appendix B: Quality Assurance Project Plan

The Quality Assurance Project Plan for the P66 Refinery in Wilmington, CA, is included as Appendix B to this document.