Appendix B2
Air Dispersion Modeling

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1.0 Introduction

This appendix describes the methods and results of air dispersion modeling performed to predict ground-level concentrations of criteria pollutants from construction and operation of the Phillips 66 Marine Oil Terminal Wharf Improvements Project (Proposed Project) located at Berths 148-151 at the Port of Los Angeles. As described in Section 3.1.5 of the Draft Environmental Impact Report (Draft EIR), dispersion modeling of nitrogen oxides (NO_X) and particulate matter (PM_{10}, and $PM_{2.5}$) emissions from Project operations and overlapping construction was performed to estimate maximum ambient air quality concentration impacts for comparison with South Coast Air Quality Management District (SCAQMD) significance thresholds shown in Table 3.1-8 of the Draft EIR.

Dispersion modeling of construction emissions was performed for:

- 1-hour and annual nitrogen dioxide (NO_2);
- 24-hour and annual particulate matter less than ten microns (PM_{10}); and
- 24-hour particulate matter less than 2.5 microns ($PM_{2.5}$).

Construction PM_{10} emissions were evaluated for all construction years (2024 – 2029). (As described in Section 2.5.1, the assumed dates are for analytical purposes only and mean that the analysis is conservative, as a later start date would result in cleaner construction and operational equipment being used.) Construction nitrogen dioxide (NO_2), PM_{10}, $PM_{2.5}$ impacts were evaluated to include overlapping emissions from Project operations and construction in 2027 (construction emissions in 2028 and 2029 were estimated to be no larger than in 2027).

Dispersion modeling was also performed to evaluate ambient air quality impacts of Project operations for:

- 1-hour and annual NO_2;
- 24-hour and annual particulate matter less than ten microns (PM_{10}); and
- 24-hour particulate matter less than 2.5 microns ($PM_{2.5}$).

Air quality impacts under the California Environmental Quality Act (CEQA) of activity associated with the construction and future operational activities of the Proposed Project were analyzed relative to the following two scenarios:

- **Baseline:** sometimes referred to as "CEQA baseline," this baseline scenario represents recorded actual activity and throughput of terminal operations in 2021. Emission factors reflect age of the equipment, vessel and truck fleet as well as local, federal and state regulations in place at the time.
- **Proposed Project:** this scenario represents activities associated with construction and operation of a new, Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS)-compliant berthing and loading/unloading facility and associated landside improvements at Berths 150-151.

More details regarding these scenarios are available in Chapter 2 Project Description and in Section 3.1 (Air Quality) of the Draft EIR.

Air dispersion modeling was performed using U.S. Environmental Protection Agency's (USEPA) AERMOD Modeling system, version 22112, based on the Guideline on Air Quality Models (40 Code of Federal Regulation [CFR], Part 51, Appendix W, November 2017). NO_2, PM_{10}, and $PM_{2.5}$ were modeled for the Proposed Project and CEQA baseline

scenarios. The predicted ground-level concentrations were compared to the relevant South Coast Air Quality Management District (SCAQMD) air quality significance thresholds (Table 3.1-6 and Table 3.1-9 of the Draft EIR) to determine ambient air quality impacts.

2.0 Estimation of Emissions Used in the Air Dispersion Modeling

Data, procedures, and assumptions used to prepare estimates of emissions from construction and operation of the Proposed Project are described in Appendix B1 (Air Quality Regulations/Methodology and Air Quality and GHG Emissions/Energy). A summary review of emission sources and procedures used to calculate time-averaged emissions for input to the dispersion model is presented in this section.

2.1 Construction Emission Sources

2.1.1 Emission Source Identification

The following construction emission sources were modeled in AERMOD:

- Off-road construction equipment: exhaust from diesel-fueled equipment;
- On-road construction vehicles (haul trucks, delivery trucks and diesel trucks): truck emissions include engine exhaust, brake wear, and re-entrained road dust;
- Harbor craft: exhaust emissions from tugboats, crew boats, and survey boats used during construction to assist in construction of structures in or near the water and maintenance dredging to clean-up the slope after construction activities; and
- Fugitive dust emissions: Onsite fugitive dust emissions associated with demolition debris, soil handling, and grading activities and volatile organic compounds (VOC) emissions from minor on-site asphalt paving.

In accordance with SCAQMD guidance, only onsite construction emission sources were modeled for criteria pollutant impacts (SCAQMD 2005). Onsite emission sources included diesel engine exhaust from construction equipment, haul and delivery trucks traveling and idling onsite, harbor craft, and fugitive dust. Details of emission calculations are presented in Appendix B1 of this Draft Environmental Impact Report (Draft EIR) along with a summary of construction emissions from the Proposed Project.

2.1.2 Derivation of Peak 1-Hour, 24-Hour, and Annual Emissions

As described in Appendix B1, emission inventories were developed for each year of the construction period (2024-2029) according to the activities in the construction schedule. (As described in Section 2.5.1, the assumed dates are for analytical purposes only and mean that the analysis is conservative, as a later start date would result in cleaner construction and operational equipment being used.)

Annual construction emissions were estimated through a bottom-up approach. First, the daily emissions for each source/equipment were determined based on the daily working hours of the sources involved in each construction activity/subphase of the schedule.

Secondly, daily emissions by source and construction activity were multiplied by the working days to obtain total mass emissions for each sub-phase from the schedule. Finally, the sub-phase emissions were allocated to construction years 2024-2029 according to the schedule to arrive at annual total mass emissions. The peak day of each year was derived by overlapping daily emissions from each subphase according to the schedule and selecting the combination with highest activity/equipment in a day. Peak 1-hr and peak 24-hr emissions were selected based on the 1-hr and 24-hr peak activity overlap of pieces of equipment involved during the selected peak day based on the expected daily construction schedule.

Appendix B1 of this Draft EIR presents a summary of construction and operational emissions occurring during construction years 2024-2029, operational emissions for the 2021 Baseline, and Project operation years 2027 and 2057.

2.2 Operational Emission Sources

2.2.1 Emission Source Identification

The following operational emission sources were modeled in AERMOD:

- Tankers transiting between the SCAQMD overwater boundary and the terminal (about 40 nautical miles), maneuvering within the harbor, anchoring while waiting for an available berth, and hoteling while at berth. Ship exhaust emission sources include propulsion engines, auxiliary engines, boilers, and pumps.
- Tugboats used to assist ships while arriving and departing the Port. Assist tugboat activity is assumed to take place within the harbor, during vessel maneuvering, (i.e. within the limits of the precautionary zone) and docking. Tugboat emission sources include propulsion and auxiliary engines.
- Articulated tug barges (ATBs), ocean-going barges, and bunkering barges propelled and maneuvered by tugboats transiting between the SCAQMD overwater boundary and the terminal (about 40 nautical miles), maneuvering within harbor, anchoring while waiting for an available berth, and hoteling while at berth. ATB and ocean-going barge emission sources include the main engine in the tug, auxiliary engines, and pumps. Bunkering barge emissions include auxiliary engines.
- Tugboats used to assist the CARB-approved Emission Control System (CAECS) barge while maneuvering within the harbor.
- CAECS barge generators used to power onboard equipment.
- Heavy-duty tanker trucks used for lube oil deliveries, including onsite and offsite driving and onsite idling. Truck emission sources include engine exhaust, tire wear, brake wear, and entrained road dust.
- Since very few workers are used for onsite operations and the number of workers is not increasing as part of the Proposed Project, worker light-duty vehicles are considered *de minimis* sources and were not modeled with the operations (although they are included in the emissions inventory as described in Appendix B-1).
- Fugitive hydrocarbon emissions associated with storage tanks, piping, and tanker vessel and truck loading.

2.2.2 Derivation of Peak 1-Hour, 24-Hour, and Annual Emissions

Appendix B1 describes the methodology for estimating annual, peak 24-hour, peak 8-hour, and peak 1-hour emissions associated with terminal operations. In general, peak day emissions were calculated for each source category (e.g., vessels, tugboats, trucks, stationary sources, and off-road equipment) based on expected maximum daily activity levels within the annual period being modeled. Peak 1-hour and 24-hour emissions were calculated as described in Appendix B1 and modeled directly in AERMOD.

3.0 Dispersion Modeling Approach

3.1 Dispersion Model Selection and Inputs

Air dispersion modeling was performed using the USEPA AERMOD dispersion model, version 22112 (USEPA 2022b), based on the *Guideline on Air Quality Models* (USEPA 2017). The AERMOD model is a steady-state, multiple sources, Gaussian dispersion model designed for applications which include areas of ground elevations that exceed emission source stack heights. Selection of the AERMOD model is well suited for this analysis because it is (1) accepted by the modeling community and regulatory agencies due to of its ability to provide reasonable results for large industrial projects with multiple emission sources; (2) the model can handle various source types, including point, area, line, and volume; and (3) AERMOD has been approved by the USEPA and SCAQMD for analysis of mobile sources.

3.1.1 Construction Emission Source Representation

During Project construction, all sources, including harbor craft, offroad construction equipment, trucks, and fugitive dust, were modeled as poly-area sources covering the portions of the construction site where those sources would be active. Table B2-1 presents source parameters used in the dispersion modeling for project construction. Locations of construction emission sources as modeled are shown in Figure B2-4.

Table B2-1. AERMOD Source Release Parameters – Construction Sources

Source Description	AERMOD Source Type	Release Height (m)	Initial Vertical Dimension (m)[a]
Construction Fugitive Dust[a]	Area	0.00	1.00
Off-road Construction Equipment[b]	Area	5.00	1.40
On-Road Construction Truck Exhaust[c,d]	Area	3.40	3.16
Onsite Tire and Brake Wear[e]	Area	1.30	1.21
Harborcraft[a,f]	Area	5.9	1.4

Notes:

a. Fugitive dust emissions are treated as a ground-level source with a 1-m initial vertical plume (SCAQMD 2008).

b. Release height is consistent with exhaust emissions assumptions from SCAQMD LST methodology (SCAQMD 2008).

c. The initial vertical dimension for truck exhaust is assumed to be equal to 1.7 times the average vehicle height. Release height is estimated as half of the+ initial vertical dimension. The initial vertical dispersion coefficient for vehicle travel is estimated as the initial vertical dimension divided by 2.15. Vehicle height (4m for heavy-duty vehicles, 1.53 m for light -duty vehicles) and initial vertical dimension are based on the USEPA Transportation Conformity Guidance (USEPA 2021).

d. On-road trucks are assumed to be heavy-duty vehicles.

e. Tire and Break Wear is assumed to have the same release height and initial vertical dimension as light-duty vehicles.

f. Source parameters are based on Chevron Modernization DEIR (City of Richmond 2015).

3.1.2 Operational Emission Source Representation

The following identifies how operational emission sources were represented in AERMOD; source parameters are presented in Table B2-2.

- Tanker vessels in transit were simulated as a series of separated volume sources extending from Berths 148-151 to the South Coast Air Basin (SCAB) overwater boundary. Volume source spacing was 100 meters within the harbor, 500 meters in the precautionary zone, 1,000 meters between the precautionary zone and 20 nautical miles from Point Fermin, and 2,000 meters between 20 nautical miles and the SCAB overwater boundary.
- Vessels hoteling at berth were modeled as point sources located adjacent to Berths 148-151.
- Vessels at anchorage were modeled as area sources within the harbor.
- Tanker ship exhaust emissions routed through the CAECS barge were modeled as a point source located adjacent to Berths 150 - 151.
- Tugboats and barges were modeled as a series of separated volume sources extending from Berths 148-151 to the Port breakwater. The volume source spacing was 100 meters.
- Trucks driving and idling on-site were modeled as line-area and poly-area sources, respectively. Trucks driving off-site were modeled as line-area sources along the primary travel routes. In-bound and out-bound off-site travel routes were provided by Phillips 66 and were divided into a total of six route segments as shown in Figure B2-5 for modeling purposes.
- Fugitive hydrocarbon emissions associated with storage tanks and piping were modeled as area sources in and around the tank farm.
- Fugitive hydrocarbon emissions associated with vessel loading were modeled as area sources located adjacent to Berths 148-151.

Table B2-2 presents source parameters used in the dispersion modeling of operational emissions. Where applicable, source parameters are consistent with those developed and used in prior Los Angeles Harbor Department (LAHD) National Environmental Policy Act (NEPA)/CEQA documents for container terminals (LAHD 2018; LAHD 2019). The locations of the emission sources as modeled are shown in Figures B2-1 through B2-3 and B2-5.

Table B2-2. AERMOD Source Release Parameters – Operational Sources

Source Description	AERMOD Source Type	Release Height (m)	Initial Vertical Dimension (m)[a]	Stack Exit Velocity (m/s)	Stack Exit Temp. (K)	Stack Inside Diameter (m)	Initial Lateral Dimension (m)[a]
Tankers – Fairway and Precautionary Area Transit[a,b,c]	Volume	28.8	6.7	--	--	--	232.56-930.23
Tankers – Maneuvering[a,b,c,d]	Volume	34.5	8.0	--	--	--	46.51
Tankers - Hoteling - Auxiliary Engines[b]	Point	23.0	--	7	618	0.6	--
Tankers - Hoteling Boiler Engine[b]	Point	22.86	--	1.3	548	1.6	--
Tankers – Anchoring[a,c]	Area	23.0	5.3	--	--	--	--
ATBs/Ocean-Going Barges-Fairway[a,b,c,d]	Volume	9.25	2.2	--	--	--	232.56

Source Description	AERMOD Source Type	Release Height (m)	Initial Vertical Dimension (m)[a]	Stack Exit Velocity (m/s)	Stack Exit Temp. (K)	Stack Inside Diameter (m)	Initial Lateral Dimension (m)[a]
ATBs Precautionary Area Transit [a,b,c,d]	Volume	9.25	2.2	--	--	--	232.56
ATBs – Maneuvering[a,b,c,d]	Volume	11.10	2.6	--	--	--	46.51
ATBs - Hoteling[b,d]	Point	7.4	--	4	618	0.1	--
ATBs– Anchoring[a,b,d]	Area	7.4	1.7	--	--	--	--
Tugboats/Bunkering and Ocean-Going Barges - Precautionary Area[a,b,c]	Volume	7.32	1.7	--	--	--	232.56
Tugboats/Bunkering and Ocean-Going Barges - Maneuvering[a,b,c,d]	Volume	10.98	2.6	--	--	--	46.51
Tugboats/Bunkering and Ocean-Going Barges - Hoteling[b,d]	Point	5.9	--	2	618	0.1	--
Bunkering and Ocean-Going Barges– Anchoring[a,b,d]	Area	5.9	1.4	--	--	--	--
Onsite On-Road Truck Exhaust[e]	Line-Area	3.4	3.16	--	--	--	--
Onsite Tire and Brake Wear/Entrained Road Dust[f]	Line-Area	1.3	1.21	--	--	--	--
Offsite On-Road Truck Exhaust[e]	Line-Area	3.4	3.16	--	--	--	--
Offsite Tire and Brake Wear [f]	Line-Area	1.3	1.21	--	--	--	--
Storage Tanks[a,g]	Area	7	1.63	--	--	--	--
Piping Fugitives/Tank Farm Losses[a,c]	Area	1.00	0.23	--	--	--	--
Vessel Loading Vapors[a,h]	Volume	9.14	4.3	--	--	--	--
ECS Stack[i]	Point	7.4	--	4	618	0.1	--

Notes:

a. The initial vertical dimension of the plume (σ_z) was estimated by dividing the initial vertical thickness by 4.3 for elevated releases and by 2.15 for ground-based releases. The initial lateral dimension of the plume (σ_y) for volume sources was determined by dividing the initial lateral thickness by 4.3 (USEPA 2022b).

b. Source parameters are based on Chevron Modernization DEIR (City of Richmond 2015), as it represents vessels used to transport liquid fuels.

c. Source parameters and vessel release height ratios are consistent with prior LAHD documents (LAHD 2019).

d. ATBs, bunkering and ocean-going barges, and assist tugboats transiting and maneuvering emissions were modeled as volume sources. ATB, bunkering and ocean-going barge, and assist tugboat hoteling was modeled as point sources. ATBs and bunkering and ocean-going barges anchoring emissions were modeled as an area source. Tugboats do not anchor.

e. The initial vertical dimension for truck exhaust is assumed to be equal to 1.7 times the average vehicle height. Release height is estimated as half of the initial vertical dimension. The initial vertical dispersion coefficient for vehicle travel is estimated as the initial vertical dimension divided by 2.15. Vehicle height (4m for heavy-duty vehicles, 1.53 m for light -duty vehicles) and initial vertical dimension are based on the USEPA Transportation Conformity Guidance (USEPA 2021)..

f. Tire and Break Wear is assumed to have the same release height and initial vertical dimension as light-duty vehicles.

g. The effective release height for storage tank losses is assumed to be approximately 1/2 the average height of the tanks at the terminal.

h. The release height for vessel loading fugitives is based on vessel deck height of 30 feet above water.

i. Based on ATB stack parameters as data for an ECS barge designed for use with tanker ships are unavailable.

1

Figure B2-1. Modeled Locations for Vessels (Far Field)

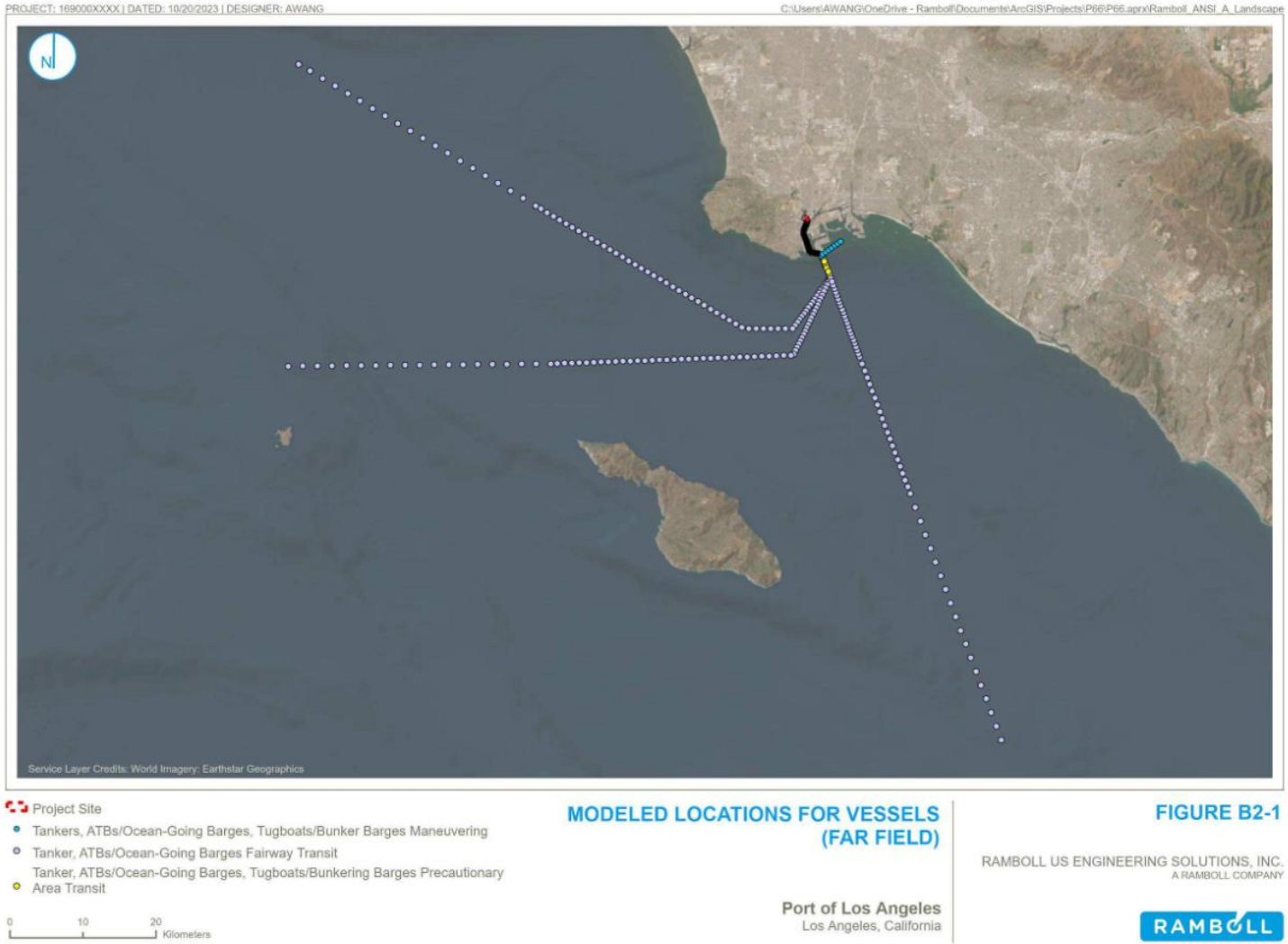


Figure B2-2. Modeled Locations for Vessels (Near Field)



Figure B2-3. Modeled Onsite Sources



Figure B2-4. Modeled Construction Sources

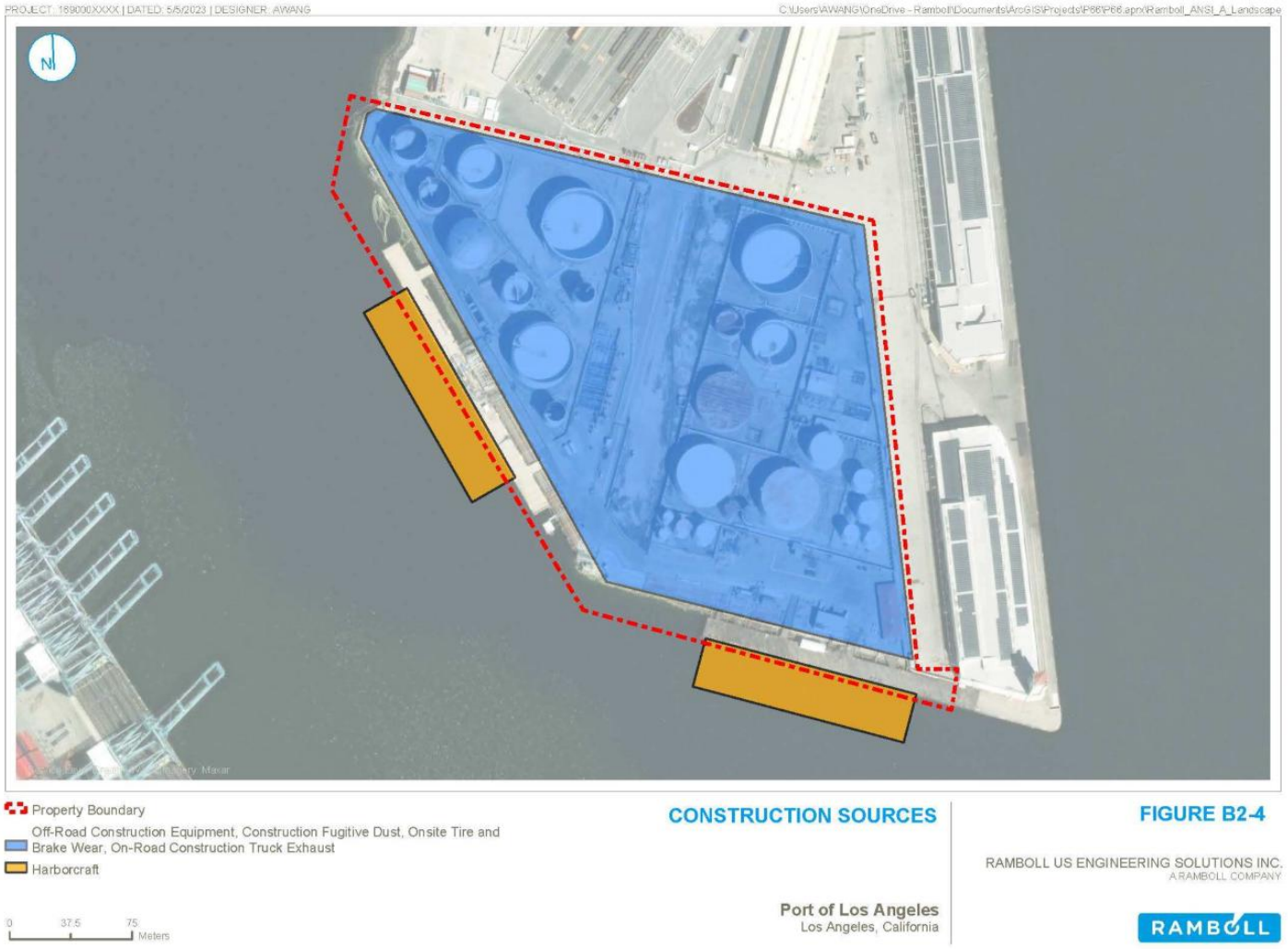
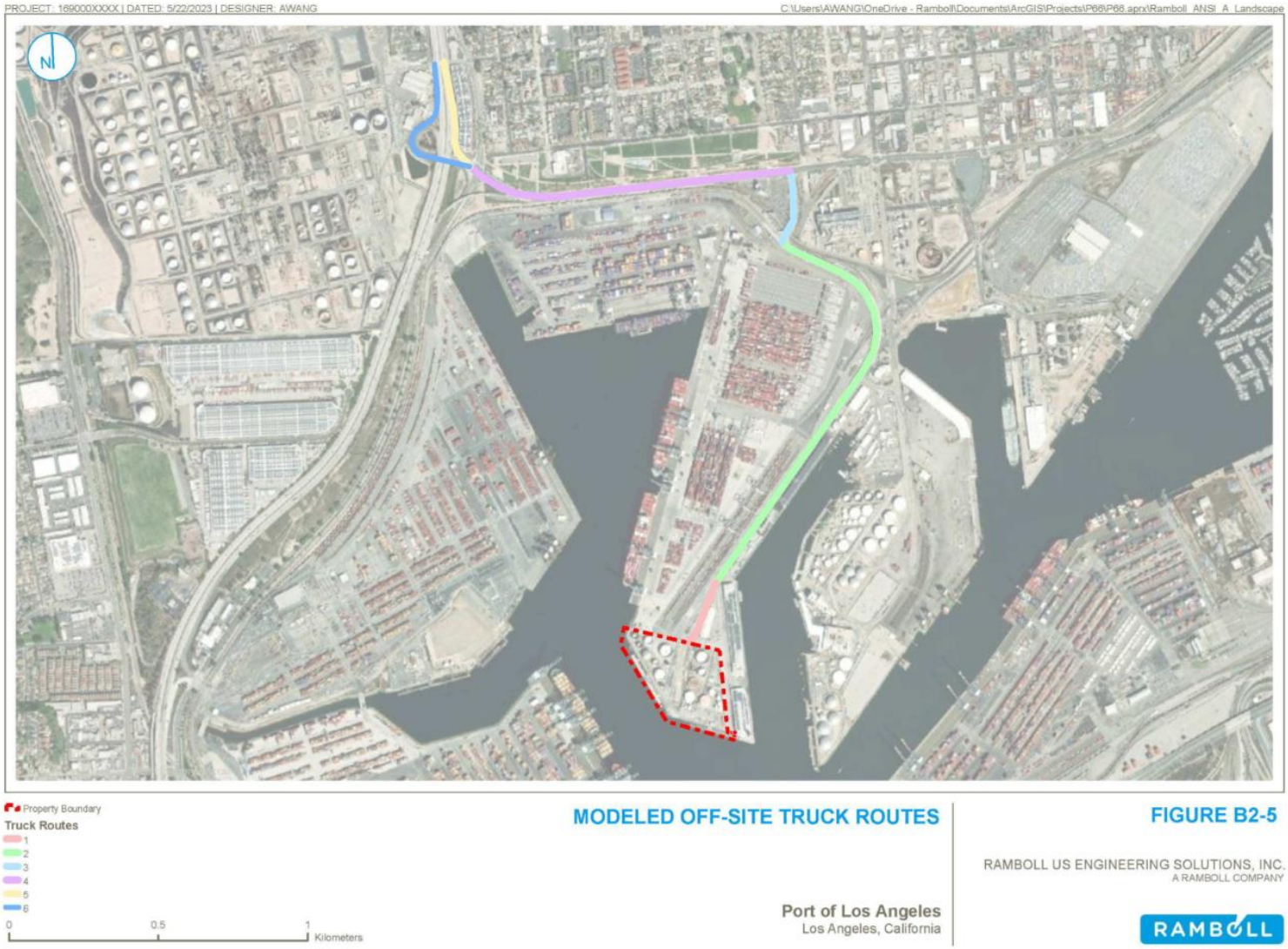


Figure B2-5. Modeled Off-Site Truck Routes



3.1.3 Meteorological Data

The complex interaction of the ocean, land, and Palos Verdes hills near the Port may result in significant variations in wind patterns over relatively short distances (LAHD 2010). Port of Los Angeles and Port of Long Beach (POLA and POLB) currently operate monitoring stations that collect meteorological data from several locations within and near port boundaries. For this dispersion analysis, the meteorological data collected at the Wilmington Community Station, located at Saints Peter and Paul School (SPPS) from 2012 to 2016 was used for dispersion modeling. SPPS is located about 1.2 mile north of the Berths 148-151 terminal and is considered the most representative meteorological station for the terminal in accordance with the "Sphere of Influence" analysis conducted by POLA and POLB in 2010 (LAHD 2010). For project-to-project consistency, this meteorological period has been used in several recent POLA and POLB EIRs.

3.1.4 Model Options

Regulatory default technical options were selected in AERMOD for all pollutants except NO_2 in accordance with USEPA modeling guidance (USEPA 2017). Consistent with SCAQMD AERMOD modeling guidance (SCAQMD 2023a) and USEPA guidance (USEPA 2017), the conversion of NO_X to NO_2 in ambient air was simulated in AERMOD using the Tier 2 Ambient Ratio Method (ARM) with USEPA default NO_X to NO_2 conversion factors.

As recommended by the SCAQMD, all sources were modeled with urban dispersion coefficients. An urban population of 9,818,605, representative of Los Angeles County, was used in AERMOD. Receptor and source base elevations were determined from USGS National Elevation Dataset (NED) files using AERMAP, version 18081 (USEPA 2011b). All coordinates were referenced to UTM NAD83, Zone 11.

3.1.5 Temporal Distribution Assumptions

For dispersion modeling purposes, operational emissions were assumed to occur during the times specified in Table B2-3. Emissions were assumed to be uniformly distributed during the specific time periods described in the table. The temporal distribution assumptions are identical for the baseline and Proposed Project scenarios.

Table B2-3. Temporal Distribution of Emissions in AERMOD

Source Description	Temporal Distribution
Construction	
Construction activities on land and over water	7 a.m. – 4 p.m Monday - Friday
Operations	
Operation activities on land and over water	24 hours per day, 7 days per week

3.1.6 Receptor Locations

Cartesian coordinate receptor grids were used to provide adequate spatial coverage surrounding the Proposed Project area to assess ground-level pollution concentrations, identify the extent of impacts, and identify maximum impact locations. AERMOD modeling was conducted with a 50 by 50 meter (m) grid up to 0.5 km (kilometer) from

the facility fence line, a 100 by 100 m grid from 0.5 km to 1 km from the facility fence line, a 250 by 250 m grid from 1 km to 5 km from the facility fence line, and a 500 by 500 m grid from 5 km to 10 km from the facility fence line. 50 by 50 m grids were also modeled over nearby potentially maximally exposed individual (MEI) locations near sources. In addition to the gridded receptor sets, previously identified sensitive receptors near the Berths 148-151 facility were also included. These receptors included schools, childcare facilities, hospitals, recreational facilities, parks, and elder care facilities. Receptors were also located at 50-m spacing along the Berths 148-151 facility fence line.

Figures B2-6 through B2-8 show the receptors used in AERMOD for criteria pollutants.

Figure B2-6. Modeled Receptors (Near Field 1)

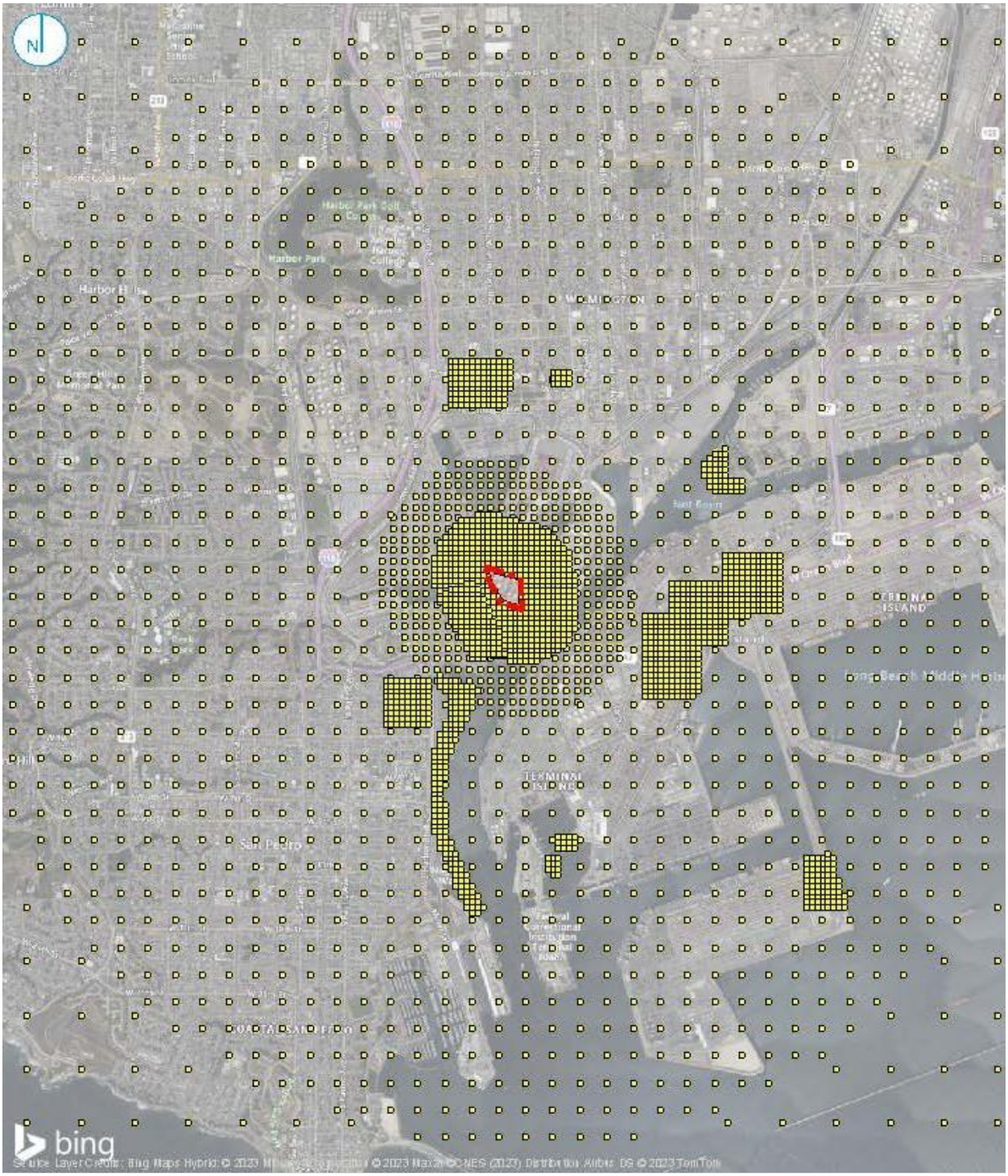


Figure B2-7. Modeled Receptors (Near Field 2)

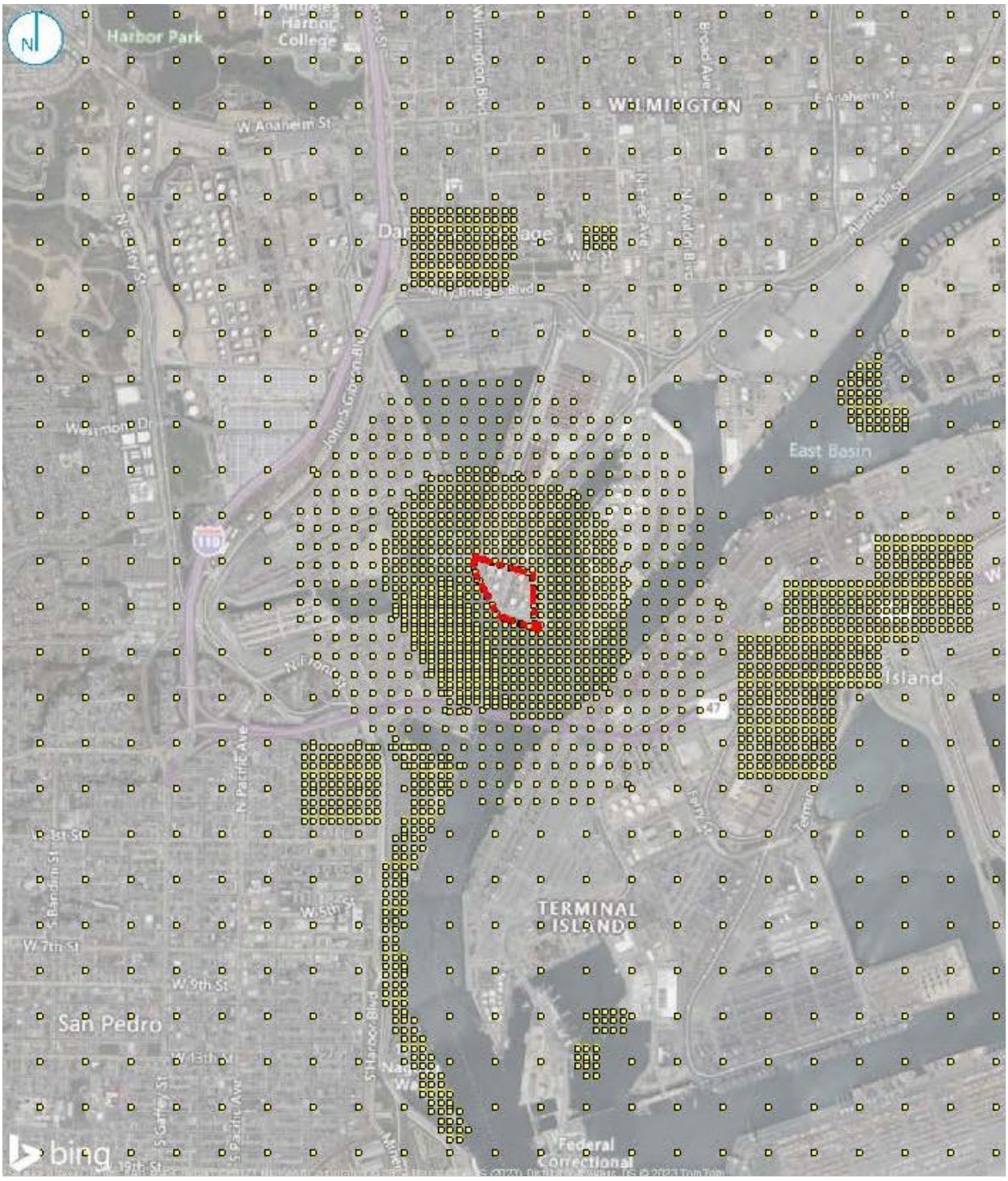
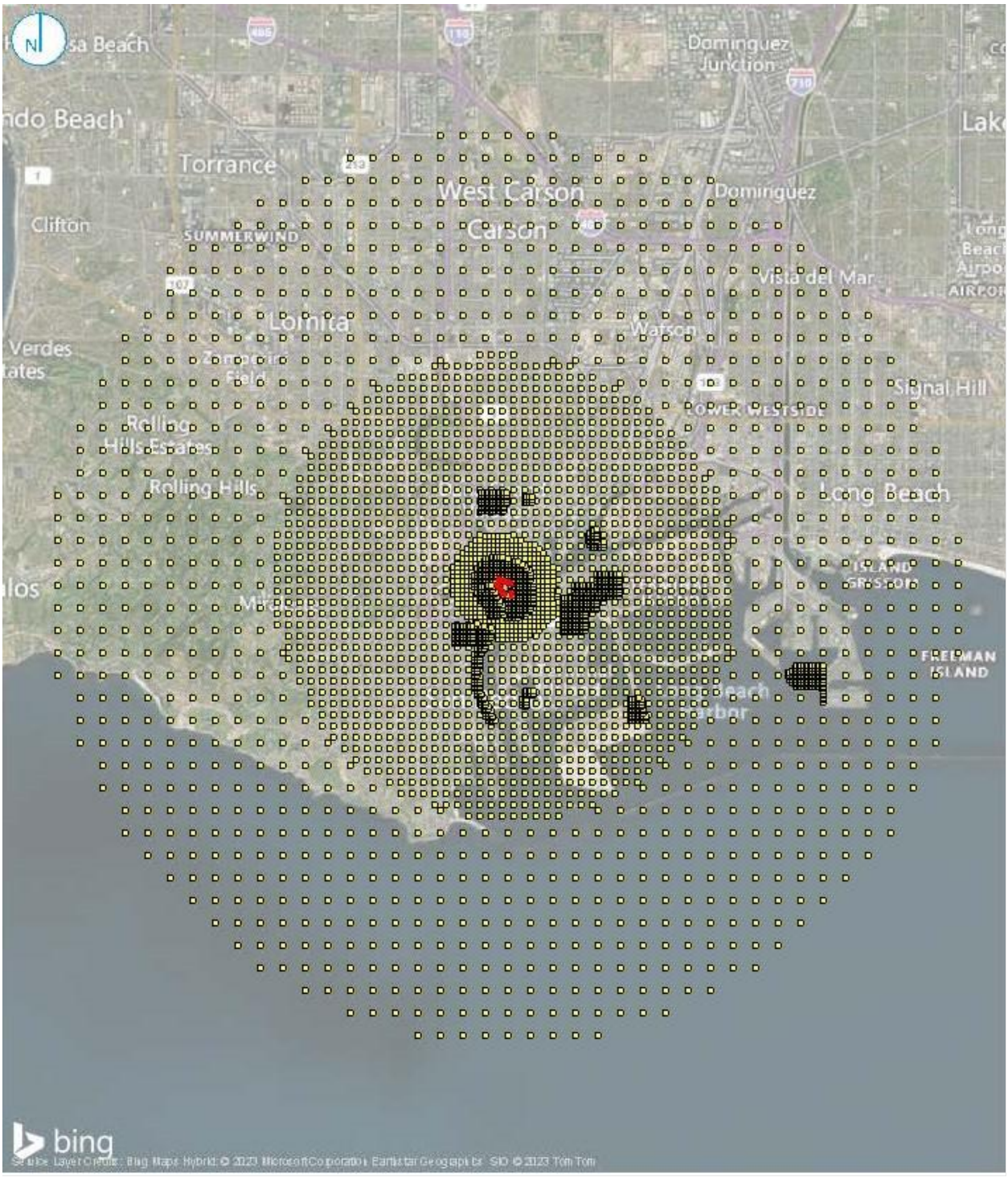


Figure B2-8. Modeled Receptors (Far Field)



3.2 Methodology for Determination of Impacts

NO_2, PM_{10} and $PM_{2.5}$ concentrations associated with the Proposed Project were modeled for each analysis year (2024-2029 and 2057). (As described in Section 2.5.1, the assumed dates are for analytical purposes only and mean that the analysis is conservative, as a later start date would result in cleaner construction and operational equipment being used.) The pollutant concentrations modeled by AERMOD were compared to the significance thresholds in Table B2-4 to assess impacts.

3.2.1 Methodology for NO_2

The SCAQMD significance concentration thresholds for NO_2 are absolute thresholds based on the ambient air quality standards. Therefore, the change in modeled Proposed Project concentrations relative to existing conditions is determined at each receptor, and the value at the receptor with the highest change in concentration is added to the ambient background concentration to yield a total concentration. The background concentration represents the maximum ambient concentration in the vicinity of the Project site excluding the incremental contribution from the Proposed Project. Ambient background concentrations were obtained from the Wilmington Community Station using the most recent 3-year period of recorded data publicly available, 2023 through 2025. Table B2-5 shows the derivation of the background concentrations.

Because the Wilmington Community Station is part of POLA's site-specific monitoring network, it was assumed that the station captures the existing air quality effects of the Berths 148-151 terminal. Therefore, the change in Proposed Project concentrations relative to existing conditions was determined by subtracting modeled 2021 Baseline concentrations from the modeled scenario concentrations (the Baseline represents existing conditions in 2021). Significance is determined by comparing the total concentrations (i.e., change in scenario concentrations plus background) to the thresholds. The Port's approach for determining total concentrations – that is, adding the site-specific background concentration to modeled scenario concentration minus modeled existing concentration – was endorsed by the SCAQMD (SCAQMD 2012a and SCAQMD 2012b). Because NO_X to NO_2 conversion is dependent on total concentration, construction and operation were not modeled separately, and NO_2 results are only presented for operation with overlapping construction.

To be consistent with the federal 1-hour NO_2 standard, the modeled federal 1-hour NO_2 concentrations represent the 98th percentile (8th highest) of the annual distribution of daily maximum 1-hour concentrations (CAPCOA 2011, USEPA 2010, USEPA 2011a). Although compliance with the federal 1-hour NO_2 standard is based on a three-year average of the 98th percentile 1-hour concentrations, the USEPA states that the use of one or more years of available site-specific meteorological data serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the NAAQS (USEPA 2022a). All other modeled pollutant concentrations, including the state 1-hour NO_2 concentration, represent the highest concentrations over the entire 5 years of meteorological data.

3.2.2 Methodology for PM_{10} and $PM_{2.5}$

The SCAQMD significance concentration thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds. Concentration increments relative to the baseline are compared directly to the thresholds without adding background concentrations. Therefore, Proposed Project

impacts were determined by subtracting modeled 2021 Baseline concentrations from modeled Proposed Project concentrations (project minus baseline) at each receptor. Significance is determined by comparing the modeled receptor with the greatest increment to the thresholds. All modeled PM concentrations represent the highest concentrations over the entire 5 years of meteorological data.

Table B2-4. SCAQMD Significance Thresholds for Construction and Operations

Air Pollutant[a]	Ambient Concentration Threshold
Construction	
Nitrogen Dioxide (NO_2)[b]	
1-hour average (Federal)[c]	0.100 ppm (188 µg/m^3)
1-hour average (State)	0.18 ppm (338 µg/m^3)
Annual average (Federal)	0.0534 ppm (100 µg/m^3)
Annual average (state)	0.030 ppm (57 µg/m^3)
Particulates (PM_{10} or $PM_{2.5}$)[d]	
24-hour average (PM_{10} and $PM_{2.5}$)	10.4 µg/m^3
Annual average (PM_{10} only)	1.0 µg/m^3
Operation	
Nitrogen Dioxide (NO_2)[b]	
1-hour average (federal)[c]	0.100 ppm (188 µg/m^3)
1-hour average (state)	0.18 ppm (338 µg/m^3)
Annual average (federal)	0.0534 ppm (100 µg/m^3)
Annual average (state)	0.030 ppm (57 µg/m^3)
Particulates (PM_{10} or $PM_{2.5}$)[d]	
24-hour average (PM_{10} and $PM_{2.5}$)	2.5 µg/m^3
Annual average (PM_{10} only)	1.0 µg/m^3

Notes:

[a] Emissions of sulfates and lead would be negligible; thus, concentration standards would not be exceeded. The NO_2 thresholds are absolute thresholds; the maximum predicted Project impact is added to the background concentration and compared to the threshold.

[b] To evaluate proposed project impacts on ambient NO_2 levels, the analysis included the use of both the current SCAQMD 1-hour NO_2 threshold (0.18 ppm) and the newer, more stringent 1-hour federal ambient air quality standard (0.100 ppm). To attain the federal standard, the 3-year average of the 98th percentile of the daily maximum 1-hour averages at a receptor must not exceed 0.100 ppm.

[c] Federal 1-hour average NO_2 concentration is based on the NAAQS because it is more stringent than the SCAQMD thresholds.

[d] The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds; the maximum Project impact relative to baseline is compared to these thresholds without adding a background concentration.

Sources:

SCAQMD 2023b; USEPA 2022c.

Table B2-5. Background Concentrations Measured at the Wilmington Community Station

Pollutant	Averaging Period	Monitored Concentration (ppm)[a]			Background Concentration[b]	
		2023	2024	2025	(ppm)	(µg/m^3)
NO_2	1-Hour State	0.052	0.053	0.060	0.060	113
	1-Hour Federal[c]	0.052	0.048	0.046	0.052	98
	Annual	0.013	0.012	0.012	0.013	24

Notes:

a. All reported values represent the highest recorded concentration during the year unless otherwise noted.
b. The concentration in micrograms per cubic meter (µg/m^3) is calculated as follows: µg/m^3 = ppm x MW / 0.02404. The molecular weights (MW) are 28.01 for CO, 46.0055 for NO_2, and 64.066 for SO_2 (all in grams per mole).
c. The background concentration reported for the federal 1-hour NO_2 standard represents the maximum of the three-year average ((including the reported year and the prior 2 years) of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations.
Source: POLA 2023; 2024; 2025.

3.3 Predicted Air Quality Impacts

Potential air quality impacts of the Proposed Project are presented in this section. Impacts from the alternatives were not evaluated quantitatively (see Draft EIR Section 3.1.5.2).

3.3.1 Proposed Project

3.3.1.1 Construction Impacts

Construction impacts were evaluated for the Proposed Project. Construction impacts for federal 1-hour NO_2 were modeled to represent the 98th percentile of the daily maximum 1-hour averages. Background concentrations for NO_2 were obtained from the Wilmington Community Monitoring Station (Saints Peter and Paul School). Concentration increments represent the modeled scenario minus the baseline. For simplification, only the increment is presented in the tables below. Additionally, exceedances of a SCAQMD threshold are indicated in bold.

Tables B2-6 through B2-8 summarize the AERMOD dispersion modeling results of proposed Project construction emissions. NO_2 incremental concentrations due to construction were added to background concentrations and compared to the SCAQMD thresholds. As described in Section 3.2.2 above, the AERMOD modeling results for PM_{10} and $PM_{2.5}$ represent the incremental increases due to the project and are compared directly to the SCAQMD thresholds without adding a background concentration.

Table B2-6. Maximum Off-Site Ambient PM_{10} and $PM_{2.5}$ Concentration Increments - Proposed Project Construction

Pollutant	Averaging Period	Analysis Year	Maximum Modeled Project Concentration Increment (µg/m^3)[a,b]	Significance Threshold (µg/m^3)	Threshold Exceeded?
PM_{10}	24-hour	2024	7.5	10.4	No
		2025	9.6	10.4	No
		2026	**29.4**	**10.4**	**Yes**
		2027	**29.3**	**10.4**	**Yes**
		2028	**28.9**	**10.4**	**Yes**

Pollutant	Averaging Period	Analysis Year	Maximum Modeled Project Concentration Increment (µg/m^3)[a,b]	Significance Threshold (µg/m^3)	Threshold Exceeded?
		2029	3.3	10.4	No
	Annual	2024	0.055	1.0	No
		2025	0.40	1.0	No
		2026	0.33	1.0	No
		2027	0.29	1.0	No
		2028	0.21	1.0	No
		2029	0.037	1.0	No
$PM_{2.5}$	24-hour	2024	1.3	10.4	No
		2025	1.9	10.4	No
		2026	5.7	10.4	No
		2027	5.1	10.4	No
		2028	5.1	10.4	No
		2029	1.7	10.4	No

Notes:
[a] The Modeled Project Concentration Increment represents the modeled concentration of the Project minus the modeled concentration of the baseline.
[b] Because the thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds, background concentrations are not added to the Maximum Modeled Project Concentration Increment.

Table B2-7. Maximum Off-Site Ambient NO_2 Concentrations – Baseline and Proposed Project Operation with Overlapping Construction

Pollutant	Averaging Period[a]	Analysis Year	2021 Baseline Background Concentration (µg/m^3)[b]	Maximum Modeled Project Concentration Increment (µg/m^3)[c,d]	Total Concentration (µg/m^3)[e]	Significance Threshold (µg/m^3)	Threshold Exceeded?
NO_2	Federal 1-hour	2027	98	109.4	**207.2**	188	**Yes**
		2057	98	27.2	125.2	188	No
	State 1-hour	2027	113	110.6	223.5	338	No
		2057	113	37.1	150.0	338	No
	Federal Annual	2027	24	33.2	57.6	100	No
		2057	24	23.6	48.1	100	No
	State Annual	2027	24	33.2	**57.6**	57	**Yes**
		2057	24	23.6	48.1	57	No

Notes:
[a] The federal 1-hour NO_2 modeled concentration represents the 98th percentile of the daily maximum 1-hour averages. The state 1-hour NO_2 modeled concentration represents the maximum concentration.
[b] The background concentrations for NO_2 were obtained from the Wilmington Community Monitoring Station (Saints Peter and Paul School).
[c] The Modeled Project Concentration Increment represents the modeled concentration of the Project minus the modeled concentration of existing terminal operations (i.e., Baseline).
[d] 2027 hourly and annual average concentrations include overlapping construction impacts.
[e] The Total Concentration equals the Background Concentration plus the Maximum Modeled Project Concentration Increment.

Table B2-8. Maximum Off-Site Ambient PM_{10} and $PM_{2.5}$ Concentration Increments – Proposed Project Operation with Overlapping Construction

Pollutant	Averaging Period	Analysis Year	Maximum Modeled Project Concentration Increment ($\mu g/m^3$)[a,b]	Significance Threshold ($\mu g/m^3$)	Threshold Exceeded?
PM_{10}	24-hour	2027	**29.1**	**10.4**	**Yes**
	Annual	2027	0.78	1.0	No
$PM_{2.5}$	24-hour	2027	4.9	10.4	No

Notes:
[a] The Modeled Project Concentration Increment represents the modeled concentration of the Project minus the modeled concentration of the baseline.
[b] Because the thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; background concentrations are not added to the Maximum Modeled Project Concentration Increment.

Figure B2-9 displays the locations of the peak AERMOD dispersion modeling results of the Proposed Project scenario construction incremental pollutant concentrations. While locations of each peak impact are shown in the figure, only the impact labeled in red exceeds the significance threshold. The receptor locations correspond to the results in the tables presented in this section above.

3.3.1.2 Operational Impacts

Impacts on ambient NO_2, PM_{10} and $PM_{2.5}$ concentrations from operation of the Proposed Project are presented in this section. Impacts for federal 1-hour NO_2 were modeled to represent the 98th percentile of the daily maximum 1-hour averages. Background concentrations for NO_2 were obtained from the Wilmington Community Monitoring Station (Saints Peter and Paul School). Concentration increments represent the modeled scenario minus the baseline. Exceedances of a SCAQMD threshold are indicated in bold.

Table B2-9 summarizes the AERMOD dispersion modeling results of Proposed Project operational emissions. NO_2 incremental concentrations due to operation were added to background concentrations and compared to the SCAQMD thresholds. As described in Sec. 3.2.2 above, the AERMOD modeling results for PM_{10} and $PM_{2.5}$ represent the incremental increases due to the project relative to the 2021 Baseline and were compared directly to the SCAQMD thresholds without adding a background concentration.

Figure B2-9. Maximum Air Quality Impacts and Area of Threshold Exceedance – Proposed Project Construction



Figure B2-10 displays the locations of the peak AERMOD dispersion modeling results of the Proposed Project scenario construction and operational incremental pollutant concentrations along with isopleths showing the interpolated area over which the calculated incremental concentrations exceed the corresponding significance threshold. An isopleth of state annual NO_2 threshold exceedances is not included, as the state annual NO_2 concentration increment only exceeds the significance threshold at the single receptor point shown in Figure B2-10. While locations of each peak impact are shown in the figure, only the impacts labeled in red exceed the significance threshold.

Figure B2-11 displays the locations of the peak AERMOD dispersion modeling results of the Proposed Project operational incremental pollutant concentrations. The receptor locations correspond to the results in the tables presented in this section above. None of the peak impacts shown in Figure B2-11 exceed the significance threshold.

Table B2-9. Maximum Off-Site Ambient PM_{10} and $PM_{2.5}$ Concentration Increments – Proposed Project Operation

Pollutant	Averaging Period	Analysis Year	Maximum Modeled Project Concentration Increment ($\mu g/m^3$)[a,b]	Significance Threshold ($\mu g/m^3$)	Threshold Exceeded?
PM_{10}	24-hour	2027	0.32	2.5	No
		2057	0.32	2.5	No
	Annual	2027	0.49	1.0	No
		2057	0.49	1.0	No
$PM_{2.5}$	24-hour	2027	0.30	2.5	No
		2057	0.30	2.5	No

Notes:

[a] The Modeled Project Concentration Increment represents the modeled concentration of the Project minus the modeled concentration of the baseline.

[b] Because the thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds, background concentrations are not added to the Maximum Modeled Project Concentration Increment.

Figure B2-10. Maximum Air Quality Impacts and Area of Threshold Exceedance – Proposed Project Operation with Overlapping Construction

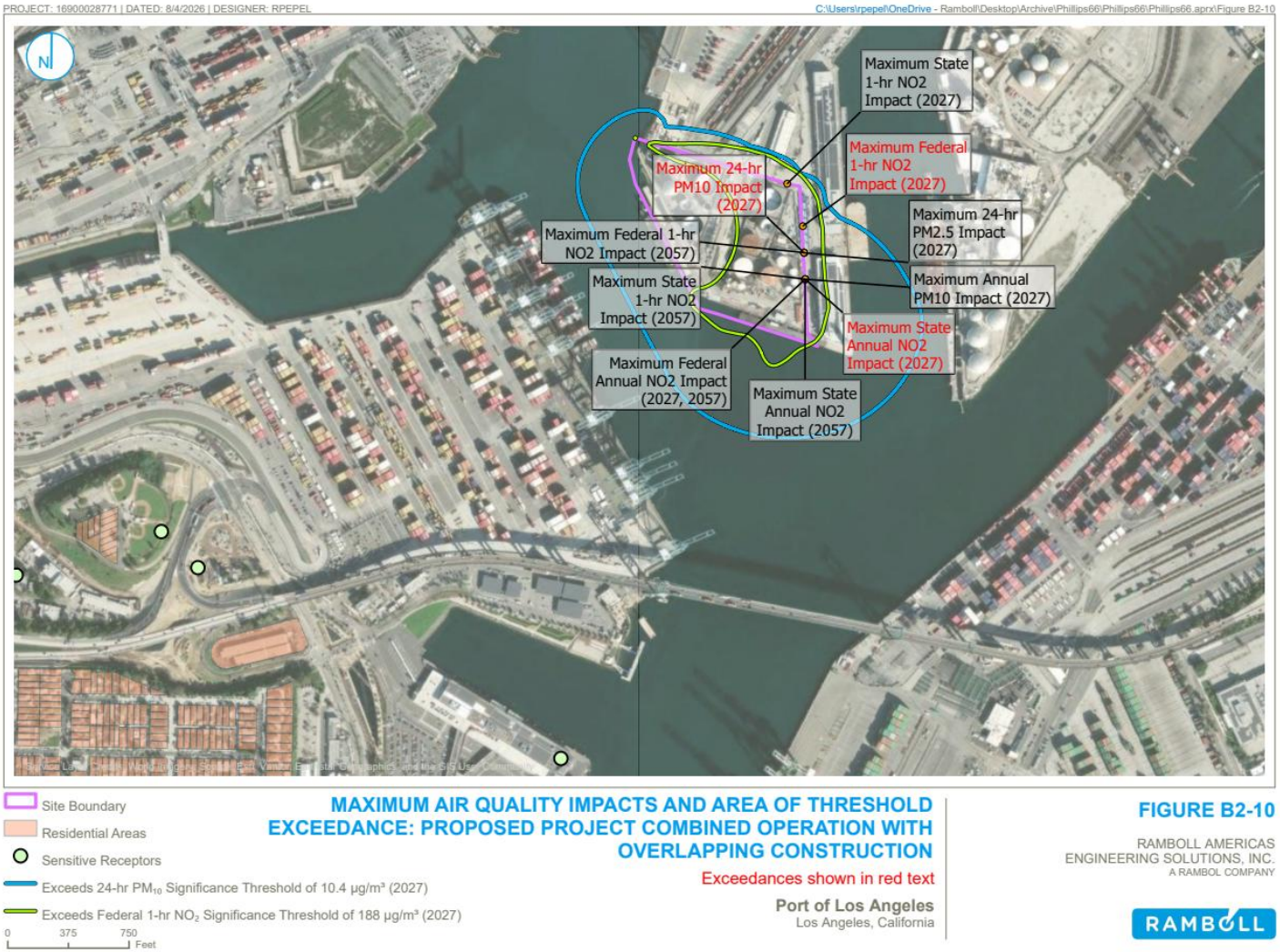
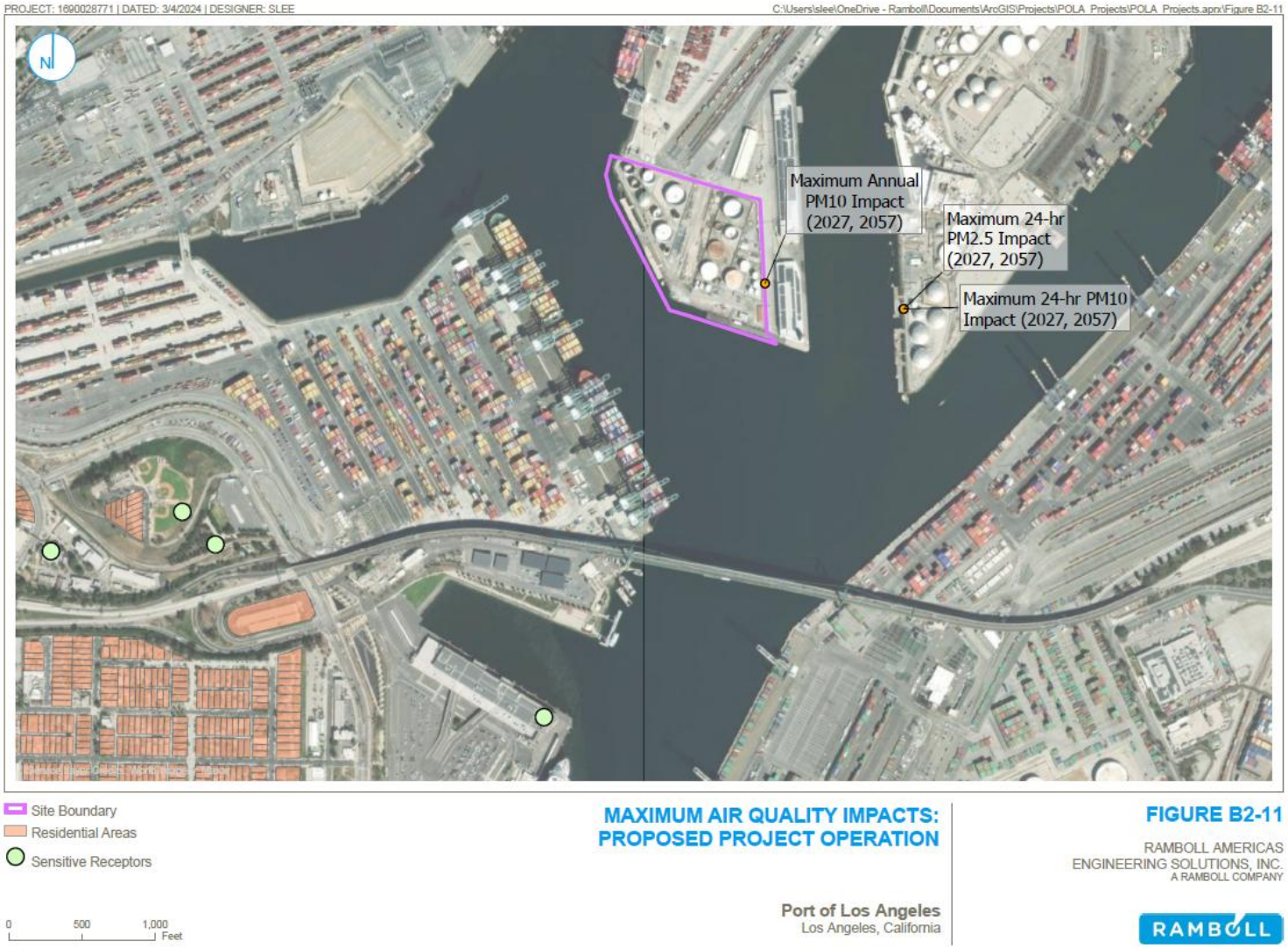


Figure B2-11. Maximum Air Quality Impacts and Area of Threshold Exceedance – Proposed Project Operation



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