Federal Transit Administration

Madison Street Corridor Bus Rapid Transit (BRT)

Air Quality

Discipline Report

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SDOT

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1 Introduction

This air quality technical memorandum evaluates potential air quality impacts resulting from the construction and operation of the Madison Street Corridor Bus Rapid Transit (Madison BRT) Project in Seattle, Washington. Federal agencies are required under the Clean Air Act (CAA) to ensure that projects they fund (such as the Madison BRT Project) are in compliance with existing federal air quality standards and the State's and metropolitan transportation improvement programs. This report describes the proposed project, air quality in the project vicinity, the methodology used to assess air impacts, and direct and indirect air impacts.

2 Project Description

2.1 Background

The City of Seattle's Department of Transportation (SDOT) proposes to provide new BRT service on Madison Street between 1st Avenue and Martin Luther King, Jr. Way East (MLK Jr. Way E.), Spring Street between 1st Avenue and 9th Avenue, and 1st Avenue and 9th Avenue between Madison Street and Spring Street as part of the Madison BRT Project.

The Madison BRT Project is located in a dense and rapidly developing area that includes portions of Madison Valley, the Central District, Capitol Hill, First Hill, and Downtown Seattle. These areas are among the densest residential neighborhoods in the City and are sizable employment centers due to the presence of two major medical centers and Seattle University. Providing BRT service along this 2.4-mile corridor is identified in the Seattle Transit Master Plan and listed as a near-term action in the 2016 Move Seattle Strategic Vision. This project would improve transit capacity, travel time, reliability, and connectivity in an area that is highly urbanized and has a lower rate of automobile ownership than other parts of the city.

The Madison BRT Project would connect with dozens of bus routes, the Center City Connector Streetcar, South Lake Union Streetcar, and the First Hill Streetcar, and would improve access to ferry service at the Colman Dock Ferry Terminal, First Hill medical institutions and housing, Seattle University, and Link light rail. As part of the project, pedestrian and bicycle access along the corridor would also be improved and enhancements would be made to the streetscape and public realm to increase comfort, visibility, and legibility in the Madison Street corridor.

2.2 Project Location

The project site is located in Seattle, Washington (Figure 1). The 2.4-mile corridor would begin and end at MLK Jr. Way E in the east. Figure 2 shows that from MLK Jr. Way E the Madison BRT Project would head west on Madison Street for 2.26 miles to 1st Avenue, head north on 1st Avenue for 290 feet, head east on Spring Street for 0.43 mile, south on 9th Avenue for 290 feet, and head east on Madison Street for 1.78 miles.

The project corridor traverses several Seattle neighborhoods: Downtown, First Hill, Capitol Hill, Central Area, and Madison Valley.

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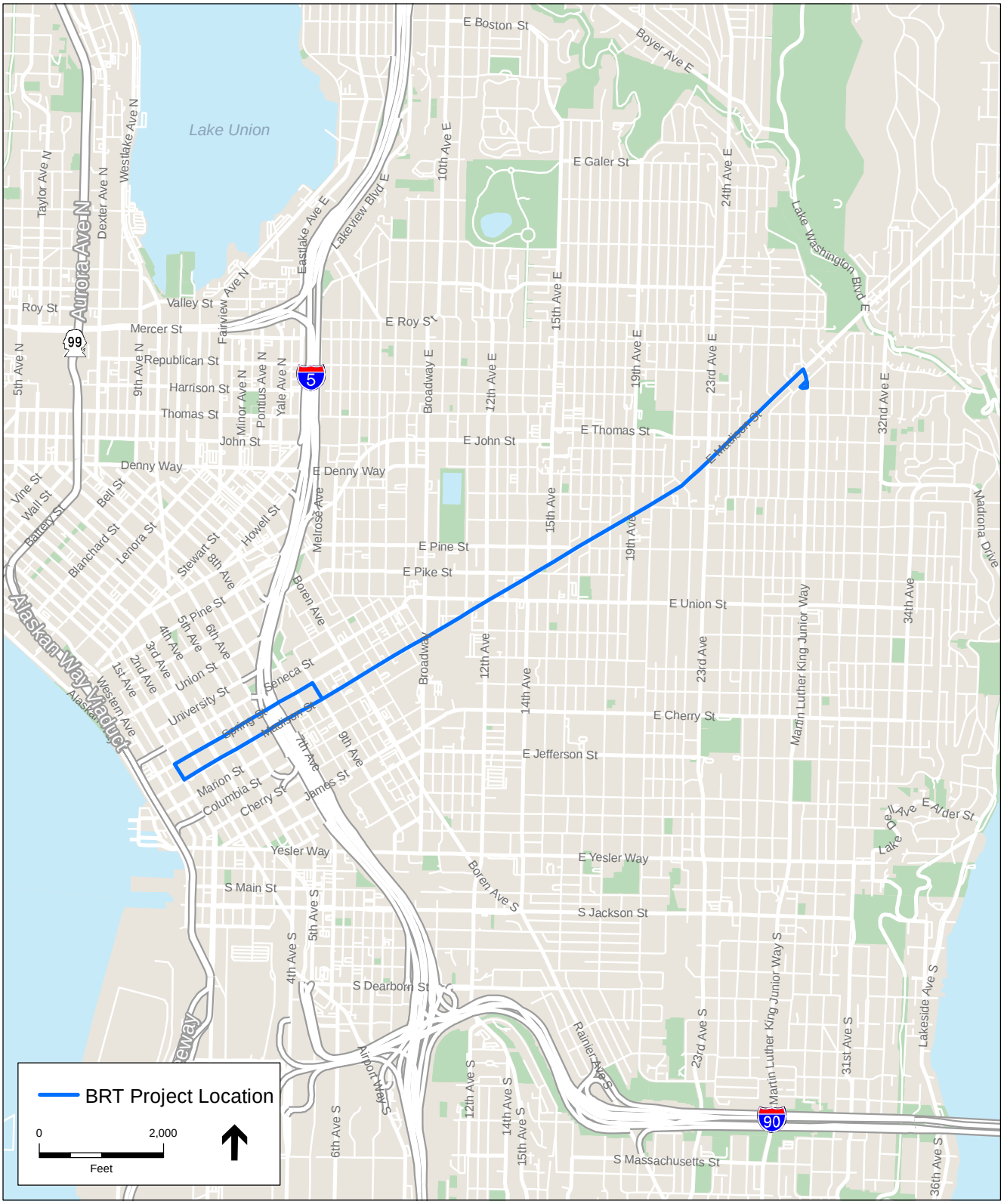
SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 1
Project Vicinity



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SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 2
Project Alignment

Downtown

The Downtown neighborhood is located at the westernmost end of the project corridor from 1st Avenue to the Interstate 5 (I-5) crossing. Downtown Seattle is primarily commercial, including large office towers in the city center, and is the largest employment center in the city.

First Hill

Moving east to First Hill, from I-5 to Broadway Avenue, the density decreases and there is a greater mixture of mid- and low-rise buildings with mixed residential-commercial uses. On the summit of First Hill, and heading east toward Broadway, institutional uses line the south side of Madison and commercial uses line the north. Virginia Mason Hospital and Swedish Hospital both have several large medical facility buildings adjacent to, or within, one block of the Madison Street corridor.

Capitol Hill

North of the project corridor, the Capitol Hill neighborhood runs from Broadway Avenue to 26th Avenue. The Pike-Pine corridor, Madison Valley, and Broadway areas are located along the Madison Street corridor. It includes mid-rise development, transitioning into low-rise and mixed commercial and residential development.

The Central Area

South of the project corridor, the Central Area neighborhood also runs from Broadway Avenue to 26th Avenue. It includes mid-rise development, transitioning into low-rise and mixed commercial and residential development. The Seattle University campus is adjacent to the Madison Street corridor.

Madison Valley

The Madison Valley neighborhood is located between 26th Avenue to MLK Jr. Way and east of the project corridor to Madison Park. Low-rise and mixed commercial and residential development dominates the corridor in this neighborhood.

2.3 Description of Proposed Work

The Project would create a new BRT line along the Madison Street corridor. It would include approximately 11 BRT station areas with 21 directional platforms along the project corridor, new Transit Only Lanes (TOLs) and Business Access & Transit (BAT) lanes, pedestrian and bicycle improvements, and signal and utility upgrades along the corridor. The Madison BRT Project would replace portions of the King County Metro Route 12 where they would otherwise overlap. Metro anticipates they will revise Route 12 to compliment the BRT and continue to serve the east Capitol Hill areas as it currently does.

The Madison BRT Project would use nine new buses, seven of which would be on the road at any one time. The buses would be 60-foot articulated low-floor vehicles with three doors on the right side and two on the left. The BRT would operate Monday through Saturday from 5 a.m. to 1 a.m. and on Sundays and holidays from 6 a.m. to 11 p.m. They would run every six minutes between 6 a.m. and 7 p.m. on weekdays and every 15 minutes during all other hours of operation.

Construction would begin in 2018 and conclude in the fall of 2019.

What is a Sidewalk Station?
A sidewalk station is a station that would be located at the curb. They are typically 60 feet long.

What is an Island Station?
An island station is a platform in the center median of the street. Island stations are at least 60 feet long and approximately 9 feet wide.

Stations

There would be a total of approximately 11 station areas with 21 directional platforms.

- Martin Luther King Jr. Way Station: eastbound and westbound curbside stops, shared with Metro Routes 8 and 11;
- 24th Avenue Station: eastbound and westbound curbside stops, shared with Metro Route 11;
- 22nd Avenue Station: eastbound and westbound curbside stops, shared with Metro Route 11;
- 17th Avenue Station: eastbound and westbound curbside stops, shared with Metro Route 11;
- 12th Avenue Station: eastbound and westbound stops on shared center island platform (Metro Route 2 would continue to have eastbound and westbound curbside stops in this vicinity);
- Boylston Avenue Station: eastbound and westbound stops on shared center island platform. Transfer to First Hill Streetcar;
- Terry Station: eastbound and westbound stops on shared center island platform (Metro Route 60 will continue to have eastbound and westbound curbside stops in this vicinity);
- 8th Avenue Station: eastbound curbside stop on Spring Street, westbound center island stop on Madison;
- 5th Avenue Station: eastbound curbside stop on Spring Street shared with Metro Route 2, westbound curbside stop on Madison;
- 3rd Avenue Station: eastbound curbside stop on Spring Street, westbound curbside stop on Madison; and
- 1st Avenue Station: northbound stop on center island platform, shared with the Center City Connector streetcar.

Each stop would typically have a shelter (except the 1st Avenue stop), off-board fare payment machines, and real-time arrival information. The level-boarding platforms would be approximately 13 inches in height (1st Avenue stop would have 10-inch platform to accommodate the streetcar) and ADA-accessible to the maximum extent feasible.

1st Avenue

The western end would be located on 1st Avenue and would be shared with Center City Connector streetcars. It would include a northbound island station.

Spring Street

On Spring Street, all of the BRT buses would be eastbound. Three stops would be provided on Spring Street, one at 3rd Avenue, one at 5th Street, and one on the nearside of 8th Avenue. The Route 2 bus would also utilize the stop at 5th Avenue.

Madison Street

On Madison Street, BRT buses would be westbound only between 1st Avenue and 9th Avenue and bidirectional between 9th Avenue and MLK Jr. Way E. Ten sidewalk stops would be provided. Westbound-only sidewalk stations would be provided on the western side of 3rd Avenue and the eastern side of 5th Avenue. Sidewalk stations would be provided in both directions at the intersections with 17th Avenue, E Denny Way, 24th Avenue and the western side of MLK Jr. Way E.

There would be six island stations. One island station, on the western side of 8th Avenue would provide westbound service only. There would be two island station pairs (westbound island adjacent to eastbound island station) at Terry Avenue and the east side of Summit Avenue. One bidirectional transit island would be east of the 12th Avenue intersection.

One westbound curbside bus layover stall would be provided on Madison Street, west of the intersection with MLK Jr. Way E.

Layover

On MLK Jr. Way E, two curbside bus layover stalls would be provided at the intersection with E Harrison Street, and a third curbside layover would be provided on westbound Madison Street, just west of MLK Jr. Way E.

Right-of-Way Improvements

Reconfiguration of Lanes

As part of the project, new TOLs and BAT lanes would be provided. TOLs can be located anywhere within the right-of-way and only allow transit use. They are typically painted red to inform all corridor users that this lane is for transit only. BAT lanes are a type of bus lane located on the curbside and permit general traffic use for accessing driveways or crossing streets (but not for through travel).

For the Madison BRT Project, 1.98 miles of new TOLs would be provided. Between 5th Avenue and 9th Avenue there would be 0.24 mile of center, unidirectional TOL. Between 9th Avenue and 15th Avenue there would be 0.80 mile of center TOLs heading in both directions (1.60 miles total). TOLs would also be provided throughout the corridor (about another 0.14 mile cumulatively) to ensure adequate transit flow. This would include TOLs being placed in front of transit stops, to keep them from being blocked, and on 9th Avenue to ensure buses can easily make the transition from Spring Street to Madison Street.

Approximately 0.82 mile of BAT lanes would be provided under the project. Unidirectional BAT lanes would be provided on Spring Street between 1st Avenue and 6th Avenue (0.3 mile heading east) and on Madison Street between 1st Avenue and 5th Avenue (0.24 mile heading west) and between 15th Avenue and 17th Avenue (0.14 heading east). BAT lanes would be provided for both directions on Madison Street between 17th Avenue and 18th Avenue (0.14 mile total).

Parking

Bus lanes must be at least 10.5 feet, and preferably 12 feet wide, according to American Public Transportation Association (APTA) standards (APTA, 2010). Many of the existing rights-of-way within the corridor would not allow for the addition of a new 10.5–foot-wide bus lane without the removal of on-street parking. The Madison BRT Project would remove 227 on-street parking

spaces (currently allowing parking during non-peak hours only) within the corridor, 12 of which would be passenger or delivery loading spaces, 120 would be street parking spaces, and 5 would be spaces that are restricted.

Paving

Approximately 10 acres of roadway and sidewalk pavement would be replaced under the project. The TOL pavement would be replaced with Portland cement concrete pavement to increase the life of the BRT travel lanes.

Alterations to Existing Street Corridor

According to APTA standards, bus lanes must be at least 10.5 feet wide (APTA, 2010). Many of the existing rights-of-way within the corridor would not allow for the addition of a new 10.5–foot-wide bus lane without the narrowing of other existing lanes. In certain sections of the roadway, existing general purpose lanes may need to be converted for BRT use (Table 1). A list of the changes to the existing street corridor is provided below:

- Roadway curb widening on seven blocks of Madison Street;
- Full depth PCCP roadway restoration under proposed BRT travel lanes corridor wide;
- Sidewalk restoration and repairs impacting approximately 75 block faces;
- Storm water detention system construction underneath Madison Street (up to 72" detention pipe diameter);
- Corridor wide roadway restriping;
- Remove north/south crossing of Madison Street via Terry Avenue; and
- Remove left turn lanes on Madison Street to Minor Avenue, Summit Avenue, and Boylston Avenue.

Table 1 General Purpose Lane Removal

Location	Existing General Purpose Lanes (ft.)	Proposed General Purpose Lands (ft.)	Percent Reduction
1st to 9th	14,096	12,559	10.9%
9th to 18th	21,103	11,433	45.8%
18th to MLK	11,610	9,789	15.7%
Total	**46,809**	**33,781**	**27.8%**

Other work proposed as part of the Madison BRT Project includes stormwater infrastructure improvements, landscaping, utility relocations, and an art component. As part of the project, SDOT would be installing a new 2,600 square-foot Pocket Plaza with sidewalk and landscaping at the intersection of Madison Street, E Pike Street and 14th Avenue.

Signal and Utility Improvements

As part of the Madison BRT Project, Transit Signal Priority (TSP) would be provided at most signalized corridor intersections between 7th Avenue and MLK Jr Way. Signal priority would be used to hold lights green for approaching BRT vehicles and shorten red times for BRT vehicles at intersections. Separate "queue jump" transit only phases would be employed where BRT

vehicles need to go in advance of general purpose traffic. In addition, two new signals would be provided on Spring Street: one at the 8th Avenue intersection and one at the 9th Avenue intersection.

The vehicles would be electrically powered using either electric trolleybus (ETB) technology requiring overhead contact systems (OCS) or some combination of ETB/OCS and emerging battery-powered technology allowing for substantial "off wire" operation. In order to power the line, new overhead wires would need to be installed in the following areas:

- 1st Avenue from Madison Street to Spring Street (approximately 300 feet)
- Spring Street from 1st Avenue to 3rd Avenue, and from 7th Avenue to 9th Avenue (approximately 0.5 mile);
- 9th Avenue from Spring Street to Madison Street (approximately 300 feet);
- Madison Street from 19th Avenue to MLK Jr. Way E (approximately 0.7 miles); and
- MLK Jr. Way E from Madison Street to E Harrison Street (approximately 800 feet).

In addition, a new traction-powered substation (TPSS) would be needed somewhere near the eastern end of the project, where the existing overhead catenary system would need to be extended.

Pedestrian and Bicycle Improvements

The Project would include a number of improvements for pedestrians and bicyclists.

Where the project is impacting the existing sidewalks along the corridor, repairs or replacements would be completed to restore them to ADA standards. Corner bulb-out sidewalk extensions would be provided at a number of locations, which reduce street crossing distance and increase visibility of pedestrians. At Boren Avenue, Broadway Avenue, and Union Street sidewalks would be narrowed slightly to accommodate left turn lanes.

Protected Bicycle Lanes (PBLs) would remain on Spring Street between 2nd Avenue and 4th Avenue and added on Union Street between 12th Avenue and 14th Avenue. A sharrow situation would be created in the left lane on Spring Street from 1st Avenue to 2nd Avenue.

Additional crosswalk and bicycle crossings would be provided at the intersection of 12th Avenue and Union Street, in accordance with the Seattle Bicycle Master Plan. As part of the project, a wide crosswalk would be constructed on Madison Street on the east side of the intersection, enabling transitions between the bike facilities on Union Street, to the east across Madison Avenue, and 12th Avenue.

A short segment of bicycle lane would be striped through the intersection of 24th Avenue and John Street and improvements to the sidewalk on Madison Street west of the intersection would be included in the project in order to facilitate through movements on the 24th Avenue greenway.

3 Regulatory Framework

3.1 Air Quality Regulations

Air quality is regulated by both the Federal Clean Air Act (CAA) (42 U.S.C. s/s 7401 et seq. 1970) and the Washington State Clean Air Act (RCW 70.94). Regulations have been developed to protect air quality, and are enforced by the United States Environmental Protection Agency (EPA), the Washington State Department of Ecology, and locally by the Puget Sound Clean Air Agency (PSCAA).

The EPA delegates authority to manage select air quality issues to the states. In Washington State, the EPA and Ecology further delegate to local air quality agencies. PSCAA has been delegated authority to regulate air quality in four counties, including King County, where the project is located.

National Ambient Air Quality Standards (NAAQS) identify criteria pollutant concentrations that are not to be exceeded. Primary air quality standards were established for the protection of public health, and secondary standards are intended to protect the natural environment and other welfare considerations. Areas that do not meet the NAAQS for any pollutant are designated as nonattainment areas. Areas that were once designated nonattainment but are now achieving the NAAQS are termed maintenance areas. Areas that have air pollution levels below the NAAQS are termed attainment areas.

Table 1 shows the primary NAAQS established by the EPA. Ecology has established state ambient air quality standards that are equivalent to the national standards except for a few pollutants with more stringent standards. These are also included in Table 2. PSCAA has adopted EPA and Ecology standards by reference.

Table 2 National and State Ambient Air Quality Standards

Pollutant	National Primary Standards	Washington State Standards
Carbon Monoxide		
1-Hour Average	35 ppm	35 ppm
8-Hour Average	9 ppm	9 ppm
Sulfur Dioxide		
1-Hour Average	75 ppb	0.25 ppm
24-Hour Average	0.14 ppm	0.10 ppm
Annual Average	0.03 ppm	0.02 ppm
Lead		
Quarterly Average	1.5 µg/m3	1.5 µg/m3
Rolling 3-Month Average	0.15 µg/m3	N/A
Ozone		
1-Hour Average	N/A	0.12 ppm
8-Hour Average	0.070 ppm	N/A
PM10		
24-Hour Average	150 µg/m3	150 µg/m3
Annual Arithmetic Average	N/A	50 µg/m3
PM2.5		
24-Hour Average	35 µg/m3	N/A
Annual Arithmetic Average	12 µg/m3	N/A
TSP		
24-Hour Average	N/A	150 µg/m3
Annual Geometric Average	N/A	60 µg/m3
Nitrogen Dioxide		
1-Hour	0.1 ppm	N/A
Annual Average	0.053 ppm	0.053 ppm

Notes:
ppm = parts per million, µg/m3 = micrograms per cubic meter, N/A = not applicable
Source: EPA, 2016a; Ecology, 2011.

In areas designated as nonattainment and maintenance with respect to the NAAQS, the federal CAA and Washington State CAA require transportation projects to conform to the State Implementation Plan (SIP). The SIP is a state's plan for meeting and maintaining compliance with the NAAQS for those areas. Transportation activities must not produce new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS. While portions of the Puget Sound region are nonattainment for $PM_{2.5}$ (Tacoma-Pierce County) and maintenance for PM_{10} (Tacoma, Seattle, and Kent), the area in which the Project is located is currently designated maintenance for CO.

3.2 Air Pollutants

The major airborne pollutants of interest for this project are carbon monoxide (CO), particulate matter (PM), ozone (O_3), and the O_3 precursors: volatile organic compounds (VOCs) and oxides of nitrogen (NOx). These pollutants are regulated by both federal and state standards along with lead and sulfur dioxide, and are commonly referred to as criteria pollutants. Lead and sulfur dioxide are not typically emitted in substantial amounts by mobile sources; consequently, lead and sulfur dioxide are not a concern for this project and are not addressed in this analysis. In addition to the criteria pollutants, mobile sources emit toxic air pollutants (TAP) and greenhouse gases (GHGs). A brief description of each of the air pollutants of concern is provided below (USEPA, 2012).

Carbon monoxide (CO) is an odorless, colorless gas formed by the burning of fuels containing carbon. Motor vehicles are the principal source of CO emissions in urban areas. Maximum concentrations usually occur near road intersections and other areas of traffic congestion, and they decrease rapidly with distance from the source. CO interferes with the uptake of oxygen by red blood cells. It can affect the heart, lungs, and brain.

Particulate matter (PM) enters the air from industrial operations, vehicular traffic, and other sources, such as wood burning in fireplaces and woodstoves. Two historically common classifications from particulate matter are total suspended particulates (TSP) and inhalable particulate matter (PM_{10}), which includes particles with an aerodynamic diameter less than or equal to 10 micrometers. Recent regulatory changes by the U.S. Environmental Protection Agency (EPA) have also created an additional standard for even smaller particles, less than 2.5 micrometers in diameter ($PM_{2.5}$). Health effects from smaller particles include damage to lungs from deeply inhaled smaller particles and synergistic effects with other pollutants. Aesthetic effects from PM include deposition and soiling effects as well as visibility reductions.

Ozone (O_3) in the lower atmosphere is a harmful air pollutant and contributes to the formation of smog. It is a secondary pollutant formed by the reaction of volatile organic gases (VOCs) and nitrogen oxides (NOx) in the presence of sunlight and high temperatures. Ozone levels are reduced by minimizing emissions of those precursor pollutants. Ozone is a pungent-smelling, colorless gas that is an irritant to lungs and respiratory functions. Persons with chronic respiratory problems, like asthma, are most sensitive to elevated ozone levels.

Volatile organic compounds (VOCs) are a key component in the formation of ozone. These compounds are emitted or evaporate into the atmosphere from a variety of sources, including natural or non-anthropogenic sources. In most urban areas, mobile sources (cars and other vehicles) are the source of most VOC emissions. VOC is not a criteria pollutant since ambient air quality standards have not been established for this pollutant.

Oxides of nitrogen (NOx) are another precursor to ozone formation. NOx is produced by high-temperature fuel combustion and subsequent atmospheric reactions. Common sources of NOx include motor vehicles, power plants, refineries, and other industrial operations. Like VOCs, NOx emissions in an urban setting are overwhelmingly produced by transportation sources. Nitrogen dioxide (NO_2) is a criteria pollutant because it has been implicated in a variety of respiratory diseases.

Toxic air pollutants (TAP) are compounds emitted individually, or in a mixture, that have been found to cause health effects such as cancer, neurological, or reproduction problems. US Environmental Protection Agency (EPA) has identified 188 compounds that are known or suspected to cause cancer or other serious health effects. Most TAPs are constituents of PM or VOCs. EPA and state agencies, including Washington, have reduced emissions of benzene, toluene, and other air toxics from mobile sources (known as mobile source air toxics, or MSATs) by requiring the use of reformulated gasoline and placing limits on tailpipe emissions. EPA has identified six priority MSATs: acetaldehyde, benzene, formaldehyde, diesel exhaust, acrolein, and 1,3 butadiene. Benzene is a known human carcinogen, while formaldehyde, acetaldehyde, 1,3-butadiene, and diesel particulate matter are probable human carcinogens.

Greenhouse gases (GHGs) associated with transportation include water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). CO_2 makes up the bulk of emissions from transportation. Vehicles are a significant source of GHG emissions and contribute to global warming primarily through the burning of gasoline and diesel fuel. National estimates show that the transportation sector (including on-road vehicles, construction activities, airplanes, and boats) accounts for almost 30 percent of total domestic GHG emissions. However, in Washington State, transportation accounts for nearly half of GHG emissions because the state relies heavily on hydropower for electricity generation, unlike other states that rely on fossil fuel combustion to generate electricity (WSDOT, 2014a). GHG emissions are an issue of global concern and represent a cumulative impact. No individual project makes a significant contribution to GHG emissions but instead contributes cumulatively to global GHG emissions (WSDOT, 2014a).

4 Affected Environment

As discussed above, areas that violate primary ambient air quality standards are designated as nonattainment areas, and state implementation plans (SIPs) must be developed to bring these areas into attainment. Portions of King County are currently designated as a CO maintenance area and a PM_{10} maintenance area. However, the project is not located within the PM_{10} maintenance area. Individual projects in maintenance areas are still subject to air quality conformity to ensure that they do not cause or contribute to any new violations (EPA, 2016b). Table 2 lists the maximum ambient pollutant concentrations from 2013 to 2015 in the project area, for the pollutants of interest for this project.

Table 3 Summary of Maximum Ambient Air Monitoring Levels in Project Area

Pollutant	Averaging Time	2013	2014	2015
CO (ppm)	1 hour	1.8	3.3	2.2
	8 hour	1.4	2.0	1.8
Ozone (ppm)	1 hour	0.051	0.058	0.062
	8 hour	0.047	0.048	0.050
PM2.5 ($\mu g/m^3$)	24-Hour	25.7	33.6	26.5
	Annual	6.6	10.0	9.3

Notes:
2014 and 2015 CO and PM2.5 values based on monitoring in Seattle, WA (10^{th} and Weller)
All other values based on monitoring in Seattle, WA (4103 Beacon Hill S).
ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter

Source: EPA, 2016c.

5 Methodology

The methodology for determining regional and project level effects are discussed below.

5.1 Regional Level Methodology

As mentioned in the regulatory background discussion above, the Puget Sound area is in attainment for ozone. Consequently, ozone conformity was not evaluated for the Project. However, because the project is within an area of the Puget Sound Air Quality Management Area that is classified as a CO attainment-maintenance area, a CO hot-spot analysis is still required. That analysis is described below.

5.2 Project Level Methodology

CO Hot Spot Analysis

A CO hot spot analysis is required because the project is located in a CO maintenance area. A CO hot spot is a localized concentration of CO that would exceed the state or federal 1-hour or 8-hour CO ambient air quality standards. The project-level CO hot spot analysis is necessary to verify that no localized impacts would cause or contribute to a violation of the ambient air quality standards. While the Madison BRT Project will be using electric trolley buses with no CO emissions, the Project would affect intersections with vehicle traffic, potentially contributing to localized CO hot spots. The decision as to whether to conduct a qualitative versus quantitative analysis is based on how the project affects the operation of nearby intersections.

In Washington State, quantitative analyses are required to use emission factors from EPA's MOVES2014 model and conduct dispersion modeling using AERMOD, CAL3QHCR, or WASIST air quality models. The location at which CO concentrations are estimated is known as a model "receptor." Receptors should be located adjacent to the intersection where a

representative person can be located and where CO concentrations are expected to be the highest.

PM Hot Spot Analysis

A quantitative PM hot spot analysis (PM_{10} and/or $PM_{2.5}$) is required for projects of air quality concern (POAQC) located in PM_{10} and/or $PM_{2.5}$ nonattainment or maintenance areas. The proposed project is located in a PM_{10} and $PM_{2.5}$ attainment area. Consequently, a PM hot spot analysis is not required.

Mobile Source Air Toxics (MSAT) Analysis

The FTA follows guidance from the Federal Highways Administration (FHWA) which bases the need for an MSAT analysis on the type of project and project facility. A quantitative MSAT emissions analysis is required for projects on roads with average annual daily traffic (AADT) greater than 140,000 vehicles or where there is the potential for the project to increase substantially (10 percent or more) the number of diesel vehicles using a roadway. Since AADT would be substantially less than 140,000, a quantitative MSAT analysis is not required.

Construction Analysis

Construction of the proposed project will include earthwork, fine grading, and road construction. However, since the project will involve short-term construction (less than five years), construction emissions were not quantified, but instead are discussed qualitatively.

6 Impacts

Impacts from the Madison BRT Project are evaluated during the construction and operational phases. Cumulative effects from the Project are discussed separately. Impacts from GHGs are evaluated as a cumulative effect.

6.1 Construction Impacts

Federal transportation conformity regulations only require that construction emissions be estimated if construction is slated to last five years or more. For the proposed project, construction would be less than five years. Consequently, a quantitative estimate of construction emissions was not conducted for this project.

During construction, fugitive dust from soil-disturbing activities and demolition, exhaust emissions from construction equipment and worker commuting, and paving could release emissions into the atmosphere that would temporarily affect air quality. Emissions of fugitive dust include PM10 and PM2.5. Construction equipment and worker commute vehicle exhaust emissions include VOCs, NOX, PM2.5, PM10, SO2, TAPs, and GHGs. Due to the linear nature of road construction projects, emissions typically do not occur in the same location for extended periods of time. Consequently, air pollutants released from project construction would be temporary and would be minimized by best management practices (BMPs) required by PSCAA, such as those described in Section 7 Mitigation.

6.2 Operational Impacts

The project is located in a federally designated CO maintenance area. EPA guidance states that for projects located within CO nonattainment or maintenance areas, CO concentrations should be estimated for those affected intersections that are Level of Service (LOS) D, E, or F in the Existing or Design Year (CO emissions are typically highest for vehicles that are idling or operating at low speeds, which are typical of intersections operating at a level of service of D, E, or F). Affected intersections are those for which the project:

1) Results in a 10 percent increase in volumes, or
2) Degrades an intersection to LOS D or worse (WSDOT, 2014b).

To assess the Project's contribution to the region's CO emissions, eight intersections along the bus route with an LOS of D, E, or F during existing (2015) and design year (2019) PM peak hour conditions were analyzed (Nelson\Nygaard Consulting Associates, 2016). Figures 3.1 through 3.8 provide the locations of each intersection. The affected intersections analyzed are:

- 2nd Avenue and Spring Street;
- 6th Avenue and Spring Street;
- Boren Avenue and Madison Street;
- 12th Avenue and Madison Street and Union Street;
- 18th Avenue and Madison Street;
- 23rd Avenue and Madison Street;
- 25th Avenue and Madison Street; and
- 28th Avenue/MLK Jr Way and Madison Street.

The EPA MOVES2014 model (version 20151201) was used to estimate CO emission rates for traffic traveling through these intersections. The emissions rates were used with the CAL3QHCR model to estimate peak 1-hour and 8-hour CO concentrations at receptors located near these intersections (see Figures 3.1 through 3.8). As described in Section 5 Methodology, the receptors should be located adjacent to the intersection where a representative person can be located and where CO concentrations are expected to be the highest. Therefore, the receptors include sidewalks and associated pedestrian areas adjacent to the intersection where CO concentrations are expected to be the highest. CO concentrations were estimated for existing (2015), and design year (2019) conditions using PM peak-hour traffic volumes (Nelson\Nygaard Consulting Associates, 2016).

Tables 4 through 11 show the CO modeling results for existing (2015), design year (2019) without the Madison BRT Project, and design year (2019) with the Madison BRT Project conditions. Each table compares the modeled CO concentrations at the identified receptors to the CO 1-hour and 8-hour NAAQS. The background CO concentration was added to the modeled 1-hour and 8-hour CO impacts to establish design value concentrations at the affected intersections. The CO modeling results indicate no violations of the CO 1-hour or 8-hour ambient standards under any of the scenarios. Appendix A includes the detailed CO modeling inputs and outputs.

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SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

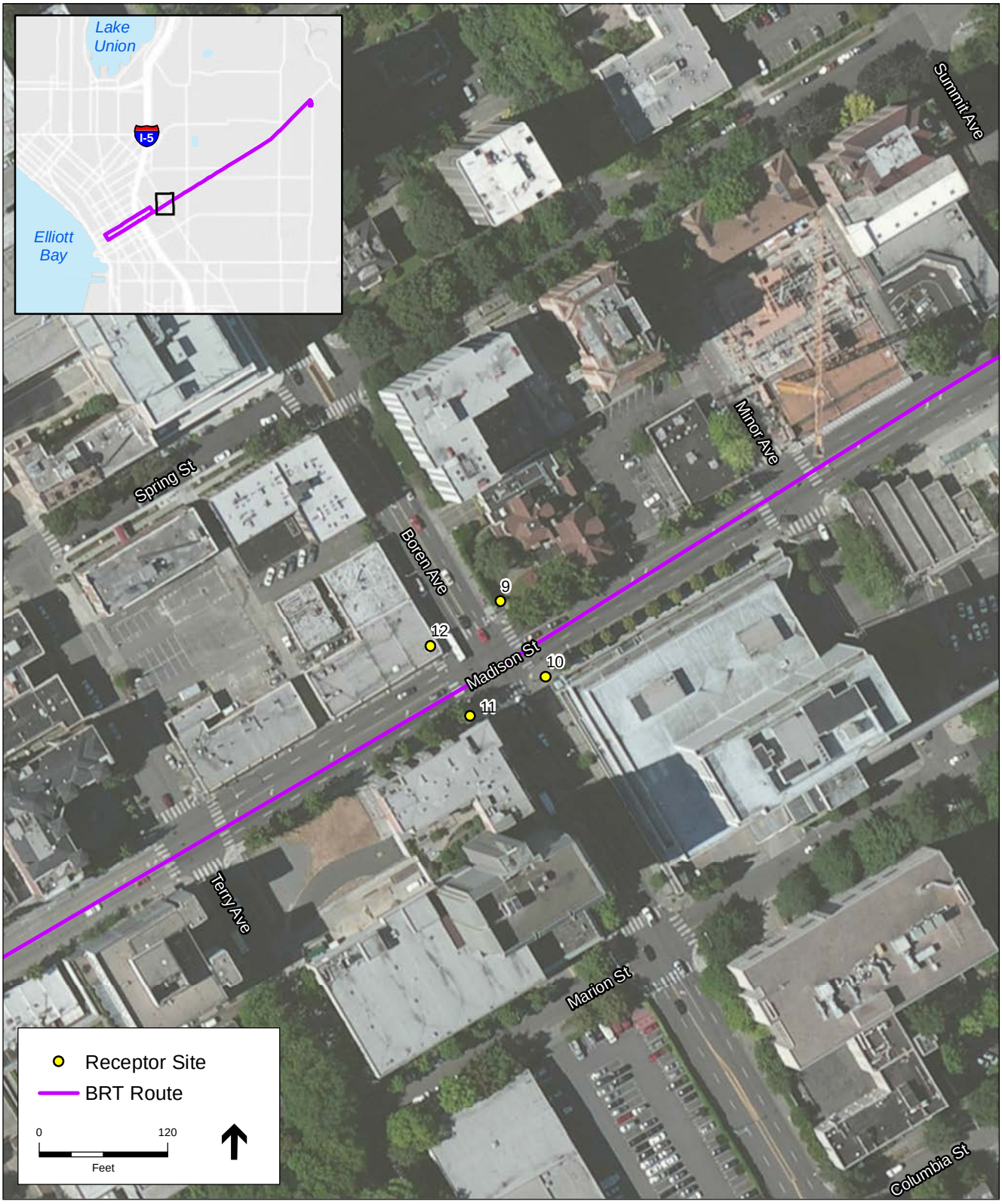
Figure 3.1
Air Quality Receptor Sites

U:\GIS\GIS\Projects\15xxxx\D150820_Madison_BRT\03_MXDs_Projects\AirQuality2.mxd (lxe, 8/31/2016)

SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 3.2
Air Quality Receptor Sites



U:\GIS\GIS\Projects\15xxxx\D150820_Madison_BRT\03_MXDs_Projects\AirQuality2.mxd (lxe, 8/31/2016)

SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 3.3
Air Quality Receptor Sites

U:\GIS\GIS\Projects\15xxxx\D150820_Madison_BRT\03_MXDs_Projects\AirQuality2.mxd (lxe, 8/31/2016)

SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 3.4
Air Quality Receptor Sites

U:\GIS\GIS\Projects\15xxxx\D150820_Madison_BRT\03_MXDs_Projects\AirQuality2.mxd (lxe, 8/31/2016)

SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 3.5
Air Quality Receptor Sites

U:\GIS\GIS\Projects\15xxxx\D150820_Madison_BRT\03_MXDs_Projects\AirQuality2.mxd (lxe, 8/31/2016)

SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 3.6
Air Quality Receptor Sites

U:\GIS\GIS\Projects\15xxxx\D150820_Madison_BRT\03_MXDs_Projects\AirQuality2.mxd (lxe, 8/31/2016)

SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 3.7
Air Quality Receptor Sites

U:\GIS\GIS\Projects\15xxxx\D150820_Madison_BRT\03_MXDs_Projects\AirQuality2.mxd (lxe, 8/31/2016)

SOURCE:
Wa. Dept. of Ecology 2016; ESA 2016; OSM 2015.

SDOT Madison BRT Design . 150820

Figure 3.8
Air Quality Receptor Sites

Table 4 CO Modeling Results for the 2nd Avenue and Spring Street Intersection

Receptor	Existing - 2015		No-Project – 2019		Project – 2019	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
1	3.7	2.3	3.5	2.2	3.5	2.2
2	3.6	2.3	3.5	2.2	3.5	2.2
3	3.6	2.2	3.5	2.1	3.5	2.2
4	3.7	2.3	3.5	2.2	3.5	2.2
CO Standard	35	9	35	9	35	9
Exceed Standard?	No	No	No	No	No	No

Notes: CO emissions estimated using Tier 1 version of CAL3QHCR. Detailed emission results included in Appendix A. Concentrations include a 1-hour background concentration of 3.3 ppm and an 8-hour background concentration of 2.0 based on highest concentrations taken from closest CO monitoring station (see monitoring results in Table 2 above.) Modeling based on one year's worth of meteorological data from the Seattle-Tacoma airport.

Table 5 CO Modeling Results for the 6th Avenue and Spring Street Intersection

Receptor	Existing - 2015		No-Project – 2019		Project – 2019	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
5	3.7	2.3	3.5	2.2	3.5	2.1
6	3.9	2.5	3.6	2.3	3.6	2.2
7	3.8	2.3	3.5	2.2	3.5	2.1
8	3.7	2.4	3.6	2.2	3.6	2.2
CO Standard	35	9	35	9	35	9
Exceed Standard?	No	No	No	No	No	No

Notes: CO emissions estimated using Tier 1 version of CAL3QHCR. Detailed emission results included in Appendix A. Concentrations include a 1-hour background concentration of 3.3 ppm and an 8-hour background concentration of 2.0 based on highest concentrations taken from closest CO monitoring station (see monitoring results in Table 2 above.) Modeling based on one year's worth of meteorological data from the Seattle-Tacoma airport.

Table 6 CO Modeling Results for the Boren Avenue and Madison Street Intersection

Receptor	Existing - 2015		No-Project – 2019		Project – 2019	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
9	3.8	2.4	3.5	2.2	3.5	2.2
10	3.9	2.5	3.6	2.2	3.5	2.2
11	3.8	2.4	3.6	2.2	3.6	2.2
12	3.8	2.4	3.6	2.2	3.6	2.2
CO Standard	35	9	35	9	35	9
Exceed Standard?	No	No	No	No	No	No

Notes: CO emissions estimated using Tier 1 version of CAL3QHCR. Detailed emission results included in Appendix A. Concentrations include a 1-hour background concentration of 3.3 ppm and an 8-hour background concentration of 2.0 based on highest concentrations taken from closest CO monitoring station (see monitoring results in Table 2 above.) Modeling based on one year's worth of meteorological data from the Seattle-Tacoma airport.

Table 7 CO Modeling Results for the 12th Avenue and Madison Street and Union Street Intersection

Receptor	Existing - 2015		No-Project – 2019		Project – 2019	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
13	3.6	2.3	3.5	2.2	3.5	2.1
14	3.7	2.3	3.6	2.2	3.5	2.2
15	3.7	2.3	3.6	2.2	3.5	2.2
16	3.6	2.2	3.5	2.2	3.5	2.1
17	3.6	2.2	3.5	2.1	3.5	2.1
CO Standard	35	9	35	9	35	9
Exceed Standard?	No	No	No	No	No	No

Notes: CO emissions estimated using Tier 1 version of CAL3QHCR. Detailed emission results included in Appendix A. Concentrations include a 1-hour background concentration of 3.3 ppm and an 8-hour background concentration of 2.0 based on highest concentrations taken from closest CO monitoring station (see monitoring results in Table 2 above.) Modeling based on one year's worth of meteorological data from the Seattle-Tacoma airport.

Table 8 CO Modeling Results for the 18th Avenue and Madison Street Intersection

Receptor	Existing - 2015		No-Project – 2019		Project – 2019	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
18	3.5	2.2	3.5	2.1	3.4	2.1
19	3.6	2.2	3.5	2.1	3.5	2.2
20	3.6	2.2	3.5	2.1	3.5	2.1
21	3.5	2.2	3.5	2.1	3.4	2.1
CO Standard	35	9	35	9	35	9
Exceed Standard?	No	No	No	No	No	No

Notes: CO emissions estimated using Tier 1 version of CAL3QHCR. Detailed emission results included in Appendix A. Concentrations include a 1-hour background concentration of 3.3 ppm and an 8-hour background concentration of 2.0 based on highest concentrations taken from closest CO monitoring station (see monitoring results in Table 2 above.) Modeling based on one year's worth of meteorological data from the Seattle-Tacoma airport.

Table 9 CO Modeling Results for the 23rd Avenue and Madison Street Intersection

Receptor	Existing - 2015		No-Project – 2019		Project – 2019	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
22	3.8	2.4	3.6	2.2	3.6	2.2
23	3.9	2.5	3.6	2.3	3.6	2.2
24	3.8	2.4	3.6	2.2	3.6	2.2
25	3.8	2.3	3.6	2.2	3.6	2.2
CO Standard	35	9	35	9	35	9
Exceed Standard?	No	No	No	No	No	No

Notes: CO emissions estimated using Tier 1 version of CAL3QHCR. Detailed emission results included in Appendix A. Concentrations include a 1-hour background concentration of 3.3 ppm and an 8-hour background concentration of 2.0 based on highest concentrations taken from closest CO monitoring station (see monitoring results in Table 2 above.) Modeling based on one year's worth of meteorological data from the Seattle-Tacoma airport.

Table 10 CO Modeling Results for the 25th Avenue and Madison Street Intersection

Receptor	Existing - 2015		No-Project – 2019		Project – 2019	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
26	3.5	2.2	3.4	2.1	3.4	2.1
27	3.5	2.2	3.4	2.1	3.4	2.1
28	3.5	2.1	3.4	2.1	3.4	2.1
29	3.5	2.1	3.4	2.1	3.4	2.1
CO Standard	35	9	35	9	35	9
Exceed Standard?	No	No	No	No	No	No

Notes: CO emissions estimated using Tier 1 version of CAL3QHCR. Detailed emission results included in Appendix A. Concentrations include a 1-hour background concentration of 3.3 ppm and an 8-hour background concentration of 2.0 based on highest concentrations taken from closest CO monitoring station (see monitoring results in Table 2 above.) Modeling based on one year's worth of meteorological data from the Seattle-Tacoma airport.

Table 11 CO Modeling Results for the 28th Avenue/Martin Luther King Jr Way and Madison Street Intersection

Receptor	Existing - 2015		No-Project – 2019		Project – 2019	
	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)	1-hour (ppm)	8-hour (ppm)
30	3.6	2.2	3.5	2.1	3.5	2.1
31	3.5	2.2	3.5	2.1	3.5	2.1
32	3.6	2.2	3.5	2.2	3.5	2.1
33	3.5	2.2	3.5	2.2	3.5	2.1
34	3.6	2.2	3.5	2.2	3.5	2.2
35	3.6	2.3	3.5	2.2	3.5	2.2
36	3.6	2.2	3.5	2.2	3.5	2.2
37	3.6	2.2	3.5	2.1	3.5	2.1
CO Standard	35	9	35	9	35	9
Exceed Standard?	No	No	No	No	No	No

Notes: CO emissions estimated using Tier 1 version of CAL3QHCR. Detailed emission results included in Appendix A. Concentrations include a 1-hour background concentration of 3.3 ppm and an 8-hour background concentration of 2.0 based on highest concentrations taken from closest CO monitoring station (see monitoring results in Table 2 above.) Modeling based on one year's worth of meteorological data from the Seattle-Tacoma airport.

6.3 Cumulative Effects

Cumulative environmental effects result from the incremental impacts of the proposed action when added to other past, present, and reasonably foreseeable future actions.

Air quality in the King County region has either been maintained or improved over the last 5 years. Cleaner cars, industries, and consumer products have contributed to cleaner air throughout much of the United States, including in the Puget Sound Air Quality Management Area, and this trend is likely to continue. As recommended by the WSDOT, GHG emissions should be treated as a cumulative effect, as GHG emissions are an issue of global concern (WSDOT, 2014a).

Short-term Cumulative Effects

Construction GHGs

Emissions of GHGs would result from the combustion of fossil fuels within construction equipment and worker commute vehicles. GHG emissions would be directly proportional to the quantity of fuel used. The scale and duration of the project will have a minimal GHG emissions impact because the project construction would only affect local circulation and the impact on regional facilities and regional travel would be negligible, as detours would use local roads and be of short-term duration.

One of the proposed construction BMPs would minimize GHGs by maintaining all construction equipment in good operating condition. Proper maintenance reduces fuel consumption and GHG emissions. Project construction will include setting up active construction areas, staging areas, and material transfer sites to reduce equipment idling time. In addition, construction workers will be encouraged to use ridesharing to reduce temporary energy use and associated GHG emissions. These activities will minimize GHG emissions during construction.

Long-term Cumulative Effects

Air Pollutants

The air quality analysis for the Project considers the long-term cumulative impacts of air pollutants by incorporating traffic forecasts for regionally significant projects in the region (Nelson\Nygaard Consulting Associates, 2016). The proposed Project is not expected to have long-term cumulative effects on air quality and would only add at most 7 peak-hour bus trips to all affected intersections. Therefore, the Project would not generate a substantial increase in traffic or intersection delays compared to baseline conditions and would result in only minor increases in air pollutants.

Operational GHGs

GHG emissions are an issue of global concern and represent a cumulative impact. No individual project makes a significant contribution to GHG emissions but instead contributes cumulatively to global GHG emissions (WSDOT, 2014a). GHG emissions from a single project are usually very small (and often less than without the project). Statewide, users of the transportation system contribute close to half of the state's GHG emissions. WSDOT guidance states that transportation emissions are better addressed at the region, state, or transportation systems level where multiple projects can be analyzed in aggregate. For projects subject to an EA, WSDOT recommends a qualitative discussion of a projects operational and construction GHG effects in the "Cumulative Effects" section.

The Project would reduce future vehicle trips by providing public transportation to residents of Downtown, First Hill, Capitol Hill, Central Area, and Madison Valley in Seattle. Because the Project would be electric-powered and would reduce vehicle trips in the study area, direct emissions of GHGs from the Project would not be expected. However, indirect emissions of GHG would be generated to power the electric buses. The majority of the electricity consumed in the Pacific Northwest is produced from hydroelectric power sources compared to fossil-fueled power sources (EIA, 2015). Therefore, the reduction of GHGs from the reduced vehicle trips would be expected to partially or fully offset the GHGs emitted indirectly from the electric buses.

7 Mitigation

During construction, impacts on air quality will be reduced and controlled in accordance with the City of Seattle's Standard Specifications for Road, Bridge, and Municipal Construction [Section 1-07.5(3)] and dust control BMPs described in the City of Seattle's *Construction Stormwater Control Technical Requirements Manual – Volume 2* (City of Seattle, 2009).

Reducing air quality impacts during construction would involve BMPs to control dust and exhaust emissions such as:

- Maintaining all equipment in good operating condition.
- Watering exposed soil, dirt driveways and construction surfaces, installing temporary ground covers, sprinkling the project site with approved flocculating agents, and/or using temporary stabilization practices upon completion of grading to control dust.
- Providing wheel-cleaning stations to ensure construction vehicle wheels and undercarriages do not carry excess dirt from the site onto adjacent roadways.
- Cleaning streets on a regular basis to ensure excess dust and debris are not inadvertently transported from the construction site to adjacent roads.
- Staging construction to minimize soil exposure for extended periods.

Emissions of $PM_{2.5}$, $PM_{10,}$ VOCs, NO_x, SO_2, and CO would be minimized whenever reasonable and possible. Because these emissions primarily result from construction equipment, machinery engines would be kept in good mechanical condition to minimize exhaust emissions. Additionally, contractors would be encouraged to reduce idling time of equipment and vehicles and to use newer construction equipment or equipment with add-on emission controls.

No mitigation is required during the operational phase of the Madison BRT Project because the Project is not expected to exceed ambient air quality standards or create MSAT or GHG impacts.

8 Conclusion

Although project construction would generate localized air quality impacts, mainly in the form of fugitive dust, these impacts would be temporary. Proposed BMPs would minimize the generation of GHGs and dust during construction.

Project operation would not result in significant CO impacts. Consequently, the project would not cause or contribute to violations of the federal or state ambient CO air quality standards.

9 References

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Appendix A

CO Modeling Inputs and Outputs

Table of Contents

Summary of Affected Intersection Level of Service

Intersection	Existing – 2015	No-Project – 2019	Project – 2019
Boren Avenue and Madison Street	**D**	**D**	**D**
12th Avenue and Madison Street and Union Street	**D**	C	**F**
18th Avenue and Madison Street	**E**	**E**	C
23rd Avenue and Madison Street	**D**	C	C
25th Avenue and Madison Street	**E**	**E**	**E**
28th Avenue/Martin Luther King Jr Way and Madison Street	B	C	**D**
2nd Avenue and Spring Street	C	C	**E**
6th Avenue and Spring Street	**F**	**F**	**F**

Source: Nelson\Nygaard Consulting Associates, 2016

Existing (2015) Carbon Monoxide Emission Rates from MOVES

movesRunId	yearId	monthId	hourId	linkId	pollutant	GramsPerVehMile	GramsPerVehHour
1	2015	1	18	1	CO	4.93	N/A
1	2015	1	18	2	CO	N/A	29.58

Existing (2015) CAL3QHCR Results

CAL3QHCR (Dated: 13196)

DATE : 08/29/16 PAGE: 1
TIME : 15:57:15

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

==========
General Information
==========

Run start date: 01/01/90 Julian: 1
end date: 12/31/90 Julian: 365

A Tier 1 approach was used for input data preparation.

The MODE flag has been set to C for calculating CO averages.

Ambient background concentrations are excluded from the averages below.

Site & Meteorological Constants

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 100. CM ATIM = 60.

Met. Sfc. Sta. Id & Yr = 24233 90
Upper Air Sta. Id & Yr = 94240 90

Urban mixing heights were processed.

In 1990, Julian day 1 is a Monday.

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
1.	Link_1	550004.44	5272655.50	549980.06	5272641.50	28.	240.	AG	0.0	6.1	2
2.	Link_2	549950.00	5272660.00	549961.94	5272640.50	23.	149.	AG	0.0	12.0	3
3.	Link_3	549920.06	5272710.50	549967.00	5272633.50	90.	149.	AG	0.0	18.2	
4.	Link_4	550052.81	5272684.50	549967.19	5272633.50	100.	239.	AG	0.0	12.0	
5.	Link_5	549967.06	5272633.50	550018.56	5272556.50	93.	146.	AG	0.0	18.0	
6.	Link_6	549966.81	5272633.50	549885.31	5272583.00	96.	238.	AG	0.0	12.0	
7.	Link_7	549756.62	5272608.50	549838.25	5272659.50	96.	58.	AG	0.0	14.0	
8.	Link_8	549879.62	5272685.50	549919.56	5272710.50	47.	58.	AG	0.0	14.0	
9.	Link_9	549784.94	5272734.50	549833.50	5272657.00	91.	148.	AG	0.0	12.0	
10.	Link_10	549842.50	5272663.00	549793.94	5272740.00	91.	328.	AG	0.0	12.0	
11.	Link_11	549833.88	5272656.00	549881.06	5272580.00	89.	148.	AG	0.0	12.0	
12.	Link_12	549889.69	5272586.00	549842.69	5272662.00	89.	328.	AG	0.0	12.0	
13.	Link_13	549813.31	5272644.00	549827.50	5272653.00	17.	58.	AG	0.0	8.0	2
14.	Link_14	549820.69	5272677.00	549828.50	5272664.50	15.	148.	AG	0.0	6.0	2
15.	Link_15	549856.50	5272639.50	549848.94	5272652.00	15.	329.	AG	0.0	6.0	2

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
16.	Link_16	549871.75	5272790.00	549919.75	5272712.00	92.	148.	AG	0.0	18.0	
17.	Link_17	549920.31	5272710.50	550005.12	5272763.50	100.	58.	AG	0.0	12.0	
18.	Link_18	549885.62	5272690.00	549909.25	5272704.50	28.	58.	AG	0.0	6.0	2
19.	Link_19	549904.56	5272735.00	549913.94	5272720.50	17.	147.	AG	0.0	12.0	3
20.	Link_20	549899.81	5272756.00	549920.69	5272724.00	38.	147.	AG	0.0	3.0	1
21.	Link_21	549838.50	5272659.50	549879.44	5272685.50	48.	58.	AG	0.0	14.0	
22.	Link_22	549956.81	5272641.00	549958.62	5272638.00	4.	149.	AG	0.0	3.0	1
23.	Link_23	550090.38	5272816.00	550042.25	5272895.00	93.	329.	AG	0.0	21.0	
24.	Link_24	550005.25	5272763.50	550090.62	5272816.00	100.	58.	AG	0.0	12.0	
25.	Link_25	550140.50	5272738.50	550053.44	5272685.00	102.	238.	AG	0.0	12.0	
26.	Link_26	550224.12	5272791.00	550141.00	5272739.00	98.	238.	AG	0.0	12.0	
27.	Link_27	550141.06	5272739.50	550113.94	5272779.50	48.	326.	AG	0.0	21.0	
28.	Link_28	550113.94	5272779.00	550090.19	5272815.50	44.	327.	AG	0.0	21.0	
29.	Link_29	550190.12	5272660.50	550140.88	5272738.50	92.	328.	AG	0.0	21.0	
30.	Link_30	550107.00	5272804.00	550103.19	5272809.50	7.	325.	AG	0.0	3.0	1
31.	Link_31	550112.62	5272780.50	550096.50	5272805.00	29.	327.	AG	0.0	12.0	3
32.	Link_32	550056.19	5272794.50	550080.44	5272809.50	29.	58.	AG	0.0	6.0	2
33.	Link_33	550090.44	5272815.50	550136.88	5272844.00	54.	58.	AG	0.0	12.0	
34.	Link_34	550169.31	5272756.50	550150.38	5272744.50	22.	238.	AG	0.0	12.0	2
35.	Link_35	550161.06	5272706.50	550146.81	5272729.50	27.	328.	AG	0.0	27.0	4
36.	Link_36	550136.88	5272844.00	550176.12	5272868.50	46.	58.	AG	0.0	12.0	
37.	Link_37	550175.62	5272868.50	550218.69	5272896.00	51.	57.	AG	0.0	12.0	
38.	Link_38	550218.88	5272896.50	550257.69	5272921.00	46.	58.	AG	0.0	12.0	
39.	Link_39	550125.56	5272948.50	550175.25	5272868.00	95.	148.	AG	0.0	12.0	
40.	Link_40	550175.56	5272868.00	550224.19	5272791.00	91.	148.	AG	0.0	12.0	
41.	Link_41	550133.38	5272842.50	550165.31	5272861.50	37.	59.	AG	0.0	6.0	2
42.	Link_42	550157.00	5272897.50	550170.56	5272876.50	25.	147.	AG	0.0	9.0	3
43.	Link_44	550307.56	5272843.00	550257.88	5272920.50	92.	327.	AG	0.0	18.0	
44.	Link_45	550257.50	5272921.00	550208.25	5272999.00	92.	328.	AG	0.0	18.0	
45.	Link_46	550257.94	5272921.50	550336.19	5272974.00	94.	56.	AG	0.0	18.0	
46.	Link_47	550257.94	5272921.00	550277.19	5272917.00	20.	102.	AG	0.0	12.0	
47.	Link_48	550277.19	5272917.00	550292.50	5272912.50	16.	106.	AG	0.0	12.0	
48.	Link_49	550292.50	5272912.50	550304.38	5272903.50	15.	127.	AG	0.0	12.0	
49.	Link_50	550304.38	5272903.50	550323.25	5272866.50	42.	153.	AG	0.0	12.0	
50.	Link_51	550237.44	5272908.00	550249.06	5272915.50	14.	57.	AG	0.0	6.0	2
51.	Link_43	550270.31	5272895.00	550263.44	5272906.00	13.	328.	AG	0.0	6.0	2
52.	Link_52	550281.31	5272888.00	550272.50	5272910.00	24.	338.	AG	0.0	6.0	2
53.	Link_53	550665.94	5273179.00	550714.62	5273101.50	92.	148.	AG	0.0	14.0	
54.	Link_54	550690.06	5273140.50	550708.31	5273111.00	35.	148.	AG	0.0	8.0	2
55.	Link_55	550700.12	5273135.00	550712.81	5273114.00	25.	149.	AG	0.0	3.0	1
56.	Link_56	550722.94	5273106.50	550673.12	5273184.50	93.	327.	AG	0.0	12.0	

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
57.	Link_57	550801.12	5273159.50	550716.56	5273107.50	99.	238.	AG	0.0	12.0	
58.	Link_58	550716.44	5273107.00	550635.00	5273055.50	96.	238.	AG	0.0	12.0	
59.	Link_59	550639.44	5273048.00	550722.00	5273100.00	98.	58.	AG	0.0	12.0	
60.	Link_60	550721.75	5273099.50	550806.75	5273151.50	100.	59.	AG	0.0	12.0	
61.	Link_61	550772.75	5273026.00	550722.81	5273106.50	95.	328.	AG	0.0	12.0	
62.	Link_62	550714.75	5273101.50	550764.44	5273022.00	94.	148.	AG	0.0	12.0	
63.	Link_63	550684.38	5273076.00	550710.81	5273093.00	31.	57.	AG	0.0	6.0	2
64.	Link_64	550646.44	5273057.00	550708.62	5273096.50	74.	58.	AG	0.0	3.0	1
65.	Link_65	550745.50	5273070.50	550729.31	5273096.00	30.	328.	AG	0.0	6.0	2
66.	Link_66	550732.81	5273083.00	550726.31	5273093.00	12.	327.	AG	0.0	3.0	1
67.	Link_67	550756.06	5273131.50	550726.88	5273114.00	34.	239.	AG	0.0	6.0	2
68.	Link_68	550763.81	5273131.00	550729.38	5273110.00	40.	239.	AG	0.0	3.0	1
69.	Link_69	551041.94	5273402.50	551042.56	5273307.50	95.	180.	AG	0.0	18.0	
70.	Link_70	551051.00	5273313.00	551050.50	5273403.50	91.	360.	AG	0.0	18.0	
71.	Link_71	551042.56	5273307.50	551043.81	5273197.00	111.	179.	AG	0.0	18.0	
72.	Link_72	551052.88	5273198.00	551050.88	5273312.50	115.	359.	AG	0.0	18.0	
73.	Link_73	551046.75	5273315.50	550966.25	5273265.00	95.	238.	AG	0.0	12.0	
74.	Link_74	550970.12	5273258.00	551046.75	5273305.50	90.	58.	AG	0.0	12.0	
75.	Link_75	551143.44	5273374.50	551046.75	5273315.50	113.	239.	AG	0.0	12.0	
76.	Link_76	551046.62	5273305.50	551144.38	5273365.50	115.	58.	AG	0.0	12.0	
77.	Link_77	551013.19	5273285.00	551034.44	5273298.00	25.	59.	AG	0.0	6.0	2
78.	Link_78	550994.12	5273277.00	551034.06	5273301.00	47.	59.	AG	0.0	3.0	1
79.	Link_79	551051.69	5273267.00	551051.19	5273298.50	32.	359.	AG	0.0	6.0	2
80.	Link_80	551042.00	5273344.50	551042.44	5273321.50	23.	179.	AG	0.0	6.0	2
81.	Link_81	551075.75	5273333.00	551060.19	5273323.50	18.	239.	AG	0.0	6.0	2
82.	Link_82	551068.75	5273324.00	551060.06	5273318.00	11.	235.	AG	0.0	3.0	1
83.	Link_83	551265.88	5273444.00	551343.81	5273491.50	91.	59.	AG	0.0	12.0	
84.	Link_84	551342.50	5273499.00	551262.50	5273450.00	94.	239.	AG	0.0	12.0	
85.	Link_85	551343.25	5273509.50	551245.00	5273509.00	98.	270.	AG	0.0	9.0	
86.	Link_86	551348.88	5273355.00	551347.75	5273501.00	146.	360.	AG	0.0	12.0	
87.	Link_87	551341.00	5273496.00	551341.88	5273355.00	141.	180.	AG	0.0	12.0	
88.	Link_88	551347.56	5273500.50	551343.38	5273638.00	138.	358.	AG	0.0	12.0	
89.	Link_89	551336.19	5273637.50	551340.75	5273496.00	142.	178.	AG	0.0	12.0	
90.	Link_90	551437.69	5273559.50	551342.75	5273499.50	112.	238.	AG	0.0	12.0	
91.	Link_91	551343.81	5273491.50	551438.56	5273551.50	112.	58.	AG	0.0	12.0	
92.	Link_92	551382.94	5273525.00	551359.25	5273510.00	28.	238.	AG	0.0	6.0	2
93.	Link_93	551337.19	5273542.00	551337.81	5273519.00	23.	178.	AG	0.0	6.0	2
94.	Link_94	551341.44	5273525.00	551341.56	5273519.50	6.	179.	AG	0.0	3.0	1
95.	Link_95	551344.69	5273471.00	551344.69	5273481.50	10.	360.	AG	0.0	3.0	1
96.	Link_96	551348.31	5273445.00	551347.94	5273484.00	39.	359.	AG	0.0	3.0	1
97.	Link_97	551351.38	5273479.00	551351.25	5273485.50	7.	359.	AG	0.0	3.0	1

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
98.	Link_98	551294.25	5273461.50	551330.06	5273483.00	42.	59.	AG	0.0	6.0	2
99.	Link_99	552409.75	5274096.00	552410.31	5274215.50	120.	0.	AG	0.0	12.0	
100.	Link_100	552405.38	5274210.50	552403.69	5274095.00	116.	181.	AG	0.0	12.0	
101.	Link_101	552405.12	5274327.50	552405.12	5274210.50	117.	180.	AG	0.0	12.0	
102.	Link_102	552410.25	5274215.50	552411.81	5274328.50	113.	1.	AG	0.0	12.0	
103.	Link_103	552294.75	5274087.50	552408.00	5274206.00	164.	44.	AG	0.0	12.0	
104.	Link_104	552408.69	5274221.50	552286.75	5274093.50	177.	224.	AG	0.0	12.0	
105.	Link_105	552407.75	5274206.50	552526.62	5274327.00	169.	45.	AG	0.0	12.0	
106.	Link_106	552514.12	5274327.50	552408.69	5274221.50	150.	225.	AG	0.0	12.0	
107.	Link_107	552410.19	5274171.00	552410.44	5274200.50	30.	0.	AG	0.0	6.0	2
108.	Link_108	552379.38	5274176.00	552398.69	5274197.00	29.	43.	AG	0.0	6.0	2
109.	Link_109	552377.12	5274180.50	552398.25	5274201.00	29.	46.	AG	0.0	3.0	1
110.	Link_110	552437.38	5274250.50	552418.50	5274231.50	27.	225.	AG	0.0	6.0	2
111.	Link_111	552425.44	5274233.00	552419.00	5274227.00	9.	227.	AG	0.0	3.0	1
112.	Link_112	552404.81	5274262.00	552404.81	5274226.00	36.	180.	AG	0.0	6.0	2
113.	Link_113	550217.12	5272890.50	550250.75	5272912.50	40.	57.	AG	0.0	3.0	2

Receptor Data

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	R_001	549952.62	5272634.00	1.8
2.	R_002	549974.19	5272646.50	1.8
3.	R_003	549984.81	5272630.50	1.8
4.	R_004	549964.62	5272619.00	1.8
5.	R_005	549822.94	5272659.50	1.8
6.	R_006	549843.88	5272673.00	1.8
7.	R_007	549854.06	5272656.00	1.8
8.	R_008	549832.12	5272643.00	1.8
9.	R_009	549905.19	5272714.50	1.8
10.	R_010	549925.56	5272726.00	1.8
11.	R_011	549914.50	5272696.00	1.8
12.	R_012	549935.56	5272709.00	1.8
13.	R_013	550072.81	5272817.50	1.8
14.	R_014	550097.56	5272831.50	1.8
15.	R_015	550108.00	5272814.00	1.8
16.	R_016	550083.81	5272800.00	1.8
17.	R_017	550124.25	5272740.00	1.8
18.	R_018	550147.38	5272755.00	1.8

Receptor Data

	RECEPTOR		COORDINATES (M) X	Y	Z
19.	R_019	*	550159.06	5272737.00	1.8
20.	R_020	*	550133.44	5272722.50	1.8
21.	R_021	*	550163.44	5272871.00	1.8
22.	R_022	*	550177.94	5272880.50	1.8
23.	R_023	*	550187.44	5272865.00	1.8
24.	R_024	*	550172.56	5272856.00	1.8
25.	R_025	*	550254.25	5272909.00	1.8
26.	R_026	*	550244.19	5272922.00	1.8
27.	R_027	*	550260.56	5272937.00	1.8
28.	R_028	*	550274.06	5272924.50	1.8
29.	R_029	*	550736.38	5273099.50	1.8
30.	R_030	*	550723.00	5273120.50	1.8
31.	R_031	*	550703.38	5273107.00	1.8
32.	R_032	*	550715.25	5273087.50	1.8
33.	R_033	*	551032.69	5273288.50	1.8
34.	R_034	*	551060.94	5273306.00	1.8
35.	R_035	*	551060.12	5273331.00	1.8
36.	R_036	*	551032.81	5273314.50	1.8
37.	R_037	*	551328.56	5273501.00	1.8
38.	R_038	*	551330.00	5273517.50	1.8
39.	R_039	*	551356.25	5273518.50	1.8
40.	R_040	*	551358.31	5273490.50	1.8
41.	R_041	*	551402.00	5273519.00	1.8
42.	R_042	*	552398.56	5274187.00	1.8
43.	R_043	*	552415.50	5274206.50	1.8
44.	R_044	*	552400.19	5274221.00	1.8
45.	R_045	*	552419.50	5274239.50	1.8
46.	R_046	*	551333.75	5273477.50	1.8

****
Please check the meteorological data listed in CAL3HR.ERR.
****

Model Results

Remarks : In search of the wind direction corresponding
to the maximum concentration, only the first
direction, of the directions with the same maximum
concentrations, is indicated as the maximum.

* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
* (PPM)

	REC0001	REC0002	REC0003	REC0004	REC0005	REC0006	REC0007	REC0008	REC0009	REC0010
MAX+BKG	0.4144	0.3336	0.3412	0.3911	0.3476	0.2489	0.2359	0.3149	0.3850	0.3827
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.4144	0.3336	0.3412	0.3911	0.3476	0.2489	0.2359	0.3149	0.3850	0.3827
WIND DIR	58	282	309	342	58	225	180	58	58	286
JULIAN	300	91	21	103	300	62	1	300	300	266
HOUR	3	21	1	2	3	5	24	3	3	21

	REC0011	REC0012	REC0013	REC0014	REC0015	REC0016	REC0017	REC0018	REC0019	REC0020
MAX+BKG	0.3277	0.3302	0.4568	0.3852	0.4034	0.3953	0.3400	0.4080	0.3860	0.3723
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.3277	0.3302	0.4568	0.3852	0.4034	0.3953	0.3400	0.4080	0.3860	0.3723
WIND DIR	348	310	132	165	199	117	129	165	317	109
JULIAN	269	268	306	20	300	261	288	20	14	50
HOUR	24	20	2	7	1	5	18	7	23	1

	REC0021	REC0022	REC0023	REC0024	REC0025	REC0026	REC0027	REC0028	REC0029	REC0030
MAX+BKG	0.4394	0.4867	0.4061	0.3651	0.4616	0.4195	0.3697	0.5860	0.5567	0.4671
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.4394	0.4867	0.4061	0.3651	0.4616	0.4195	0.3697	0.5860	0.5567	0.4671
WIND DIR	72	226	310	347	253	208	221	245	248	221
JULIAN	18	266	268	104	18	278	125	265	350	125
HOUR	6	22	20	4	23	4	4	4	2	4

	REC0031	REC0032	REC0033	REC0034	REC0035	REC0036	REC0037	REC0038	REC0039	REC0040
MAX+BKG	0.5378	0.5013	0.3673	0.4069	0.3882	0.3510	0.3032	0.3033	0.3432	0.4180
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.5378	0.5013	0.3673	0.4069	0.3882	0.3510	0.3032	0.3033	0.3432	0.4180
WIND DIR	72	262	16	245	190	72	72	80	221	245
JULIAN	18	15	96	205	55	18	18	121	125	265
HOUR	6	2	1	8	11	6	6	20	4	4

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
* (PPM)

	REC0041	REC0042	REC0043	REC0044	REC0045	REC0046
MAX+BKG	0.3524	0.5338	0.5663	0.4937	0.4671	0.4160
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.3524	0.5338	0.5663	0.4937	0.4671	0.4160
WIND DIR	253	10	234	18	199	45
JULIAN	18	195	343	17	188	60
HOUR	23	24	18	22	3	7

THE HIGHEST CONCENTRATION OF 0.5860 PPM OCCURRED AT RECEPTOR REC0028.

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Output Section
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NOTES PERTAINING TO THE REPORT

1. THE HIGHEST AVERAGE IN EACH OF THE FIRST TWO COLUMNS OF EACH TABLE BELOW ARE SUFFIXED BY AN ASTERISK (*). FOR PM OUTPUT, THERE IS ONLY ONE COLUMN AND ASTERISK FOR THE ANNUAL AVERAGE/PERIOD OF CONCERN TABLE.

2. THE NUMBERS IN PARENTHESES ARE THE JULIAN DAY AND ENDING HOUR FOR THE PRECEDING AVERAGE.

3. THE NUMBER OF CALM HOURS USED IN PRODUCING EACH AVERAGE ARE PREFIXED BY A C.

PRIMARY AVERAGES.

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor Number	Highest Conc	Highest Ending Day Hr	Highest Calm	Second highest Conc	Second highest Ending Day Hr	Second highest Calm
1	0.27	(240, 6)	C 1	0.27	(263, 6)	C 0
2	0.28	(267, 3)	C 0	0.25	(136, 5)	C 1
3	0.25	(267, 3)	C 0	0.21	(250, 5)	C 2
4	0.27	(104, 6)	C 0	0.27	(221, 7)	C 1
5	0.24	(341, 8)	C 0	0.23	(55,13)	C 1
6	0.19	(136, 7)	C 1	0.19	(269, 3)	C 0
7	0.21	(267, 2)	C 1	0.20	(269, 2)	C 0
8	0.20	(221, 8)	C 1	0.19	(260, 5)	C 0
9	0.27	(281, 6)	C 0	0.27	(239, 7)	C 2
10	0.34	(267, 3)	C 0	0.32	(136, 6)	C 1
11	0.23	(221, 8)	C 1	0.22	(104, 6)	C 0
12	0.28	(267, 2)	C 1	0.24	(136, 6)	C 1
13	0.31	(20, 5)	C 1	0.30	(341, 6)	C 0
14	0.28	(307, 3)	C 0	0.28	(109, 6)	C 2
15	0.33	(136, 9)	C 1	0.32	(168, 6)	C 2
16	0.27	(303,22)	C 0	0.27	(341, 1)	C 0
17	0.23	(20, 5)	C 1	0.22	(104, 4)	C 0
18	0.29	(320, 5)	C 0	0.29	(268, 8)	C 0
19	0.31	(168, 6)	C 2	0.30	(268, 8)	C 0
20	0.25	(303,22)	C 0	0.24	(240, 6)	C 1
21	0.31	(239, 7)	C 2	0.31	(281, 7)	C 0
22	0.38	(136, 7)	C 1	0.38	(269, 3)	C 0
23	0.35	(267, 2)	C 1	0.31	(136, 6)	C 1
24	0.26	(267, 1)	C 1	0.26	(136, 6)	C 1

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor	Highest			Second highest		
Number	Conc	Ending Day Hr	Calm	Conc	Ending Day Hr	Calm
25	0.34	(267, 1)	C 1	0.34	(136, 6)	C 1
26	0.37	(341, 7)	C 0	0.31	(168, 6)	C 2
27	0.27	(109, 8)	C 2	0.26	(307, 3)	C 0
28	0.45	(136, 8)	C 1	0.42	(268, 2)	C 0
29	0.45*	(267, 1)	C 1	0.43	(136, 6)	C 1
30	0.37	(136, 7)	C 1	0.37	(341, 4)	C 0
31	0.41	(239, 7)	C 2	0.40	(281, 6)	C 0
32	0.39	(267, 3)	C 0	0.37	(177, 3)	C 2
33	0.27	(267, 3)	C 0	0.26	(260, 5)	C 0
34	0.32	(267, 1)	C 1	0.32	(136, 7)	C 1
35	0.31	(268, 5)	C 0	0.31	(168, 6)	C 2
36	0.24	(147,12)	C 2	0.23	(320, 6)	C 0
37	0.23	(341, 8)	C 0	0.22	(320, 6)	C 0
38	0.21	(147,12)	C 2	0.19	(104, 2)	C 0
39	0.27	(341, 7)	C 0	0.26	(168, 6)	C 2
40	0.33	(136, 6)	C 1	0.33	(267, 1)	C 1
41	0.28	(136, 6)	C 1	0.27	(267, 1)	C 1
42	0.37	(263, 4)	C 0	0.36	(267, 3)	C 0
43	0.45	(269, 6)	C 0	0.45*	(136, 8)	C 1
44	0.34	(91, 6)	C 2	0.34	(240, 5)	C 1
45	0.37	(341, 8)	C 0	0.36	(168, 6)	C 2
46	0.32	(267, 3)	C 0	0.30	(146, 7)	C 2

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr	Highest			Second Highest			Third Highest			Fourth Highest			Fifth Highest			Sixth Highest		
No.	Conc	Ending Day Hr	Calm	Conc	Ending Day Hr	Calm	Conc	Ending Day Hr	Calm	Conc	Ending Day Hr	Calm	Conc	Ending Day Hr	Calm	Conc	Ending Day Hr	Calm
1	0.4144	(300, 3)	C 0	0.3983	(137, 1)	C 0	0.3983	(260,11)	C 0	0.3958	(86, 3)	C 0	0.3876	(262, 2)	C 0	0.3796	(146, 3)	C 0
2	0.3336	(91,21)	C 0	0.3336	(192,22)	C 0	0.3334	(306,16)	C 0	0.3332	(89,22)	C 0	0.3332	(296, 1)	C 0	0.3328	(266,21)	C 0
3	0.3412	(21, 1)	C 0	0.3398	(268,20)	C 0	0.3377	(14,16)	C 0	0.3377	(165,21)	C 0	0.3377	(271,19)	C 0	0.3374	(182, 1)	C 0
4	0.3911	(103, 2)	C 0	0.3853	(221, 5)	C 0	0.3822	(60, 7)	C 0	0.3814	(221, 1)	C 0	0.3803	(104, 4)	C 0	0.3792	(239,23)	C 0
5	0.3476	(300, 3)	C 0	0.3265	(137, 1)	C 0	0.3265	(260,11)	C 0	0.3203	(86, 3)	C 0	0.3066	(18, 6)	C 0	0.2993	(262, 2)	C 0
6	0.2489	(62, 5)	C 0	0.2489	(72,22)	C 0	0.2489	(307,19)	C 0	0.2489	(358,16)	C 0	0.2486	(266,22)	C 0	0.2478	(249, 4)	C 0
7	0.2359	(1,24)	C 0	0.2359	(21, 6)	C 0	0.2358	(60, 1)	C 0	0.2358	(268, 8)	C 0	0.2357	(55,10)	C 0	0.2357	(183,14)	C 0
8	0.3149	(300, 3)	C 0	0.3090	(137, 1)	C 0	0.3090	(260,11)	C 0	0.3079	(86, 3)	C 0	0.3013	(262, 2)	C 0	0.2899	(146, 3)	C 0
9	0.3850	(300, 3)	C 0	0.3672	(137, 1)	C 0	0.3672	(260,11)	C 0	0.3630	(86, 3)	C 0	0.3515	(195,24)	C 0	0.3515	(229, 3)	C 0
10	0.3827	(266,21)	C 0	0.3827	(347, 7)	C 0	0.3825	(91,21)	C 0	0.3825	(192,22)	C 0	0.3825	(360, 3)	C 0	0.3825	(89,22)	C 0
11	0.3277	(269,24)	C 0	0.3277	(278,19)	C 0	0.3272	(104, 4)	C 0	0.3219	(262,23)	C 0	0.3219	(269, 4)	C 0	0.3219	(280,24)	C 0
12	0.3302	(268,20)	C 0	0.3295	(21, 1)	C 0	0.3295	(306,17)	C 0	0.3295	(340,19)	C 0	0.3280	(72,23)	C 0	0.3258	(199, 5)	C 0
13	0.4568	(306, 2)	C 0	0.4567	(328,10)	C 0	0.4556	(341, 6)	C 0	0.4541	(20, 4)	C 0	0.4537	(288,18)	C 0	0.4513	(20,20)	C 0

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr No.	Highest Ending Conc Day Hr Calm	Second Highest Ending Conc Day Hr Calm	Third Highest Ending Conc Day Hr Calm	Fourth Highest Ending Conc Day Hr Calm	Fifth Highest Ending Conc Day Hr Calm	Sixth Highest Ending Conc Day Hr Calm
14	0.3852 (20, 7) C 0	0.3852 (47, 1) C 0	0.3852 (201, 5) C 0	0.3852 (261, 9) C 0	0.3834 (90, 1) C 0	0.3834 (90, 6) C 0
15	0.4034 (300, 1) C 0	0.4034 (188, 3) C 0	0.4034 (239, 6) C 0	0.4034 (320, 4) C 0	0.4033 (55, 9) C 0	0.4032 (248,19) C 0
16	0.3953 (261, 5) C 0	0.3953 (359,22) C 0	0.3951 (341, 1) C 0	0.3947 (20,21) C 0	0.3946 (18, 5) C 0	0.3938 (121, 1) C 0
17	0.3400 (288,18) C 0	0.3378 (341, 6) C 0	0.3373 (103,23) C 0	0.3367 (239,24) C 0	0.3367 (288, 4) C 0	0.3350 (328,10) C 0
18	0.4080 (20, 7) C 0	0.4080 (47, 1) C 0	0.4080 (201, 5) C 0	0.4080 (261, 9) C 0	0.4076 (90, 1) C 0	0.4076 (90, 6) C 0
19	0.3860 (14,23) C 0	0.3860 (268,21) C 0	0.3848 (75,21) C 0	0.3848 (122,20) C 0	0.3848 (255,20) C 0	0.3848 (266,20) C 0
20	0.3723 (50, 1) C 0	0.3723 (340,21) C 0	0.3721 (85, 3) C 0	0.3721 (157, 5) C 0	0.3721 (283,20) C 0	0.3711 (63, 4) C 0
21	0.4394 (18, 6) C 0	0.4121 (300, 3) C 0	0.3899 (347, 3) C 0	0.3898 (109, 1) C 0	0.3898 (299,22) C 0	0.3896 (167,23) C 0
22	0.4867 (266,22) C 0	0.4861 (77, 5) C 0	0.4861 (141,22) C 0	0.4860 (62, 5) C 0	0.4860 (72,22) C 0	0.4846 (307,19) C 0
23	0.4061 (268,20) C 0	0.4060 (306,17) C 0	0.4060 (340,19) C 0	0.4049 (21, 1) C 0	0.4047 (72,23) C 0	0.4025 (199, 5) C 0
24	0.3651 (104, 4) C 0	0.3593 (269,24) C 0	0.3593 (278,19) C 0	0.3573 (103, 2) C 0	0.3487 (328,24) C 0	0.3486 (266,24) C 0
25	0.4616 (18,23) C 0	0.4615 (92, 1) C 0	0.4615 (108,11) C 0	0.4615 (136, 2) C 0	0.4615 (255,18) C 0	0.4615 (266,23) C 0
26	0.4195 (278, 4) C 0	0.4184 (182, 2) C 0	0.4179 (179, 7) C 0	0.4179 (227, 2) C 0	0.4178 (193, 3) C 0	0.4178 (297,19) C 0
27	0.3697 (125, 4) C 0	0.3671 (289, 6) C 0	0.3671 (208, 5) C 0	0.3671 (306,22) C 0	0.3669 (123, 3) C 0	0.3666 (15,23) C 0
28	0.5860*(265, 4) C 0	0.5791*(214, 1) C 0	0.5781 (340,22) C 0	0.5781 (102, 8) C 0	0.5781 (136, 5) C 0	0.5781 (267,22) C 0
29	0.5567 (350, 2) C 0	0.5567 (79,22) C 0	0.5567 (91,23) C 0	0.5565 (248,20) C 0	0.5554 (350, 1) C 0	0.5554 (221,21) C 0
30	0.4671 (125, 4) C 0	0.4657 (249, 4) C 0	0.4657 (266,11) C 0	0.4657 (269, 2) C 0	0.4655 (54, 3) C 0	0.4654 (20,23) C 0
31	0.5378 (18, 6) C 0	0.5209 (300, 3) C 0	0.5103 (281, 6) C 0	0.5100 (122,22) C 0	0.5095 (102,24) C 0	0.5082 (54, 2) C 0
32	0.5013 (15, 2) C 0	0.5013 (110,21) C 0	0.5013 (179,23) C 0	0.5012 (328,24) C 0	0.5012 (349,22) C 0	0.5010 (240,23) C 0
33	0.3673 (96, 1) C 0	0.3673 (210, 7) C 0	0.3669 (255,24) C 0	0.3669 (103, 6) C 0	0.3667 (344, 1) C 0	0.3662 (219, 5) C 0
34	0.4069 (205, 8) C 0	0.4069 (269, 3) C 0	0.4069 (356,17) C 0	0.4040 (248,20) C 0	0.4012 (350, 2) C 0	0.4009 (79,22) C 0
35	0.3882 (55,11) C 0	0.3882 (112, 5) C 0	0.3882 (305, 2) C 0	0.3882 (341, 2) C 0	0.3880 (194, 1) C 0	0.3879 (77, 4) C 0
36	0.3510 (18, 6) C 0	0.3412 (300, 3) C 0	0.3239 (137, 1) C 0	0.3239 (260,11) C 0	0.3216 (103,21) C 0	0.3216 (278, 5) C 0
37	0.3032 (18, 6) C 0	0.2889 (121,20) C 0	0.2889 (261, 4) C 0	0.2858 (239, 2) C 0	0.2858 (288, 3) C 0	0.2790 (260, 2) C 0
38	0.3033 (121,20) C 0	0.3033 (261, 4) C 0	0.3024 (239, 2) C 0	0.3024 (288, 3) C 0	0.2996 (260, 2) C 0	0.2991 (18, 6) C 0
39	0.3432 (125, 4) C 0	0.3415 (289, 6) C 0	0.3414 (208, 5) C 0	0.3414 (306,22) C 0	0.3412 (123, 3) C 0	0.3408 (249, 4) C 0
40	0.4180 (265, 4) C 0	0.4155 (205, 8) C 0	0.4155 (269, 3) C 0	0.4155 (356,17) C 0	0.4155 (248,20) C 0	0.4146 (350, 2) C 0
41	0.3524 (18,23) C 0	0.3522 (92, 1) C 0	0.3522 (108,11) C 0	0.3522 (136, 2) C 0	0.3522 (255,18) C 0	0.3522 (266,23) C 0
42	0.5338 (195,24) C 0	0.5338 (229, 3) C 0	0.5338 (262, 3) C 0	0.5338 (263, 3) C 0	0.5337 (75,22) C 0	0.5337 (95, 5) C 0
43	0.5663 (343,18) C 0	0.5646 (135,21) C 0	0.5646 (218, 9) C 0	0.5646 (269, 6) C 0	0.5633 (91,24) C 0	0.5633 (160, 7) C 0
44	0.4937 (17,22) C 0	0.4937 (219, 5) C 0	0.4934 (91, 5) C 0	0.4934 (103, 6) C 0	0.4934 (255,24) C 0	0.4923 (96, 1) C 0
45	0.4671 (188, 3) C 0	0.4671 (239, 6) C 0	0.4671 (300, 1) C 0	0.4671 (320, 4) C 0	0.4665 (248,19) C 0	0.4665 (284,23) C 0
46	0.4160 (60, 7) C 0	0.4149 (239,23) C 0	0.4140 (266,24) C 0	0.4140 (268,23) C 0	0.4132 (88,19) C 0	0.4125 (146, 2) C 0

CALM DURATION FREQUENCY

Hours of Consecutive Calm Winds	Frequency of Occurrence	(Julian day/hour ending) of Significant Occurrences
1	123	(1,23)(10, 9)(17,24)(19, 1)(19,24)(20, 8)(20,14)(20,24)(21, 3)(21, 7) (48,24)(50, 3)(50, 6)(51, 7)(54, 1)(54, 9)(54,11)(55, 7)(59,12)(62, 4) (62, 6)(64, 2)(71, 5)(74, 1)(76,12)(77, 3)(85, 1)(87, 4)(87, 7)(88, 3) (88, 5)(88, 8)(89, 5)(89,12)(89,17)(89,23)(90, 8)(91, 1)(91, 4)(92,10) (95,23)(96,24)(97, 2)(99, 3)(102, 5)(103, 1)(107,20)(122,21)(123, 2)(123, 4) (123, 9)(136, 4)(142,24)(143, 2)(143, 9)(145,24)(146, 4)(147,21)(148, 6)(148,15) (154, 4)(156, 3)(156,17)(156,19)(156,21)(156,23)(159, 2)(168,24)(173, 3)(175,13) (176,24)(177, 2)(178, 5)(182,23)(183,13)(185, 5)(186, 5)(188, 4)(192,24)(196, 5) (201, 3)(201, 6)(203, 1)(205, 1)(208, 1)(208, 4)(209, 2)(210, 4)(210, 6)(214, 2) (220, 4)(221, 7)(223, 3)(223, 7)(229, 8)(231, 3)(231,24)(232, 2)(232,24)(235,22) (235,24)(237, 4)(238, 4)(238, 6)(239, 5)(239, 7)(240, 3)(244, 7)(244, 9)(247,24) (248, 3)(251, 8)(253, 5)(254, 2)(254, 4)(260,10)(265,20)(266,19)(271, 4)(306,14) (341,10)(341,15)(345, 9)
2	25	(17, 2)(54, 7)(60, 3)(65,19)(71, 3)(77, 7)(85, 7)(95, 3)(109, 3)(122,24) (125, 3)(146,21)(147, 3)(153,24)(165, 8)(203, 4)(209, 5)(217, 3)(222, 2)(222, 6) (224, 2)(240, 8)(244, 3)(249, 3)(250, 3)
3	8	(15, 5)(70, 9)(103, 5)(147,13)(194, 6)(202, 4)(226, 1)(232, 8)
4	5	(90, 5)(156, 8)(160, 6)(168, 8)(226, 7)
5	1	(150, 4)

Program terminated normally

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

General Information

Run start date: 01/01/90 Julian: 1
end date: 12/31/90 Julian: 365

A Tier 1 approach was used for input data preparation.

The MODE flag has been set to C for calculating CO averages.

Ambient background concentrations are excluded from the averages below.

Site & Meteorological Constants

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 100. CM ATIM = 60.

Met. Sfc. Sta. Id & Yr = 24233 90
Upper Air Sta. Id & Yr = 94240 90

Urban mixing heights were processed.

In 1990, Julian day 1 is a Monday.

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
1.	Link_1	551840.62	5273806.00	551936.38	5273866.00	113.	58.	AG	0.0	12.0	
2.	Link_2	551936.38	5273872.50	551840.31	5273813.00	113.	238.	AG	0.0	12.0	
3.	Link_3	551936.38	5273866.00	552043.88	5273933.50	127.	58.	AG	0.0	12.0	
4.	Link_4	552044.06	5273941.50	551936.38	5273872.50	128.	237.	AG	0.0	12.0	
5.	Link_5	551933.31	5273867.00	551935.19	5273775.00	92.	179.	AG	0.0	10.0	
6.	Link_6	551939.00	5273775.00	551938.12	5273823.00	48.	359.	AG	0.0	10.0	
7.	Link_7	551937.12	5273869.00	551938.19	5274028.00	159.	0.	AG	0.0	10.0	
8.	Link_8	551934.12	5274028.50	551933.31	5273918.00	111.	180.	AG	0.0	10.0	
9.	Link_9	551938.00	5273822.50	551937.06	5273867.00	45.	359.	AG	0.0	10.0	
10.	Link_10	551933.19	5273918.00	551933.19	5273867.50	50.	180.	AG	0.0	10.0	
11.	Link_11	552530.38	5274329.00	552606.12	5274407.00	109.	44.	AG	0.0	10.0	
12.	Link_12	552605.94	5274407.00	552724.75	5274526.00	168.	45.	AG	0.0	10.0	
13.	Link_13	552605.69	5274413.00	552724.06	5274531.00	167.	45.	AG	0.0	10.0	
14.	Link_14	552605.50	5274412.50	552522.19	5274329.00	118.	225.	AG	0.0	10.0	
15.	Link_15	552611.81	5274328.00	552611.56	5274368.00	40.	360.	AG	0.0	10.0	

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
16.	Link_16	552605.50	5274410.00	552605.69	5274328.00	82.	180.	AG	0.0	10.0	
17.	Link_17	552611.12	5274416.00	552609.75	5274587.50	172.	360.	AG	0.0	10.0	
18.	Link_18	552604.81	5274457.50	552603.88	5274587.00	130.	360.	AG	0.0	10.0	
19.	Link_19	552604.81	5274458.00	552605.50	5274411.00	47.	179.	AG	0.0	10.0	
20.	Link_20	552611.12	5274368.00	552610.94	5274416.50	49.	360.	AG	0.0	10.0	
21.	Link_21	552802.50	5274609.00	552864.81	5274673.50	90.	44.	AG	0.0	12.0	
22.	Link_22	552864.62	5274674.00	552936.94	5274746.50	102.	45.	AG	0.0	12.0	
23.	Link_23	552934.00	5274748.50	552880.38	5274694.00	76.	225.	AG	0.0	12.0	
24.	Link_24	552880.44	5274694.00	552799.88	5274611.50	115.	224.	AG	0.0	12.0	
25.	Link_25	552884.25	5274622.50	552866.75	5274679.00	59.	343.	AG	0.0	12.0	
26.	Link_26	552863.69	5274675.50	552880.31	5274620.00	58.	163.	AG	0.0	12.0	
27.	Link_27	552881.31	5274693.00	552861.69	5274713.00	28.	316.	AG	0.0	12.0	
28.	Link_28	552861.69	5274713.00	552852.38	5274727.00	17.	326.	AG	0.0	12.0	
29.	Link_29	552852.38	5274727.00	552851.06	5274750.00	23.	357.	AG	0.0	12.0	
30.	Link_30	552848.00	5274749.50	552849.75	5274725.00	25.	176.	AG	0.0	12.0	
31.	Link_31	552849.75	5274725.00	552852.56	5274707.00	18.	171.	AG	0.0	12.0	
32.	Link_32	552852.56	5274707.00	552864.19	5274677.00	32.	159.	AG	0.0	12.0	
33.	Link_33	552859.00	5274690.50	552863.12	5274680.00	11.	159.	AG	0.0	10.0	1
34.	Link_34	552875.75	5274651.00	552868.31	5274674.00	24.	342.	AG	0.0	12.0	1
35.	Link_35	552847.19	5274657.50	552862.06	5274672.50	21.	45.	AG	0.0	12.0	1
36.	Link_36	552896.00	5274711.00	552881.81	5274697.00	20.	225.	AG	0.0	12.0	2
37.	Link_37	552855.06	5274662.50	552862.38	5274670.50	11.	42.	AG	0.0	6.0	1
38.	Link_38	552889.94	5274701.50	552883.75	5274695.50	9.	226.	AG	0.0	6.0	1

Receptor Data

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	R_001	551942.62	5273885.00	1.8
2.	R_002	551942.81	5273862.50	1.8
3.	R_003	551928.00	5273853.00	1.8
4.	R_004	551927.81	5273875.00	1.8
5.	R_005	552616.31	5274431.00	1.8
6.	R_006	552616.12	5274410.00	1.8
7.	R_007	552600.06	5274393.00	1.8
8.	R_008	552599.81	5274415.00	1.8
9.	R_009	552880.31	5274703.00	1.8
10.	R_010	552890.94	5274691.50	1.8
11.	R_011	552882.81	5274683.50	1.8

Receptor Data

RECEPTOR		COORDINATES (M) X	Y	Z
12.	R_012	552871.69	5274694.00	1.8
13.	R_013	552866.50	5274688.50	1.8
14.	R_014	552874.44	5274675.00	1.8
15.	R_015	552861.56	5274661.50	1.8
16.	R_016	552856.81	5274679.00	1.8

****
Please check the meteorological data listed in CAL3HR.ERR.
****

Model Results

Remarks : In search of the wind direction corresponding
to the maximum concentration, only the first
direction, of the directions with the same maximum
concentrations, is indicated as the maximum.

* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
(PPM)

	REC0001	REC0002	REC0003	REC0004	REC0005	REC0006	REC0007	REC0008	REC0009	REC0010
MAX+BKG	0.2319	0.2633	0.2711	0.2340	0.2147	0.2153	0.2189	0.2162	0.2500	0.2355
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.2319	0.2633	0.2711	0.2340	0.2147	0.2153	0.2189	0.2162	0.2500	0.2355
WIND DIR	220	255	45	72	210	237	29	58	205	234
JULIAN	208	279	60	18	341	261	281	300	182	278
HOUR	5	3	7	6	3	8	2	3	2	3

	REC0011	REC0012	REC0013	REC0014	REC0015	REC0016
MAX+BKG	0.2581	0.2460	0.2818	0.3063	0.3032	0.2510
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.2581	0.2460	0.2818	0.3063	0.3032	0.2510
WIND DIR	234	188	173	234	29	58
JULIAN	278	165	159	278	281	300
HOUR	3	23	3	3	2	3

THE HIGHEST CONCENTRATION OF 0.3063 PPM OCCURRED AT RECEPTOR REC0014.

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Output Section
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NOTES PERTAINING TO THE REPORT

1. THE HIGHEST AVERAGE IN EACH OF THE FIRST TWO COLUMNS OF EACH TABLE BELOW ARE SUFFIXED BY AN ASTERISK (*). FOR PM OUTPUT, THERE IS ONLY ONE COLUMN AND ASTERISK FOR THE ANNUAL AVERAGE/PERIOD OF CONCERN TABLE.

2. THE NUMBERS IN PARENTHESES ARE THE JULIAN DAY AND ENDING HOUR FOR THE PRECEDING AVERAGE.

3. THE NUMBER OF CALM HOURS USED IN PRODUCING EACH AVERAGE ARE PREFIXED BY A C.

PRIMARY AVERAGES.

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor Number	Highest Conc	Highest Ending Day Hr Calm	Second highest Conc	Second highest Ending Day Hr Calm
1	0.16	(307, 3) C 0	0.16	(341, 8) C 0
2	0.20	(267, 2) C 1	0.19	(136, 6) C 1
3	0.19	(146, 7) C 2	0.18	(267, 2) C 1
4	0.17	(341, 8) C 0	0.16	(307, 3) C 0
5	0.15	(168, 6) C 2	0.15	(109, 6) C 2
6	0.18	(136, 6) C 1	0.17	(267, 1) C 1
7	0.14	(263, 4) C 0	0.14	(136, 6) C 1
8	0.14	(341, 8) C 0	0.14	(147,12) C 2
9	0.19	(168, 6) C 2	0.18	(109, 6) C 2
10	0.19	(136, 6) C 1	0.18	(267, 1) C 1
11	0.21	(136, 6) C 1	0.19	(267, 1) C 1
12	0.20	(168, 6) C 2	0.19	(109, 6) C 2
13	0.22	(268, 8) C 0	0.22	(109, 6) C 2
14	0.26*	(136, 6) C 1	0.25*	(267, 1) C 1
15	0.20	(263, 4) C 0	0.19	(240, 5) C 1
16	0.18	(360, 7) C 0	0.18	(20, 5) C 1

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr No.	Highest Ending Conc Day Hr Calm	Second Highest Ending Conc Day Hr Calm	Third Highest Ending Conc Day Hr Calm	Fourth Highest Ending Conc Day Hr Calm	Fifth Highest Ending Conc Day Hr Calm	Sixth Highest Ending Conc Day Hr Calm
1	0.2319 (208, 5) C 0	0.2319 (289, 6) C 0	0.2319 (306,22) C 0	0.2318 (15,23) C 0	0.2318 (306,20) C 0	0.2318 (347, 2) C 0

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr No.	Highest Conc	Ending Day Hr	Calm	Second Highest Conc	Ending Day Hr	Calm	Third Highest Conc	Ending Day Hr	Calm	Fourth Highest Conc	Ending Day Hr	Calm	Fifth Highest Conc	Ending Day Hr	Calm	Sixth Highest Conc	Ending Day Hr	Calm
2	0.2633	(279, 3)	C 0	0.2632	(92, 1)	C 0	0.2632	(108,11)	C 0	0.2632	(136, 2)	C 0	0.2632	(255,18)	C 0	0.2632	(266,23)	C 0
3	0.2711	(60, 7)	C 0	0.2690	(239,23)	C 0	0.2667	(146, 2)	C 0	0.2650	(103,24)	C 0	0.2650	(271, 6)	C 0	0.2648	(147, 5)	C 0
4	0.2340	(18, 6)	C 0	0.2266	(121,20)	C 0	0.2266	(261, 4)	C 0	0.2250	(239, 2)	C 0	0.2250	(288, 3)	C 0	0.2233	(15,23)	C 0
5	0.2147	(341, 3)	C 0	0.2146	(198, 4)	C 0	0.2146	(165,24)	C 0	0.2146	(13,13)	C 0	0.2146	(296,21)	C 0	0.2144	(268,24)	C 0
6	0.2153	(261, 8)	C 0	0.2152	(136, 6)	C 0	0.2152	(360, 9)	C 0	0.2150	(136, 3)	C 0	0.2150	(267,23)	C 0	0.2150	(267,24)	C 0
7	0.2189	(281, 2)	C 0	0.2179	(172,23)	C 0	0.2168	(199, 6)	C 0	0.2143	(224, 3)	C 0	0.2115	(147, 5)	C 0	0.2082	(146, 2)	C 0
8	0.2162	(300, 3)	C 0	0.2156	(137, 1)	C 0	0.2156	(260,11)	C 0	0.2145	(86, 3)	C 0	0.2080	(262, 2)	C 0	0.1968	(146, 3)	C 0
9	0.2500	(182, 2)	C 0	0.2500	(278, 4)	C 0	0.2495	(179, 7)	C 0	0.2495	(227, 2)	C 0	0.2488	(268,24)	C 0	0.2488	(296,19)	C 0
10	0.2355	(278, 3)	C 0	0.2344	(91,24)	C 0	0.2344	(160, 7)	C 0	0.2344	(233, 1)	C 0	0.2344	(136, 3)	C 0	0.2344	(267,23)	C 0
11	0.2581	(278, 3)	C 0	0.2567	(91,24)	C 0	0.2567	(160, 7)	C 0	0.2567	(233, 1)	C 0	0.2567	(343,18)	C 0	0.2567	(269, 6)	C 0
12	0.2460	(165,23)	C 0	0.2460	(168, 4)	C 0	0.2460	(194, 3)	C 0	0.2460	(283,23)	C 0	0.2459	(296,20)	C 0	0.2459	(194, 1)	C 0
13	0.2818	(159, 3)	C 0	0.2817	(350, 6)	C 0	0.2816	(77, 2)	C 0	0.2816	(299,23)	C 0	0.2810	(205, 7)	C 0	0.2810	(266, 8)	C 0
14	0.3063*	(278, 3)	C 0	0.3054*	(91,24)	C 0	0.3054	(160, 7)	C 0	0.3054	(233, 1)	C 0	0.3052	(136, 3)	C 0	0.3052	(267,23)	C 0
15	0.3032	(281, 2)	C 0	0.3024	(172,23)	C 0	0.3012	(199, 6)	C 0	0.2934	(224, 3)	C 0	0.2898	(147, 5)	C 0	0.2856	(146, 2)	C 0
16	0.2510	(300, 3)	C 0	0.2486	(19,23)	C 0	0.2485	(55, 8)	C 0	0.2485	(120, 2)	C 0	0.2483	(248, 4)	C 0	0.2483	(309, 5)	C 0

CALM DURATION FREQUENCY

Hours of Consecutive Calm Winds	Frequency of Occurrence	(Julian day/hour ending) of Significant Occurrences
1	123	(1,23)(10, 9)(17,24)(19, 1)(19,24)(20, 8)(20,14)(20,24)(21, 3)(21, 7) (48,24)(50, 3)(50, 6)(51, 7)(54, 1)(54, 9)(54,11)(55, 7)(59,12)(62, 4) (62, 6)(64, 2)(71, 5)(74, 1)(76,12)(77, 3)(85, 1)(87, 4)(87, 7)(88, 3) (88, 5)(88, 8)(89, 5)(89,12)(89,17)(89,23)(90, 8)(91, 1)(91, 4)(92,10) (95,23)(96,24)(97, 2)(99, 3)(102, 5)(103, 1)(107,20)(122,21)(123, 2)(123, 4) (123, 9)(136, 4)(142,24)(143, 2)(143, 9)(145,24)(146, 4)(147,21)(148, 6)(148,15) (154, 4)(156, 3)(156,17)(156,19)(156,21)(156,23)(159, 2)(168,24)(173, 3)(175,13) (176,24)(177, 2)(178, 5)(182,23)(183,13)(185, 5)(186, 5)(188, 4)(192,24)(196, 5) (201, 3)(201, 6)(203, 1)(205, 1)(208, 1)(208, 4)(209, 2)(210, 4)(210, 6)(214, 2) (220, 4)(221, 7)(223, 3)(223, 7)(229, 8)(231, 3)(231,24)(232, 2)(232,24)(235,22) (235,24)(237, 4)(238, 4)(238, 6)(239, 5)(239, 7)(240, 3)(244, 7)(244, 9)(247,24) (248, 3)(251, 8)(253, 5)(254, 2)(254, 4)(260,10)(265,20)(266,19)(271, 4)(306,14) (341,10)(341,15)(345, 9)
2	25	(17, 2)(54, 7)(60, 3)(65,19)(71, 3)(77, 7)(85, 7)(95, 3)(109, 3)(122,24) (125, 3)(146,21)(147, 3)(153,24)(165, 8)(203, 4)(209, 5)(217, 3)(222, 2)(222, 6) (224, 2)(240, 8)(244, 3)(249, 3)(250, 3)
3	8	(15, 5)(70, 9)(103, 5)(147,13)(194, 6)(202, 4)(226, 1)(232, 8)
4	5	(90, 5)(156, 8)(160, 6)(168, 8)(226, 7)
5	1	(150, 4)

Program terminated normally

Future (2019) Carbon Monoxide Emission Rates from MOVES

movesRunId	yearId	monthId	hourId	linkId	pollutant	GramsPerVehMile	GramsPerVehHour
1	2019	1	18	1	CO	3.4	N/A
1	2019	1	18	2	CO	N/A	14.42

Future (2019) without Project CAL3QHCR Results

CAL3QHCR (Dated: 13196)

DATE : 08/29/16 PAGE: 1
TIME : 16:56:48

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

==========
General Information
==========

Run start date: 01/01/90 Julian: 1
end date: 12/31/90 Julian: 365

A Tier 1 approach was used for input data preparation.

The MODE flag has been set to C for calculating CO averages.

Ambient background concentrations are excluded from the averages below.

Site & Meteorological Constants

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 100. CM ATIM = 60.

Met. Sfc. Sta. Id & Yr = 24233 90
Upper Air Sta. Id & Yr = 94240 90

Urban mixing heights were processed.

In 1990, Julian day 1 is a Monday.

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
1.	Link_1	550003.25	5272654.50	549980.88	5272641.50	26.	240.	AG	0.0	6.1	2
2.	Link_2	549950.00	5272660.00	549962.00	5272640.50	23.	148.	AG	0.0	12.0	3
3.	Link_3	549920.06	5272710.50	549945.19	5272669.50	48.	148.	AG	0.0	18.2	
4.	Link_4	550052.81	5272684.50	549967.19	5272633.50	100.	239.	AG	0.0	12.0	
5.	Link_5	549967.06	5272633.50	550018.56	5272556.50	93.	146.	AG	0.0	18.0	
6.	Link_6	549966.81	5272633.50	549885.31	5272583.00	96.	238.	AG	0.0	12.0	
7.	Link_7	549756.62	5272608.50	549838.25	5272659.50	96.	58.	AG	0.0	14.0	
8.	Link_8	549879.62	5272685.50	549919.56	5272710.50	47.	58.	AG	0.0	14.0	
9.	Link_9	549784.94	5272734.50	549833.50	5272657.00	91.	148.	AG	0.0	12.0	
10.	Link_10	549842.50	5272663.00	549793.94	5272740.00	91.	328.	AG	0.0	12.0	
11.	Link_11	549833.88	5272656.00	549881.06	5272580.00	89.	148.	AG	0.0	12.0	
12.	Link_12	549889.69	5272586.00	549842.69	5272662.00	89.	328.	AG	0.0	12.0	
13.	Link_13	549813.31	5272644.00	549827.06	5272652.50	16.	58.	AG	0.0	8.0	2
14.	Link_14	549820.69	5272677.00	549828.50	5272664.50	15.	148.	AG	0.0	6.0	2
15.	Link_15	549855.88	5272640.50	549848.62	5272652.00	14.	328.	AG	0.0	6.0	2

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
16.	Link_16	549871.75	5272790.00	549919.75	5272712.00	92.	148.	AG	0.0	18.0	
17.	Link_17	549920.31	5272710.50	550005.12	5272763.50	100.	58.	AG	0.0	12.0	
18.	Link_18	549887.50	5272691.00	549909.56	5272704.50	26.	59.	AG	0.0	6.0	2
19.	Link_19	549904.56	5272735.00	549914.12	5272720.50	17.	147.	AG	0.0	12.0	3
20.	Link_20	549907.19	5272743.50	549920.06	5272723.50	24.	147.	AG	0.0	3.0	1
21.	Link_21	549838.50	5272659.50	549879.44	5272685.50	48.	58.	AG	0.0	14.0	
22.	Link_22	549956.81	5272641.00	549958.25	5272638.00	3.	154.	AG	0.0	3.0	1
23.	Link_23	550090.38	5272816.00	550042.25	5272895.00	93.	329.	AG	0.0	21.0	
24.	Link_24	550005.25	5272763.50	550090.62	5272816.00	100.	58.	AG	0.0	12.0	
25.	Link_25	550140.50	5272738.50	550053.44	5272685.00	102.	238.	AG	0.0	12.0	
26.	Link_26	550224.12	5272791.00	550141.00	5272739.00	98.	238.	AG	0.0	12.0	
27.	Link_27	550141.06	5272739.50	550113.94	5272779.50	48.	326.	AG	0.0	21.0	
28.	Link_28	550113.94	5272779.00	550090.19	5272815.50	44.	327.	AG	0.0	21.0	
29.	Link_29	550190.12	5272660.50	550140.88	5272738.50	92.	328.	AG	0.0	21.0	
30.	Link_30	550107.00	5272804.00	550102.88	5272810.00	7.	325.	AG	0.0	3.0	1
31.	Link_31	550119.62	5272770.00	550096.69	5272805.00	42.	327.	AG	0.0	12.0	3
32.	Link_32	550051.00	5272792.00	550081.19	5272810.00	35.	59.	AG	0.0	6.0	2
33.	Link_33	550090.44	5272815.50	550136.88	5272844.00	54.	58.	AG	0.0	12.0	
34.	Link_34	550174.31	5272759.50	550151.12	5272745.00	27.	238.	AG	0.0	12.0	2
35.	Link_35	550161.06	5272706.50	550146.81	5272729.50	27.	328.	AG	0.0	27.0	4
36.	Link_36	550136.88	5272844.00	550176.12	5272868.50	46.	58.	AG	0.0	12.0	
37.	Link_37	550175.62	5272868.50	550218.69	5272896.00	51.	57.	AG	0.0	12.0	
38.	Link_38	550218.88	5272896.50	550257.69	5272921.00	46.	58.	AG	0.0	12.0	
39.	Link_39	550125.56	5272948.50	550175.25	5272868.00	95.	148.	AG	0.0	12.0	
40.	Link_40	550175.56	5272868.00	550224.19	5272791.00	91.	148.	AG	0.0	12.0	
41.	Link_41	550134.56	5272843.50	550164.25	5272861.00	34.	59.	AG	0.0	6.0	2
42.	Link_42	550155.12	5272901.00	550170.88	5272876.00	30.	148.	AG	0.0	9.0	3
43.	Link_44	550307.56	5272843.00	550257.88	5272920.50	92.	327.	AG	0.0	18.0	
44.	Link_45	550257.50	5272921.00	550208.25	5272999.00	92.	328.	AG	0.0	18.0	
45.	Link_46	550257.94	5272921.50	550336.19	5272974.00	94.	56.	AG	0.0	18.0	
46.	Link_47	550257.94	5272921.00	550277.19	5272917.00	20.	102.	AG	0.0	12.0	
47.	Link_48	550277.19	5272917.00	550292.50	5272912.50	16.	106.	AG	0.0	12.0	
48.	Link_49	550292.50	5272912.50	550304.38	5272903.50	15.	127.	AG	0.0	12.0	
49.	Link_50	550304.38	5272903.50	550323.25	5272866.50	42.	153.	AG	0.0	12.0	
50.	Link_51	550237.44	5272908.00	550248.88	5272915.50	14.	57.	AG	0.0	6.0	2
51.	Link_43	550270.31	5272895.00	550262.88	5272907.00	14.	328.	AG	0.0	6.0	2
52.	Link_52	550281.31	5272888.00	550272.31	5272910.50	24.	338.	AG	0.0	6.0	2
53.	Link_53	550665.94	5273179.00	550714.62	5273101.50	92.	148.	AG	0.0	14.0	
54.	Link_54	550687.88	5273144.00	550708.69	5273111.00	39.	148.	AG	0.0	8.0	2
55.	Link_55	550696.06	5273142.00	550712.75	5273114.00	33.	149.	AG	0.0	3.0	1
56.	Link_56	550722.94	5273106.50	550673.12	5273184.50	93.	327.	AG	0.0	12.0	

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
57.	Link_57	550801.12	5273159.50	550716.56	5273107.50	99.	238.	AG	0.0	12.0	
58.	Link_58	550716.44	5273107.00	550635.00	5273055.50	96.	238.	AG	0.0	12.0	
59.	Link_59	550639.44	5273048.00	550722.00	5273100.00	98.	58.	AG	0.0	12.0	
60.	Link_60	550721.75	5273099.50	550806.75	5273151.50	100.	59.	AG	0.0	12.0	
61.	Link_61	550772.75	5273026.00	550722.81	5273106.50	95.	328.	AG	0.0	12.0	
62.	Link_62	550714.75	5273101.50	550764.44	5273022.00	94.	148.	AG	0.0	12.0	
63.	Link_63	550680.31	5273074.00	550709.38	5273092.00	34.	58.	AG	0.0	6.0	2
64.	Link_64	550665.94	5273069.00	550708.50	5273096.50	51.	57.	AG	0.0	3.0	1
65.	Link_65	550746.81	5273068.50	550730.00	5273095.00	31.	328.	AG	0.0	6.0	2
66.	Link_66	550743.31	5273066.50	550726.75	5273092.50	31.	328.	AG	0.0	3.0	1
67.	Link_67	550768.06	5273138.00	550727.19	5273113.50	48.	239.	AG	0.0	6.0	2
68.	Link_68	550732.75	5273112.00	550728.50	5273109.50	5.	240.	AG	0.0	3.0	1
69.	Link_69	551041.94	5273402.50	551042.56	5273307.50	95.	180.	AG	0.0	18.0	
70.	Link_70	551051.00	5273313.00	551050.50	5273403.50	91.	360.	AG	0.0	18.0	
71.	Link_71	551042.56	5273307.50	551043.81	5273197.00	111.	179.	AG	0.0	18.0	
72.	Link_72	551052.88	5273198.00	551050.88	5273312.50	115.	359.	AG	0.0	18.0	
73.	Link_73	551046.75	5273315.50	550966.25	5273265.00	95.	238.	AG	0.0	12.0	
74.	Link_74	550970.12	5273258.00	551046.75	5273305.50	90.	58.	AG	0.0	12.0	
75.	Link_75	551143.44	5273374.50	551046.75	5273315.50	113.	239.	AG	0.0	12.0	
76.	Link_76	551046.62	5273305.50	551144.38	5273365.50	115.	58.	AG	0.0	12.0	
77.	Link_77	551009.12	5273283.00	551032.75	5273297.50	28.	58.	AG	0.0	6.0	2
78.	Link_78	550976.75	5273266.50	551034.06	5273301.00	67.	59.	AG	0.0	3.0	1
79.	Link_79	551051.94	5273264.50	551051.38	5273298.00	34.	359.	AG	0.0	6.0	2
80.	Link_80	551042.00	5273344.50	551042.44	5273320.50	24.	179.	AG	0.0	6.0	2
81.	Link_81	551080.12	5273335.50	551060.69	5273323.50	23.	238.	AG	0.0	6.0	2
82.	Link_82	551070.25	5273324.50	551060.50	5273318.00	12.	236.	AG	0.0	3.0	1
83.	Link_83	551265.88	5273444.00	551343.81	5273491.50	91.	59.	AG	0.0	12.0	
84.	Link_84	551342.50	5273499.00	551262.50	5273450.00	94.	239.	AG	0.0	12.0	
85.	Link_85	551343.25	5273509.50	551245.00	5273509.00	98.	270.	AG	0.0	9.0	
86.	Link_86	551348.88	5273355.00	551347.75	5273501.00	146.	360.	AG	0.0	12.0	
87.	Link_87	551341.00	5273496.00	551341.88	5273355.00	141.	180.	AG	0.0	12.0	
88.	Link_88	551347.56	5273500.50	551343.38	5273638.00	138.	358.	AG	0.0	12.0	
89.	Link_89	551336.19	5273637.50	551340.75	5273496.00	142.	178.	AG	0.0	12.0	
90.	Link_90	551437.69	5273559.50	551342.75	5273499.50	112.	238.	AG	0.0	12.0	
91.	Link_91	551343.81	5273491.50	551438.56	5273551.50	112.	58.	AG	0.0	12.0	
92.	Link_92	551387.06	5273528.00	551358.50	5273509.50	34.	237.	AG	0.0	6.0	2
93.	Link_93	551337.06	5273544.50	551337.75	5273519.50	25.	178.	AG	0.0	6.0	2
94.	Link_94	551341.44	5273525.00	551341.56	5273519.50	6.	179.	AG	0.0	3.0	1
95.	Link_95	551344.69	5273471.00	551344.69	5273482.00	11.	360.	AG	0.0	3.0	1
96.	Link_96	551348.31	5273445.00	551347.88	5273484.50	40.	359.	AG	0.0	3.0	1
97.	Link_97	551351.38	5273479.00	551351.19	5273486.00	7.	358.	AG	0.0	3.0	1

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
98.	Link_98	551294.25	5273461.50	551330.69	5273483.50	43.	59.	AG	0.0	6.0	2
99.	Link_99	552409.75	5274096.00	552410.31	5274215.50	120.	0.	AG	0.0	12.0	
100.	Link_100	552405.38	5274210.50	552403.69	5274095.00	116.	181.	AG	0.0	12.0	
101.	Link_101	552405.12	5274327.50	552405.12	5274210.50	117.	180.	AG	0.0	12.0	
102.	Link_102	552410.25	5274215.50	552411.81	5274328.50	113.	1.	AG	0.0	12.0	
103.	Link_103	552294.75	5274087.50	552408.00	5274206.00	164.	44.	AG	0.0	12.0	
104.	Link_104	552408.69	5274221.50	552286.75	5274093.50	177.	224.	AG	0.0	12.0	
105.	Link_105	552407.75	5274206.50	552526.62	5274327.00	169.	45.	AG	0.0	12.0	
106.	Link_106	552514.12	5274327.50	552408.69	5274221.50	150.	225.	AG	0.0	12.0	
107.	Link_107	552410.31	5274163.50	552410.69	5274201.00	38.	1.	AG	0.0	6.0	2
108.	Link_108	552369.81	5274165.50	552398.69	5274197.00	43.	43.	AG	0.0	6.0	2
109.	Link_109	552377.12	5274180.50	552398.75	5274201.50	30.	46.	AG	0.0	3.0	1
110.	Link_110	552439.75	5274253.00	552418.69	5274232.00	30.	225.	AG	0.0	6.0	2
111.	Link_111	552431.44	5274237.50	552417.50	5274225.50	18.	229.	AG	0.0	3.0	1
112.	Link_112	552404.81	5274267.00	552404.81	5274226.50	40.	180.	AG	0.0	6.0	2
113.	Link_113	550227.25	5272897.50	550250.62	5272912.50	28.	57.	AG	0.0	3.0	2
114.	Link_114	549944.88	5272669.50	549967.44	5272633.50	42.	148.	AG	0.0	18.0	
115.	Link_115	549810.94	5272701.50	549832.25	5272668.00	40.	148.	AG	0.0	3.0	1
116.	Link_116	552402.44	5274239.00	552402.44	5274224.00	15.	180.	AG	0.0	6.0	1

Receptor Data

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	R_001	549952.62	5272634.00	1.8
2.	R_002	549974.19	5272646.50	1.8
3.	R_003	549984.81	5272630.50	1.8
4.	R_004	549964.62	5272619.00	1.8
5.	R_005	549822.94	5272659.50	1.8
6.	R_006	549843.88	5272673.00	1.8
7.	R_007	549854.06	5272656.00	1.8
8.	R_008	549832.12	5272643.00	1.8
9.	R_009	549905.19	5272714.50	1.8
10.	R_010	549925.56	5272726.00	1.8
11.	R_011	549914.50	5272696.00	1.8
12.	R_012	549935.56	5272709.00	1.8
13.	R_013	550072.81	5272817.50	1.8
14.	R_014	550097.56	5272831.50	1.8
15.	R_015	550108.00	5272814.00	1.8

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Receptor Data

	RECEPTOR		COORDINATES (M) X	Y	Z
16.	R_016	*	550083.81	5272800.00	1.8
17.	R_017	*	550124.25	5272740.00	1.8
18.	R_018	*	550147.38	5272755.00	1.8
19.	R_019	*	550159.06	5272737.00	1.8
20.	R_020	*	550133.44	5272722.50	1.8
21.	R_021	*	550163.44	5272871.00	1.8
22.	R_022	*	550177.94	5272880.50	1.8
23.	R_023	*	550187.44	5272865.00	1.8
24.	R_024	*	550172.56	5272856.00	1.8
25.	R_025	*	550254.25	5272909.00	1.8
26.	R_026	*	550244.19	5272922.00	1.8
27.	R_027	*	550260.56	5272937.00	1.8
28.	R_028	*	550274.06	5272924.50	1.8
29.	R_029	*	550736.38	5273099.50	1.8
30.	R_030	*	550723.00	5273120.50	1.8
31.	R_031	*	550703.38	5273107.00	1.8
32.	R_032	*	550715.25	5273087.50	1.8
33.	R_033	*	551032.69	5273288.50	1.8
34.	R_034	*	551060.94	5273306.00	1.8
35.	R_035	*	551060.12	5273331.00	1.8
36.	R_036	*	551032.81	5273314.50	1.8
37.	R_037	*	551328.56	5273501.00	1.8
38.	R_038	*	551330.00	5273517.50	1.8
39.	R_039	*	551356.25	5273518.50	1.8
40.	R_040	*	551358.31	5273490.50	1.8
41.	R_041	*	551402.00	5273519.00	1.8
42.	R_042	*	552398.56	5274187.00	1.8
43.	R_043	*	552415.50	5274206.50	1.8
44.	R_044	*	552400.19	5274221.00	1.8
45.	R_045	*	552419.50	5274239.50	1.8
46.	R_046	*	551334.94	5273479.00	1.8

****
Please check the meteorological data listed in CAL3HR.ERR.
****

Model Results

Remarks : In search of the wind direction corresponding
to the maximum concentration, only the first
direction, of the directions with the same maximum
concentrations, is indicated as the maximum.

* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
* (PPM)

	REC0001	REC0002	REC0003	REC0004	REC0005	REC0006	REC0007	REC0008	REC0009	REC0010
MAX+BKG	0.1274	0.1234	0.1241	0.1433	0.1284	0.1191	0.1060	0.1174	0.2139	0.2099
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1274	0.1234	0.1241	0.1433	0.1284	0.1191	0.1060	0.1174	0.2139	0.2099
WIND DIR	342	313	314	338	58	58	51	58	58	287
JULIAN	103	72	199	221	300	300	262	300	300	360
HOUR	2	23	5	5	3	3	2	3	3	3

	REC0011	REC0012	REC0013	REC0014	REC0015	REC0016	REC0017	REC0018	REC0019	REC0020
MAX+BKG	0.2000	0.2039	0.1452	0.1268	0.1342	0.1452	0.1175	0.1176	0.1268	0.1274
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.2000	0.2039	0.1452	0.1268	0.1342	0.1452	0.1175	0.1176	0.1268	0.1274
WIND DIR	348	309	131	165	245	58	58	167	313	45
JULIAN	269	21	328	20	265	300	300	358	72	60
HOUR	24	1	10	7	4	3	3	7	23	7

	REC0021	REC0022	REC0023	REC0024	REC0025	REC0026	REC0027	REC0028	REC0029	REC0030
MAX+BKG	0.1767	0.1427	0.1259	0.1408	0.2482	0.2711	0.2125	0.3328	0.2624	0.2470
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1767	0.1427	0.1259	0.1408	0.2482	0.2711	0.2125	0.3328	0.2624	0.2470
WIND DIR	72	72	245	58	266	115	161	245	308	162
JULIAN	18	18	265	300	130	18	71	265	182	96
HOUR	6	6	4	3	3	5	6	4	1	2

	REC0031	REC0032	REC0033	REC0034	REC0035	REC0036	REC0037	REC0038	REC0039	REC0040
MAX+BKG	0.2752	0.2723	0.1246	0.1351	0.1323	0.1191	0.2033	0.1811	0.2288	0.2580
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.2752	0.2723	0.1246	0.1351	0.1323	0.1191	0.2033	0.1811	0.2288	0.2580
WIND DIR	72	342	48	245	234	72	72	80	199	250
JULIAN	18	103	146	265	278	18	18	121	300	160
HOUR	6	2	3	4	3	6	6	20	1	2

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* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
* (PPM)

	REC0041	REC0042	REC0043	REC0044	REC0045	REC0046
MAX+BKG	0.2265	0.3102	0.3216	0.2849	0.2953	0.2994
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.2265	0.3102	0.3216	0.2849	0.2953	0.2994
WIND DIR	257	17	234	58	205	45
JULIAN	88	255	343	300	182	60
HOUR	19	24	18	3	2	7

THE HIGHEST CONCENTRATION OF 0.3328 PPM OCCURRED AT RECEPTOR REC0028.

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Output Section
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NOTES PERTAINING TO THE REPORT

1. THE HIGHEST AVERAGE IN EACH OF THE FIRST TWO COLUMNS OF EACH TABLE BELOW ARE SUFFIXED BY AN ASTERISK (*). FOR PM OUTPUT, THERE IS ONLY ONE COLUMN AND ASTERISK FOR THE ANNUAL AVERAGE/PERIOD OF CONCERN TABLE.

2. THE NUMBERS IN PARENTHESES ARE THE JULIAN DAY AND ENDING HOUR FOR THE PRECEDING AVERAGE.

3. THE NUMBER OF CALM HOURS USED IN PRODUCING EACH AVERAGE ARE PREFIXED BY A C.

PRIMARY AVERAGES.

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor Number	Highest Conc	Highest Ending Day Hr	Highest Calm	Second highest Conc	Second highest Ending Day Hr	Second highest Calm
1	0.09	(221, 8)	C 1	0.08	(104, 6)	C 0
2	0.09	(267, 3)	C 0	0.08	(269, 2)	C 0
3	0.08	(267, 3)	C 0	0.07	(269, 2)	C 0
4	0.10	(221, 7)	C 1	0.09	(103, 3)	C 2
5	0.06	(147,12)	C 2	0.06	(240, 6)	C 1
6	0.05	(147,12)	C 2	0.05	(300, 3)	C 0
7	0.05	(146, 7)	C 2	0.05	(147, 9)	C 2
8	0.06	(240, 6)	C 1	0.05	(260,11)	C 1
9	0.15	(281, 6)	C 0	0.15	(239, 7)	C 2
10	0.18	(267, 3)	C 0	0.17	(136, 6)	C 1
11	0.14	(221, 8)	C 1	0.13	(104, 6)	C 0
12	0.17	(267, 3)	C 0	0.14	(269, 1)	C 0
13	0.10	(20, 5)	C 1	0.09	(341, 6)	C 0
14	0.10	(268, 4)	C 0	0.10	(136, 8)	C 1
15	0.11	(267, 1)	C 1	0.11	(136, 6)	C 1
16	0.09	(240, 6)	C 1	0.09	(18, 7)	C 1
17	0.08	(104, 5)	C 0	0.08	(221, 8)	C 1
18	0.09	(268, 8)	C 0	0.09	(267, 3)	C 0
19	0.10	(267, 2)	C 1	0.10	(269, 2)	C 0
20	0.09	(240, 5)	C 1	0.09	(104, 6)	C 0
21	0.10	(239, 9)	C 2	0.09	(147,12)	C 2
22	0.11	(136, 7)	C 1	0.11	(269, 3)	C 0
23	0.11	(267, 2)	C 1	0.10	(136, 6)	C 1
24	0.08	(146, 7)	C 2	0.08	(240, 6)	C 1

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor Number	Highest Conc	Highest Ending Day Hr Calm	Second highest Conc	Second highest Ending Day Hr Calm
25	0.20	(267, 4) C 0	0.18	(177, 3) C 2
26	0.22	(341, 7) C 0	0.20	(360, 1) C 0
27	0.16	(109, 6) C 2	0.16	(320, 5) C 0
28	0.26	(136, 8) C 1	0.25	(268, 2) C 0
29	0.23	(267, 2) C 1	0.21	(269, 3) C 0
30	0.19	(109, 6) C 2	0.19	(307, 3) C 0
31	0.21	(239, 7) C 2	0.20	(281, 6) C 0
32	0.19	(221, 8) C 1	0.19	(104, 6) C 0
33	0.08	(146, 7) C 2	0.08	(267, 3) C 0
34	0.10	(136, 6) C 1	0.10	(267, 1) C 1
35	0.10	(136, 8) C 1	0.10	(268, 5) C 0
36	0.08	(341, 8) C 0	0.08	(147,12) C 2
37	0.15	(341, 8) C 0	0.15	(360, 1) C 0
38	0.13	(360, 1) C 0	0.13	(21,10) C 2
39	0.18	(168, 6) C 2	0.17	(341, 7) C 0
40	0.21	(267, 1) C 1	0.21	(136, 6) C 1
41	0.18	(267, 3) C 0	0.17	(136, 6) C 1
42	0.22	(136, 6) C 1	0.21	(263, 4) C 0
43	0.26*	(269, 6) C 0	0.25*	(136, 7) C 1
44	0.21	(320, 6) C 0	0.21	(268, 8) C 0
45	0.23	(341, 8) C 0	0.22	(168, 6) C 2
46	0.21	(146, 7) C 2	0.20	(267, 2) C 1

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr No.	Highest Conc	Highest Ending Day Hr Calm	Second Highest Conc	Second Highest Ending Day Hr Calm	Third Highest Conc	Third Highest Ending Day Hr Calm	Fourth Highest Conc	Fourth Highest Ending Day Hr Calm	Fifth Highest Conc	Fifth Highest Ending Day Hr Calm	Sixth Highest Conc	Sixth Highest Ending Day Hr Calm
1	0.1274	(103, 2) C 0	0.1244	(221, 5) C 0	0.1241	(104, 4) C 0	0.1228	(269,24) C 0	0.1228	(278,19) C 0	0.1226	(221, 1) C 0
2	0.1234	(72,23) C 0	0.1233	(306,17) C 0	0.1233	(340,19) C 0	0.1232	(199, 5) C 0	0.1232	(259,24) C 0	0.1224	(268,20) C 0
3	0.1241	(199, 5) C 0	0.1241	(259,24) C 0	0.1240	(72,23) C 0	0.1236	(306,17) C 0	0.1236	(340,19) C 0	0.1228	(14,23) C 0
4	0.1433	(221, 5) C 0	0.1430	(221, 1) C 0	0.1409	(87, 8) C 0	0.1409	(91,19) C 0	0.1409	(130, 2) C 0	0.1409	(249,23) C 0
5	0.1284	(300, 3) C 0	0.1188	(137, 1) C 0	0.1188	(260,11) C 0	0.1157	(86, 3) C 0	0.1070	(18, 6) C 0	0.1058	(262, 2) C 0
6	0.1191	(300, 3) C 0	0.1065	(18, 6) C 0	0.1063	(137, 1) C 0	0.1063	(260,11) C 0	0.1021	(86, 3) C 0	0.0960	(49,24) C 0
7	0.1060	(262, 2) C 0	0.1053	(86, 3) C 0	0.1046	(137, 1) C 0	0.1046	(260,11) C 0	0.1039	(146, 3) C 0	0.1027	(300, 3) C 0
8	0.1174	(300, 3) C 0	0.1160	(137, 1) C 0	0.1160	(260,11) C 0	0.1156	(86, 3) C 0	0.1129	(262, 2) C 0	0.1076	(146, 3) C 0
9	0.2139	(300, 3) C 0	0.2044	(137, 1) C 0	0.2044	(260,11) C 0	0.2021	(86, 3) C 0	0.1972	(96, 1) C 0	0.1972	(210, 7) C 0
10	0.2099	(360, 3) C 0	0.2098	(357,23) C 0	0.2098	(266,21) C 0	0.2098	(347, 7) C 0	0.2097	(20,18) C 0	0.2094	(89,22) C 0
11	0.2000	(269,24) C 0	0.2000	(278,19) C 0	0.1998	(104, 4) C 0	0.1960	(262,23) C 0	0.1960	(269, 4) C 0	0.1960	(280,24) C 0
12	0.2039	(21, 1) C 0	0.2037	(268,20) C 0	0.2021	(306,17) C 0	0.2021	(340,19) C 0	0.2007	(72,23) C 0	0.2001	(182, 1) C 0
13	0.1452	(328,10) C 0	0.1452	(341, 6) C 0	0.1451	(306, 2) C 0	0.1448	(288,18) C 0	0.1438	(20, 4) C 0	0.1427	(103,23) C 0

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SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr No.	Highest Conc	Ending Day Hr	Calm	Second Highest Conc	Ending Day Hr	Calm	Third Highest Conc	Ending Day Hr	Calm	Fourth Highest Conc	Ending Day Hr	Calm	Fifth Highest Conc	Ending Day Hr	Calm	Sixth Highest Conc	Ending Day Hr	Calm
14	0.1268	(20, 7)	C 0	0.1268	(47, 1)	C 0	0.1268	(201, 5)	C 0	0.1268	(261, 9)	C 0	0.1257	(77, 5)	C 0	0.1257	(141,22)	C 0
15	0.1342	(265, 4)	C 0	0.1274	(248,20)	C 0	0.1273	(79,22)	C 0	0.1273	(91,23)	C 0	0.1273	(350, 2)	C 0	0.1271	(205, 8)	C 0
16	0.1452	(300, 3)	C 0	0.1408	(137, 1)	C 0	0.1408	(260,11)	C 0	0.1397	(86, 3)	C 0	0.1356	(262, 2)	C 0	0.1307	(146, 3)	C 0
17	0.1175	(300, 3)	C 0	0.1143	(103, 2)	C 0	0.1119	(104, 4)	C 0	0.1111	(137, 1)	C 0	0.1111	(260,11)	C 0	0.1109	(269,24)	C 0
18	0.1176	(358, 7)	C 0	0.1174	(90, 1)	C 0	0.1174	(90, 6)	C 0	0.1174	(112, 3)	C 0	0.1171	(20, 7)	C 0	0.1171	(47, 1)	C 0
19	0.1268	(72,23)	C 0	0.1268	(306,17)	C 0	0.1268	(340,19)	C 0	0.1265	(199, 5)	C 0	0.1265	(259,24)	C 0	0.1261	(268,20)	C 0
20	0.1274	(60, 7)	C 0	0.1265	(146, 3)	C 0	0.1263	(239,23)	C 0	0.1262	(146, 2)	C 0	0.1259	(147, 5)	C 0	0.1256	(103,24)	C 0
21	0.1767	(18, 6)	C 0	0.1569	(300, 3)	C 0	0.1524	(121,20)	C 0	0.1524	(261, 4)	C 0	0.1494	(239, 2)	C 0	0.1492	(288, 3)	C 0
22	0.1427	(18, 6)	C 0	0.1422	(278, 3)	C 0	0.1412	(13, 6)	C 0	0.1410	(77, 5)	C 0	0.1410	(141,22)	C 0	0.1410	(259,21)	C 0
23	0.1259	(265, 4)	C 0	0.1217	(268,20)	C 0	0.1215	(306,17)	C 0	0.1215	(340,19)	C 0	0.1215	(21, 1)	C 0	0.1211	(72,23)	C 0
24	0.1408	(300, 3)	C 0	0.1379	(137, 1)	C 0	0.1379	(260,11)	C 0	0.1374	(86, 3)	C 0	0.1347	(262, 2)	C 0	0.1304	(146, 3)	C 0
25	0.2482	(130, 3)	C 0	0.2482	(321, 7)	C 0	0.2482	(341,21)	C 0	0.2482	(112,13)	C 0	0.2481	(133,23)	C 0	0.2481	(272, 3)	C 0
26	0.2711	(18, 5)	C 0	0.2710	(341, 1)	C 0	0.2707	(261, 5)	C 0	0.2707	(359,22)	C 0	0.2698	(20,21)	C 0	0.2691	(85, 3)	C 0
27	0.2125	(71, 6)	C 0	0.2124	(96, 2)	C 0	0.2122	(21,10)	C 0	0.2122	(157, 4)	C 0	0.2103	(20, 7)	C 0	0.2103	(47, 1)	C 0
28	0.3328*	(265, 4)	C 0	0.3277*	(214, 1)	C 0	0.3277	(340,22)	C 0	0.3268	(102, 8)	C 0	0.3268	(136, 5)	C 0	0.3268	(267,22)	C 0
29	0.2624	(182, 1)	C 0	0.2622	(160, 2)	C 0	0.2622	(205, 5)	C 0	0.2622	(307, 8)	C 0	0.2621	(21, 1)	C 0	0.2620	(350, 1)	C 0
30	0.2470	(96, 2)	C 0	0.2464	(71, 6)	C 0	0.2463	(20, 7)	C 0	0.2463	(47, 1)	C 0	0.2463	(201, 5)	C 0	0.2463	(261, 9)	C 0
31	0.2752	(18, 6)	C 0	0.2728	(104, 4)	C 0	0.2701	(262,23)	C 0	0.2701	(269, 4)	C 0	0.2701	(280,24)	C 0	0.2701	(281,24)	C 0
32	0.2723	(103, 2)	C 0	0.2685	(221, 5)	C 0	0.2667	(104, 4)	C 0	0.2662	(221, 1)	C 0	0.2602	(269,24)	C 0	0.2602	(278,19)	C 0
33	0.1246	(146, 3)	C 0	0.1235	(103,24)	C 0	0.1235	(271, 6)	C 0	0.1235	(262, 2)	C 0	0.1229	(60, 7)	C 0	0.1199	(86, 3)	C 0
34	0.1351	(265, 4)	C 0	0.1341	(205, 8)	C 0	0.1341	(269, 3)	C 0	0.1341	(356,17)	C 0	0.1338	(248,20)	C 0	0.1332	(350, 2)	C 0
35	0.1323	(278, 3)	C 0	0.1310	(259,21)	C 0	0.1308	(13, 6)	C 0	0.1303	(135,21)	C 0	0.1303	(218, 9)	C 0	0.1298	(77, 5)	C 0
36	0.1191	(18, 6)	C 0	0.1173	(300, 3)	C 0	0.1079	(137, 1)	C 0	0.1079	(260,11)	C 0	0.1048	(86, 3)	C 0	0.1037	(121,20)	C 0
37	0.2033	(18, 6)	C 0	0.1952	(121,20)	C 0	0.1952	(261, 4)	C 0	0.1934	(239, 2)	C 0	0.1934	(288, 3)	C 0	0.1894	(260, 2)	C 0
38	0.1811	(121,20)	C 0	0.1811	(261, 4)	C 0	0.1810	(239, 2)	C 0	0.1810	(288, 3)	C 0	0.1802	(260, 2)	C 0	0.1757	(21,10)	C 0
39	0.2288	(300, 1)	C 0	0.2288	(188, 3)	C 0	0.2288	(239, 6)	C 0	0.2288	(320, 4)	C 0	0.2284	(248,19)	C 0	0.2284	(284,23)	C 0
40	0.2580	(160, 2)	C 0	0.2580	(205, 5)	C 0	0.2580	(307, 8)	C 0	0.2579	(350, 1)	C 0	0.2578	(350, 2)	C 0	0.2577	(221,21)	C 0
41	0.2265	(88,19)	C 0	0.2265	(271,23)	C 0	0.2263	(279, 3)	C 0	0.2260	(92, 1)	C 0	0.2260	(108,11)	C 0	0.2260	(136, 2)	C 0
42	0.3102	(255,24)	C 0	0.3102	(103, 6)	C 0	0.3101	(219, 5)	C 0	0.3101	(17,22)	C 0	0.3100	(96, 1)	C 0	0.3100	(210, 7)	C 0
43	0.3216	(343,18)	C 0	0.3209	(269, 6)	C 0	0.3207	(135,21)	C 0	0.3207	(218, 9)	C 0	0.3203	(91,24)	C 0	0.3203	(160, 7)	C 0
44	0.2849	(300, 3)	C 0	0.2846	(137, 1)	C 0	0.2846	(260,11)	C 0	0.2836	(86, 3)	C 0	0.2783	(71, 1)	C 0	0.2783	(71,24)	C 0
45	0.2953	(182, 2)	C 0	0.2950	(300, 1)	C 0	0.2950	(188, 3)	C 0	0.2950	(239, 6)	C 0	0.2950	(320, 4)	C 0	0.2943	(179, 7)	C 0
46	0.2994	(60, 7)	C 0	0.2984	(239,23)	C 0	0.2967	(146, 2)	C 0	0.2957	(103,24)	C 0	0.2957	(271, 6)	C 0	0.2953	(147, 5)	C 0

CALM DURATION FREQUENCY

Hours of Consecutive Calm Winds	Frequency of Occurrence	(Julian day/hour ending) of Significant Occurrences
1	123	(1,23)(10, 9)(17,24)(19, 1)(19,24)(20, 8)(20,14)(20,24)(21, 3)(21, 7) (48,24)(50, 3)(50, 6)(51, 7)(54, 1)(54, 9)(54,11)(55, 7)(59,12)(62, 4) (62, 6)(64, 2)(71, 5)(74, 1)(76,12)(77, 3)(85, 1)(87, 4)(87, 7)(88, 3) (88, 5)(88, 8)(89, 5)(89,12)(89,17)(89,23)(90, 8)(91, 1)(91, 4)(92,10) (95,23)(96,24)(97, 2)(99, 3)(102, 5)(103, 1)(107,20)(122,21)(123, 2)(123, 4) (123, 9)(136, 4)(142,24)(143, 2)(143, 9)(145,24)(146, 4)(147,21)(148, 6)(148,15) (154, 4)(156, 3)(156,17)(156,19)(156,21)(156,23)(159, 2)(168,24)(173, 3)(175,13) (176,24)(177, 2)(178, 5)(182,23)(183,13)(185, 5)(186, 5)(188, 4)(192,24)(196, 5) (201, 3)(201, 6)(203, 1)(205, 1)(208, 1)(208, 4)(209, 2)(210, 4)(210, 6)(214, 2) (220, 4)(221, 7)(223, 3)(223, 7)(229, 8)(231, 3)(231,24)(232, 2)(232,24)(235,22) (235,24)(237, 4)(238, 4)(238, 6)(239, 5)(239, 7)(240, 3)(244, 7)(244, 9)(247,24) (248, 3)(251, 8)(253, 5)(254, 2)(254, 4)(260,10)(265,20)(266,19)(271, 4)(306,14) (341,10)(341,15)(345, 9)
2	25	(17, 2)(54, 7)(60, 3)(65,19)(71, 3)(77, 7)(85, 7)(95, 3)(109, 3)(122,24) (125, 3)(146,21)(147, 3)(153,24)(165, 8)(203, 4)(209, 5)(217, 3)(222, 2)(222, 6) (224, 2)(240, 8)(244, 3)(249, 3)(250, 3)
3	8	(15, 5)(70, 9)(103, 5)(147,13)(194, 6)(202, 4)(226, 1)(232, 8)
4	5	(90, 5)(156, 8)(160, 6)(168, 8)(226, 7)
5	1	(150, 4)

Program terminated normally

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

General Information

Run start date: 01/01/90 Julian: 1
end date: 12/31/90 Julian: 365

A Tier 1 approach was used for input data preparation.

The MODE flag has been set to C for calculating CO averages.

Ambient background concentrations are excluded from the averages below.

Site & Meteorological Constants

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 100. CM ATIM = 60.

Met. Sfc. Sta. Id & Yr = 24233 90
Upper Air Sta. Id & Yr = 94240 90

Urban mixing heights were processed.

In 1990, Julian day 1 is a Monday.

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
1.	Link_1	551840.62	5273806.00	551936.38	5273866.00	113.	58.	AG	0.0	12.0	
2.	Link_2	551936.38	5273872.50	551840.31	5273813.00	113.	238.	AG	0.0	12.0	
3.	Link_3	551936.38	5273866.00	552043.88	5273933.50	127.	58.	AG	0.0	12.0	
4.	Link_4	552044.06	5273941.50	551936.38	5273872.50	128.	237.	AG	0.0	12.0	
5.	Link_5	551933.31	5273867.00	551935.19	5273775.00	92.	179.	AG	0.0	10.0	
6.	Link_6	551939.00	5273775.00	551938.12	5273823.00	48.	359.	AG	0.0	10.0	
7.	Link_7	551937.12	5273869.00	551938.19	5274028.00	159.	0.	AG	0.0	10.0	
8.	Link_8	551934.12	5274028.50	551933.31	5273918.00	111.	180.	AG	0.0	10.0	
9.	Link_9	551938.00	5273822.50	551937.06	5273867.00	45.	359.	AG	0.0	10.0	
10.	Link_10	551933.19	5273918.00	551933.19	5273867.50	50.	180.	AG	0.0	10.0	
11.	Link_11	552530.38	5274329.00	552606.12	5274407.00	109.	44.	AG	0.0	10.0	
12.	Link_12	552605.94	5274407.00	552724.75	5274526.00	168.	45.	AG	0.0	10.0	
13.	Link_13	552605.69	5274413.00	552724.06	5274531.00	167.	45.	AG	0.0	10.0	
14.	Link_14	552605.50	5274412.50	552522.19	5274329.00	118.	225.	AG	0.0	10.0	
15.	Link_15	552611.81	5274328.00	552611.56	5274368.00	40.	360.	AG	0.0	10.0	

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
16.	Link_16	552605.50	5274410.00	552605.69	5274328.00	82.	180.	AG	0.0	10.0	
17.	Link_17	552611.12	5274416.00	552609.75	5274587.50	172.	360.	AG	0.0	10.0	
18.	Link_18	552604.81	5274457.50	552603.88	5274587.00	130.	360.	AG	0.0	10.0	
19.	Link_19	552604.81	5274458.00	552605.50	5274411.00	47.	179.	AG	0.0	10.0	
20.	Link_20	552611.12	5274368.00	552610.94	5274416.50	49.	360.	AG	0.0	10.0	
21.	Link_21	552802.50	5274609.00	552864.81	5274673.50	90.	44.	AG	0.0	12.0	
22.	Link_22	552864.62	5274674.00	552936.94	5274746.50	102.	45.	AG	0.0	12.0	
23.	Link_23	552934.00	5274748.50	552880.38	5274694.00	76.	225.	AG	0.0	12.0	
24.	Link_24	552880.44	5274694.00	552799.88	5274611.50	115.	224.	AG	0.0	12.0	
25.	Link_25	552884.25	5274622.50	552866.75	5274679.00	59.	343.	AG	0.0	12.0	
26.	Link_26	552863.69	5274675.50	552880.31	5274620.00	58.	163.	AG	0.0	12.0	
27.	Link_27	552881.31	5274693.00	552861.69	5274713.00	28.	316.	AG	0.0	12.0	
28.	Link_28	552861.69	5274713.00	552852.38	5274727.00	17.	326.	AG	0.0	12.0	
29.	Link_29	552852.38	5274727.00	552851.06	5274750.00	23.	357.	AG	0.0	12.0	
30.	Link_30	552848.00	5274749.50	552849.75	5274725.00	25.	176.	AG	0.0	12.0	
31.	Link_31	552849.75	5274725.00	552852.56	5274707.00	18.	171.	AG	0.0	12.0	
32.	Link_32	552852.56	5274707.00	552864.19	5274677.00	32.	159.	AG	0.0	12.0	
33.	Link_33	552859.00	5274690.50	552863.00	5274680.50	11.	158.	AG	0.0	10.0	1
34.	Link_34	552875.75	5274651.00	552868.12	5274674.50	25.	342.	AG	0.0	12.0	1
35.	Link_35	552847.19	5274657.50	552862.06	5274672.50	21.	45.	AG	0.0	12.0	1
36.	Link_36	552896.00	5274711.00	552881.81	5274697.00	20.	225.	AG	0.0	12.0	2
37.	Link_37	552847.31	5274654.50	552862.56	5274671.00	22.	43.	AG	0.0	6.0	1
38.	Link_38	552889.94	5274701.50	552883.75	5274695.50	9.	226.	AG	0.0	6.0	1

Receptor Data

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	R_001	551942.62	5273885.00	1.8
2.	R_002	551942.81	5273862.50	1.8
3.	R_003	551928.00	5273853.00	1.8
4.	R_004	551927.81	5273875.00	1.8
5.	R_005	552616.31	5274431.00	1.8
6.	R_006	552616.12	5274410.00	1.8
7.	R_007	552600.06	5274393.00	1.8
8.	R_008	552599.81	5274415.00	1.8
9.	R_009	552880.31	5274703.00	1.8
10.	R_010	552890.94	5274691.50	1.8
11.	R_011	552882.81	5274683.50	1.8

Receptor Data

RECEPTOR		COORDINATES (M) X	Y	Z
12.	R_012	552871.69	5274694.00	1.8
13.	R_013	552866.50	5274688.50	1.8
14.	R_014	552874.44	5274675.00	1.8
15.	R_015	552861.56	5274661.50	1.8
16.	R_016	552856.81	5274679.00	1.8

****
Please check the meteorological data listed in CAL3HR.ERR.
****

Model Results

Remarks : In search of the wind direction corresponding
to the maximum concentration, only the first
direction, of the directions with the same maximum
concentrations, is indicated as the maximum.

* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
(PPM)

	REC0001	REC0002	REC0003	REC0004	REC0005	REC0006	REC0007	REC0008	REC0009	REC0010
MAX+BKG	0.1598	0.1830	0.1887	0.1610	0.1448	0.1450	0.1484	0.1446	0.1853	0.1749
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1598	0.1830	0.1887	0.1610	0.1448	0.1450	0.1484	0.1446	0.1853	0.1749
WIND DIR	220	255	45	72	210	237	29	58	205	234
JULIAN	208	279	60	18	341	261	281	300	182	278
HOUR	5	3	7	6	3	8	2	3	2	3

	REC0011	REC0012	REC0013	REC0014	REC0015	REC0016
MAX+BKG	0.1972	0.1865	0.2161	0.2469	0.2304	0.1931
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1972	0.1865	0.2161	0.2469	0.2304	0.1931
WIND DIR	234	189	176	234	29	139
JULIAN	278	194	205	278	281	55
HOUR	3	1	7	3	2	8

THE HIGHEST CONCENTRATION OF 0.2469 PPM OCCURRED AT RECEPTOR REC0014.

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Output Section
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NOTES PERTAINING TO THE REPORT

1. THE HIGHEST AVERAGE IN EACH OF THE FIRST TWO COLUMNS OF EACH TABLE BELOW ARE SUFFIXED BY AN ASTERISK (*). FOR PM OUTPUT, THERE IS ONLY ONE COLUMN AND ASTERISK FOR THE ANNUAL AVERAGE/PERIOD OF CONCERN TABLE.

2. THE NUMBERS IN PARENTHESES ARE THE JULIAN DAY AND ENDING HOUR FOR THE PRECEDING AVERAGE.

3. THE NUMBER OF CALM HOURS USED IN PRODUCING EACH AVERAGE ARE PREFIXED BY A C.

PRIMARY AVERAGES.

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor	Highest			Second highest		
Number	Conc	Ending Day Hr	Calm	Conc	Ending Day Hr	Calm
1	0.11	(307, 3)	C 0	0.11	(341, 8)	C 0
2	0.14	(267, 2)	C 1	0.13	(136, 6)	C 1
3	0.13	(146, 7)	C 2	0.13	(267, 2)	C 1
4	0.12	(341, 8)	C 0	0.11	(307, 3)	C 0
5	0.10	(168, 6)	C 2	0.10	(109, 6)	C 2
6	0.12	(136, 6)	C 1	0.11	(267, 1)	C 1
7	0.10	(136, 6)	C 1	0.10	(263, 4)	C 0
8	0.09	(341, 8)	C 0	0.09	(147,12)	C 2
9	0.14	(168, 6)	C 2	0.13	(109, 6)	C 2
10	0.14	(136, 6)	C 1	0.13	(267, 1)	C 1
11	0.16	(136, 6)	C 1	0.14	(267, 1)	C 1
12	0.15	(168, 6)	C 2	0.14	(109, 6)	C 2
13	0.17	(268, 8)	C 0	0.16	(109, 6)	C 2
14	0.20*	(136, 6)	C 1	0.19*	(267, 1)	C 1
15	0.15	(263, 4)	C 0	0.15	(240, 5)	C 1
16	0.14	(360, 7)	C 0	0.14	(20, 5)	C 1

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr	Highest Ending			Second Highest Ending			Third Highest Ending			Fourth Highest Ending			Fifth Highest Ending			Sixth Highest Ending		
No.	Conc	Day Hr	Calm	Conc	Day Hr	Calm	Conc	Day Hr	Calm	Conc	Day Hr	Calm	Conc	Day Hr	Calm	Conc	Day Hr	Calm
1	0.1598	(208, 5)	C 0	0.1598	(289, 6)	C 0	0.1598	(306,22)	C 0	0.1598	(15,23)	C 0	0.1598	(306,20)	C 0	0.1598	(347, 2)	C 0

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr No.	Highest Conc	Ending Day Hr	Calm	Second Highest Conc	Ending Day Hr	Calm	Third Highest Conc	Ending Day Hr	Calm	Fourth Highest Conc	Ending Day Hr	Calm	Fifth Highest Conc	Ending Day Hr	Calm	Sixth Highest Conc	Ending Day Hr	Calm
2	0.1830	(279, 3)	C 0	0.1830	(92, 1)	C 0	0.1830	(108,11)	C 0	0.1830	(136, 2)	C 0	0.1830	(255,18)	C 0	0.1830	(266,23)	C 0
3	0.1887	(60, 7)	C 0	0.1871	(239,23)	C 0	0.1854	(146, 2)	C 0	0.1844	(103,24)	C 0	0.1844	(271, 6)	C 0	0.1840	(147, 5)	C 0
4	0.1610	(18, 6)	C 0	0.1569	(15,23)	C 0	0.1569	(306,20)	C 0	0.1569	(347, 2)	C 0	0.1568	(208, 5)	C 0	0.1568	(289, 6)	C 0
5	0.1448	(341, 3)	C 0	0.1448	(198, 4)	C 0	0.1448	(165,24)	C 0	0.1448	(13,13)	C 0	0.1448	(296,21)	C 0	0.1446	(268,24)	C 0
6	0.1450	(261, 8)	C 0	0.1450	(136, 6)	C 0	0.1450	(360, 9)	C 0	0.1447	(136, 3)	C 0	0.1447	(267,23)	C 0	0.1447	(267,24)	C 0
7	0.1484	(281, 2)	C 0	0.1477	(172,23)	C 0	0.1468	(199, 6)	C 0	0.1458	(224, 3)	C 0	0.1439	(147, 5)	C 0	0.1416	(146, 2)	C 0
8	0.1446	(300, 3)	C 0	0.1441	(137, 1)	C 0	0.1441	(260,11)	C 0	0.1433	(86, 3)	C 0	0.1387	(262, 2)	C 0	0.1306	(146, 3)	C 0
9	0.1853	(182, 2)	C 0	0.1847	(278, 4)	C 0	0.1846	(179, 7)	C 0	0.1846	(227, 2)	C 0	0.1839	(268,24)	C 0	0.1839	(296,19)	C 0
10	0.1749	(278, 3)	C 0	0.1738	(91,24)	C 0	0.1738	(160, 7)	C 0	0.1738	(233, 1)	C 0	0.1738	(135,21)	C 0	0.1738	(218, 9)	C 0
11	0.1972	(278, 3)	C 0	0.1962	(343,18)	C 0	0.1962	(269, 6)	C 0	0.1961	(135,21)	C 0	0.1961	(218, 9)	C 0	0.1960	(91,24)	C 0
12	0.1865	(194, 1)	C 0	0.1865	(305, 2)	C 0	0.1865	(341, 2)	C 0	0.1865	(55,11)	C 0	0.1865	(112, 5)	C 0	0.1864	(165,23)	C 0
13	0.2161	(205, 7)	C 0	0.2161	(266, 8)	C 0	0.2161	(319,23)	C 0	0.2161	(341, 4)	C 0	0.2161	(89,20)	C 0	0.2161	(268, 1)	C 0
14	0.2469*	(278, 3)	C 0	0.2467*	(136, 3)	C 0	0.2467	(267,23)	C 0	0.2467	(267,24)	C 0	0.2466	(261, 8)	C 0	0.2465	(91,24)	C 0
15	0.2304	(281, 2)	C 0	0.2300	(172,23)	C 0	0.2294	(199, 6)	C 0	0.2220	(224, 3)	C 0	0.2193	(147, 5)	C 0	0.2163	(146, 2)	C 0
16	0.1931	(55, 8)	C 0	0.1931	(120, 2)	C 0	0.1931	(316, 2)	C 0	0.1931	(349, 4)	C 0	0.1931	(359,24)	C 0	0.1930	(19,23)	C 0

CALM DURATION FREQUENCY

Hours of Consecutive Calm Winds	Frequency of Occurrence	(Julian day/hour ending) of Significant Occurrences
1	123	(1,23)(10, 9)(17,24)(19, 1)(19,24)(20, 8)(20,14)(20,24)(21, 3)(21, 7) (48,24)(50, 3)(50, 6)(51, 7)(54, 1)(54, 9)(54,11)(55, 7)(59,12)(62, 4) (62, 6)(64, 2)(71, 5)(74, 1)(76,12)(77, 3)(85, 1)(87, 4)(87, 7)(88, 3) (88, 5)(88, 8)(89, 5)(89,12)(89,17)(89,23)(90, 8)(91, 1)(91, 4)(92,10) (95,23)(96,24)(97, 2)(99, 3)(102, 5)(103, 1)(107,20)(122,21)(123, 2)(123, 4) (123, 9)(136, 4)(142,24)(143, 2)(143, 9)(145,24)(146, 4)(147,21)(148, 6)(148,15) (154, 4)(156, 3)(156,17)(156,19)(156,21)(156,23)(159, 2)(168,24)(173, 3)(175,13) (176,24)(177, 2)(178, 5)(182,23)(183,13)(185, 5)(186, 5)(188, 4)(192,24)(196, 5) (201, 3)(201, 6)(203, 1)(205, 1)(208, 1)(208, 4)(209, 2)(210, 4)(210, 6)(214, 2) (220, 4)(221, 7)(223, 3)(223, 7)(229, 8)(231, 3)(231,24)(232, 2)(232,24)(235,22) (235,24)(237, 4)(238, 4)(238, 6)(239, 5)(239, 7)(240, 3)(244, 7)(244, 9)(247,24) (248, 3)(251, 8)(253, 5)(254, 2)(254, 4)(260,10)(265,20)(266,19)(271, 4)(306,14) (341,10)(341,15)(345, 9)
2	25	(17, 2)(54, 7)(60, 3)(65,19)(71, 3)(77, 7)(85, 7)(95, 3)(109, 3)(122,24) (125, 3)(146,21)(147, 3)(153,24)(165, 8)(203, 4)(209, 5)(217, 3)(222, 2)(222, 6) (224, 2)(240, 8)(244, 3)(249, 3)(250, 3)
3	8	(15, 5)(70, 9)(103, 5)(147,13)(194, 6)(202, 4)(226, 1)(232, 8)
4	5	(90, 5)(156, 8)(160, 6)(168, 8)(226, 7)
5	1	(150, 4)

Program terminated normally

Future (2019) with Project CAL3QHCR Results

```
                                                CAL3QHCR (Dated: 13196)

 DATE : 08/30/16                                                                                    PAGE:  1
 TIME : 08:51:01

 JOB:                    C:\Lakes\CALRoads View\Projects\150820 S          RUN:                    CAL3QHCR RUN

   ====================
   General Information
   ====================

     Run start date: 01/01/90    Julian:   1
           end date: 12/31/90    Julian: 365

     A Tier 1 approach was used for input data preparation.

     The MODE flag has been set to C for calculating CO averages.

     Ambient background concentrations are excluded from the averages below.


   Site & Meteorological Constants
   -------------------------------
     VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 100. CM     ATIM =  60.

       Met. Sfc. Sta. Id & Yr = 24233    90
       Upper Air Sta. Id & Yr = 94240    90

     Urban mixing heights were processed.

     In 1990, Julian day 1 is a Monday.


   Link Data Constants - (Variable data in *.LNK file)
   -------------------

               LINK DESCRIPTION              *              LINK COORDINATES (M)               *   LENGTH   BRG  TYPE    H       W  NLANES
                                             *      X1          Y1          X2          Y2      *     (M)   (DEG)        (M)     (M)
 ----------------------------------------------*-----------------------------------------------*----------------------------------------
  1.                     Link_1               *  550003.25   5272654.50   549980.88   5272641.50 *      26.   240.  AG    0.0     6.1    2
  2.                     Link_2               *  549950.00   5272660.00   549962.00   5272640.50 *      23.   148.  AG    0.0    12.0    3
  3.                     Link_3               *  549920.06   5272710.50   549945.19   5272669.50 *      48.   148.  AG    0.0    18.2
  4.                     Link_4               *  550052.81   5272684.50   549967.19   5272633.50 *     100.   239.  AG    0.0    12.0
  5.                     Link_5               *  549967.06   5272633.50   550018.56   5272556.50 *      93.   146.  AG    0.0    18.0
  6.                     Link_6               *  549966.81   5272633.50   549885.31   5272583.00 *      96.   238.  AG    0.0    12.0
  7.                     Link_7               *  549756.62   5272608.50   549838.25   5272659.50 *      96.    58.  AG    0.0    14.0
  8.                     Link_8               *  549879.62   5272685.50   549919.56   5272710.50 *      47.    58.  AG    0.0    14.0
  9.                     Link_9               *  549784.94   5272734.50   549833.50   5272657.00 *      91.   148.  AG    0.0    12.0
 10.                     Link_10              *  549842.50   5272663.00   549793.94   5272740.00 *      91.   328.  AG    0.0    12.0
 11.                     Link_11              *  549833.88   5272656.00   549881.06   5272580.00 *      89.   148.  AG    0.0    12.0
 12.                     Link_12              *  549889.69   5272586.00   549842.69   5272662.00 *      89.   328.  AG    0.0    12.0
 13.                     Link_13              *  549813.31   5272644.00   549827.06   5272652.50 *      16.    58.  AG    0.0     8.0    2
 14.                     Link_14              *  549820.69   5272677.00   549828.50   5272664.50 *      15.   148.  AG    0.0     6.0    2
 15.                     Link_15              *  549855.88   5272640.50   549848.62   5272652.00 *      14.   328.  AG    0.0     6.0    2
```

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
16.	Link_16	549871.75	5272790.00	549919.75	5272712.00	92.	148.	AG	0.0	18.0	
17.	Link_17	549920.31	5272710.50	550005.12	5272763.50	100.	58.	AG	0.0	12.0	
18.	Link_18	549887.50	5272691.00	549909.56	5272704.50	26.	59.	AG	0.0	6.0	2
19.	Link_19	549885.69	5272765.00	549914.38	5272720.50	53.	147.	AG	0.0	12.0	2
20.	Link_20	549907.19	5272743.50	549920.06	5272723.50	24.	147.	AG	0.0	3.0	1
21.	Link_21	549838.50	5272659.50	549879.44	5272685.50	48.	58.	AG	0.0	14.0	
22.	Link_22	549956.81	5272641.00	549958.25	5272638.00	3.	154.	AG	0.0	3.0	1
23.	Link_23	550090.38	5272816.00	550042.25	5272895.00	93.	329.	AG	0.0	21.0	
24.	Link_24	550005.25	5272763.50	550090.62	5272816.00	100.	58.	AG	0.0	12.0	
25.	Link_25	550140.50	5272738.50	550053.44	5272685.00	102.	238.	AG	0.0	12.0	
26.	Link_26	550224.12	5272791.00	550141.00	5272739.00	98.	238.	AG	0.0	12.0	
27.	Link_27	550141.06	5272739.50	550113.94	5272779.50	48.	326.	AG	0.0	21.0	
28.	Link_28	550113.94	5272779.00	550090.19	5272815.50	44.	327.	AG	0.0	21.0	
29.	Link_29	550190.12	5272660.50	550140.88	5272738.50	92.	328.	AG	0.0	21.0	
30.	Link_30	550107.00	5272804.00	550102.88	5272810.00	7.	325.	AG	0.0	3.0	1
31.	Link_31	550119.62	5272770.00	550096.69	5272805.00	42.	327.	AG	0.0	12.0	3
32.	Link_32	550051.00	5272792.00	550081.19	5272810.00	35.	59.	AG	0.0	6.0	2
33.	Link_33	550090.44	5272815.50	550136.88	5272844.00	54.	58.	AG	0.0	12.0	
34.	Link_34	550174.31	5272759.50	550151.12	5272745.00	27.	238.	AG	0.0	12.0	2
35.	Link_35	550161.06	5272706.50	550146.81	5272729.50	27.	328.	AG	0.0	27.0	4
36.	Link_36	550136.88	5272844.00	550176.12	5272868.50	46.	58.	AG	0.0	12.0	
37.	Link_37	550175.62	5272868.50	550218.69	5272896.00	51.	57.	AG	0.0	12.0	
38.	Link_38	550218.88	5272896.50	550257.69	5272921.00	46.	58.	AG	0.0	12.0	
39.	Link_39	550125.56	5272948.50	550175.25	5272868.00	95.	148.	AG	0.0	12.0	
40.	Link_40	550175.56	5272868.00	550224.19	5272791.00	91.	148.	AG	0.0	12.0	
41.	Link_41	550134.56	5272843.50	550164.25	5272861.00	34.	59.	AG	0.0	6.0	2
42.	Link_42	550155.12	5272901.00	550170.88	5272876.00	30.	148.	AG	0.0	9.0	3
43.	Link_44	550307.56	5272843.00	550257.88	5272920.50	92.	327.	AG	0.0	18.0	
44.	Link_45	550257.50	5272921.00	550208.25	5272999.00	92.	328.	AG	0.0	18.0	
45.	Link_46	550257.94	5272921.50	550336.19	5272974.00	94.	56.	AG	0.0	18.0	
46.	Link_47	550257.94	5272921.00	550277.19	5272917.00	20.	102.	AG	0.0	12.0	
47.	Link_48	550277.19	5272917.00	550292.50	5272912.50	16.	106.	AG	0.0	12.0	
48.	Link_49	550292.50	5272912.50	550304.38	5272903.50	15.	127.	AG	0.0	12.0	
49.	Link_50	550304.38	5272903.50	550323.25	5272866.50	42.	153.	AG	0.0	12.0	
50.	Link_51	550237.44	5272908.00	550248.88	5272915.50	14.	57.	AG	0.0	6.0	2
51.	Link_43	550270.31	5272895.00	550262.88	5272907.00	14.	328.	AG	0.0	6.0	2
52.	Link_52	550281.31	5272888.00	550272.31	5272910.50	24.	338.	AG	0.0	6.0	2
53.	Link_53	550665.94	5273179.00	550714.62	5273101.50	92.	148.	AG	0.0	14.0	
54.	Link_54	550687.88	5273144.00	550708.69	5273111.00	39.	148.	AG	0.0	8.0	2
55.	Link_55	550696.06	5273142.00	550712.75	5273114.00	33.	149.	AG	0.0	3.0	1
56.	Link_56	550722.94	5273106.50	550673.12	5273184.50	93.	327.	AG	0.0	12.0	

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
57.	Link_57	550801.12	5273159.50	550716.56	5273107.50	99.	238.	AG	0.0	12.0	
58.	Link_58	550716.44	5273107.00	550635.00	5273055.50	96.	238.	AG	0.0	12.0	
59.	Link_59	550639.44	5273048.00	550722.00	5273100.00	98.	58.	AG	0.0	12.0	
60.	Link_60	550721.75	5273099.50	550806.75	5273151.50	100.	59.	AG	0.0	12.0	
61.	Link_61	550772.75	5273026.00	550722.81	5273106.50	95.	328.	AG	0.0	12.0	
62.	Link_62	550714.75	5273101.50	550764.44	5273022.00	94.	148.	AG	0.0	12.0	
63.	Link_63	550680.31	5273074.00	550709.38	5273092.00	34.	58.	AG	0.0	6.0	2
64.	Link_64	550665.94	5273069.00	550708.50	5273096.50	51.	57.	AG	0.0	3.0	1
65.	Link_65	550746.81	5273068.50	550730.00	5273095.00	31.	328.	AG	0.0	6.0	2
66.	Link_66	550743.31	5273066.50	550726.75	5273092.50	31.	328.	AG	0.0	3.0	1
67.	Link_67	550768.06	5273138.00	550727.19	5273113.50	48.	239.	AG	0.0	6.0	2
68.	Link_68	550732.75	5273112.00	550728.50	5273109.50	5.	240.	AG	0.0	3.0	1
69.	Link_69	551041.94	5273402.50	551042.56	5273307.50	95.	180.	AG	0.0	18.0	
70.	Link_70	551051.00	5273313.00	551050.50	5273403.50	91.	360.	AG	0.0	18.0	
71.	Link_71	551042.56	5273307.50	551043.81	5273197.00	111.	179.	AG	0.0	18.0	
72.	Link_72	551052.88	5273198.00	551050.88	5273312.50	115.	359.	AG	0.0	18.0	
73.	Link_73	551046.75	5273315.50	550966.25	5273265.00	95.	238.	AG	0.0	12.0	
74.	Link_74	550970.12	5273258.00	551046.75	5273305.50	90.	58.	AG	0.0	12.0	
75.	Link_75	551143.44	5273374.50	551046.75	5273315.50	113.	239.	AG	0.0	12.0	
76.	Link_76	551046.62	5273305.50	551144.38	5273365.50	115.	58.	AG	0.0	12.0	
77.	Link_77	551009.12	5273283.00	551032.75	5273297.50	28.	58.	AG	0.0	6.0	2
78.	Link_78	550976.75	5273266.50	551034.06	5273301.00	67.	59.	AG	0.0	3.0	1
79.	Link_79	551051.94	5273264.50	551051.38	5273298.00	34.	359.	AG	0.0	6.0	2
80.	Link_80	551042.00	5273344.50	551042.44	5273320.50	24.	179.	AG	0.0	6.0	2
81.	Link_81	551080.12	5273335.50	551060.69	5273323.50	23.	238.	AG	0.0	6.0	2
82.	Link_82	551070.25	5273324.50	551060.50	5273318.00	12.	236.	AG	0.0	3.0	1
83.	Link_83	551265.88	5273444.00	551343.81	5273491.50	91.	59.	AG	0.0	12.0	
84.	Link_84	551342.50	5273499.00	551262.50	5273450.00	94.	239.	AG	0.0	12.0	
85.	Link_85	551343.25	5273509.50	551245.00	5273509.00	98.	270.	AG	0.0	9.0	
86.	Link_86	551348.88	5273355.00	551347.75	5273501.00	146.	360.	AG	0.0	12.0	
87.	Link_87	551341.00	5273496.00	551341.88	5273355.00	141.	180.	AG	0.0	12.0	
88.	Link_88	551347.56	5273500.50	551343.38	5273638.00	138.	358.	AG	0.0	12.0	
89.	Link_89	551336.19	5273637.50	551340.75	5273496.00	142.	178.	AG	0.0	12.0	
90.	Link_90	551437.69	5273559.50	551342.75	5273499.50	112.	238.	AG	0.0	12.0	
91.	Link_91	551343.81	5273491.50	551438.56	5273551.50	112.	58.	AG	0.0	12.0	
92.	Link_92	551387.06	5273528.00	551358.50	5273509.50	34.	237.	AG	0.0	6.0	2
93.	Link_93	551337.06	5273544.50	551337.75	5273519.50	25.	178.	AG	0.0	6.0	2
94.	Link_94	551341.44	5273525.00	551341.56	5273519.50	6.	179.	AG	0.0	3.0	1
95.	Link_95	551344.69	5273471.00	551344.69	5273482.00	11.	360.	AG	0.0	3.0	2
96.	Link_96	551348.31	5273445.00	551347.88	5273484.50	40.	359.	AG	0.0	3.0	1
97.	Link_97	551351.38	5273479.00	551351.19	5273486.00	7.	358.	AG	0.0	3.0	1

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
98.	Link_98	551294.25	5273461.50	551330.69	5273483.50	43.	59.	AG	0.0	6.0	2
99.	Link_99	552409.75	5274096.00	552410.31	5274215.50	120.	0.	AG	0.0	12.0	
100.	Link_100	552405.38	5274210.50	552403.69	5274095.00	116.	181.	AG	0.0	12.0	
101.	Link_101	552405.12	5274327.50	552405.12	5274210.50	117.	180.	AG	0.0	12.0	
102.	Link_102	552410.25	5274215.50	552411.81	5274328.50	113.	1.	AG	0.0	12.0	
103.	Link_103	552294.75	5274087.50	552408.00	5274206.00	164.	44.	AG	0.0	12.0	
104.	Link_104	552408.69	5274221.50	552286.75	5274093.50	177.	224.	AG	0.0	12.0	
105.	Link_105	552407.75	5274206.50	552526.62	5274327.00	169.	45.	AG	0.0	12.0	
106.	Link_106	552514.12	5274327.50	552408.69	5274221.50	150.	225.	AG	0.0	12.0	
107.	Link_107	552410.31	5274163.50	552410.69	5274201.00	38.	1.	AG	0.0	6.0	2
108.	Link_108	552369.81	5274165.50	552398.69	5274197.00	43.	43.	AG	0.0	6.0	2
109.	Link_109	552377.12	5274180.50	552398.75	5274201.50	30.	46.	AG	0.0	3.0	1
110.	Link_110	552439.75	5274253.00	552418.69	5274232.00	30.	225.	AG	0.0	6.0	2
111.	Link_111	552431.44	5274237.50	552417.50	5274225.50	18.	229.	AG	0.0	3.0	1
112.	Link_112	552404.81	5274267.00	552404.81	5274226.50	40.	180.	AG	0.0	6.0	1
113.	Link_113	550227.25	5272897.50	550250.62	5272912.50	28.	57.	AG	0.0	3.0	1
114.	Link_114	549944.88	5272669.50	549967.44	5272633.50	42.	148.	AG	0.0	18.0	
115.	Link_115	549810.94	5272701.50	549832.25	5272668.00	40.	148.	AG	0.0	3.0	1
116.	Link_116	552402.44	5274239.00	552402.44	5274224.00	15.	180.	AG	0.0	6.0	1
117.	Link_117	551323.06	5273482.00	551330.44	5273487.00	9.	56.	AG	0.0	6.0	1
118.	Link_118	549903.31	5272696.00	549911.25	5272701.00	9.	58.	AG	0.0	6.0	1

Receptor Data

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	R_001	549952.62	5272634.00	1.8
2.	R_002	549974.19	5272646.50	1.8
3.	R_003	549984.81	5272630.50	1.8
4.	R_004	549964.62	5272619.00	1.8
5.	R_005	549822.94	5272659.50	1.8
6.	R_006	549843.88	5272673.00	1.8
7.	R_007	549854.06	5272656.00	1.8
8.	R_008	549832.12	5272643.00	1.8
9.	R_009	549905.19	5272714.50	1.8
10.	R_010	549925.56	5272726.00	1.8
11.	R_011	549914.50	5272696.00	1.8
12.	R_012	549935.56	5272709.00	1.8
13.	R_013	550072.81	5272817.50	1.8

Receptor Data

	RECEPTOR		COORDINATES (M) X	Y	Z
14.	R_014	*	550097.56	5272831.50	1.8
15.	R_015	*	550108.00	5272814.00	1.8
16.	R_016	*	550083.81	5272800.00	1.8
17.	R_017	*	550124.25	5272740.00	1.8
18.	R_018	*	550147.38	5272755.00	1.8
19.	R_019	*	550159.06	5272737.00	1.8
20.	R_020	*	550133.44	5272722.50	1.8
21.	R_021	*	550163.44	5272871.00	1.8
22.	R_022	*	550177.94	5272880.50	1.8
23.	R_023	*	550187.44	5272865.00	1.8
24.	R_024	*	550172.56	5272856.00	1.8
25.	R_025	*	550254.25	5272909.00	1.8
26.	R_026	*	550244.19	5272922.00	1.8
27.	R_027	*	550260.56	5272937.00	1.8
28.	R_028	*	550274.06	5272924.50	1.8
29.	R_029	*	550736.38	5273099.50	1.8
30.	R_030	*	550723.00	5273120.50	1.8
31.	R_031	*	550703.38	5273107.00	1.8
32.	R_032	*	550715.25	5273087.50	1.8
33.	R_033	*	551032.69	5273288.50	1.8
34.	R_034	*	551060.94	5273306.00	1.8
35.	R_035	*	551060.12	5273331.00	1.8
36.	R_036	*	551032.81	5273314.50	1.8
37.	R_037	*	551328.56	5273501.00	1.8
38.	R_038	*	551330.00	5273517.50	1.8
39.	R_039	*	551356.25	5273518.50	1.8
40.	R_040	*	551358.31	5273490.50	1.8
41.	R_041	*	551402.00	5273519.00	1.8
42.	R_042	*	552398.56	5274187.00	1.8
43.	R_043	*	552415.50	5274206.50	1.8
44.	R_044	*	552400.19	5274221.00	1.8
45.	R_045	*	552419.50	5274239.50	1.8
46.	R_046	*	551334.94	5273479.00	1.8

****
Please check the meteorological data listed in CAL3HR.ERR.
****

Model Results

Remarks : In search of the wind direction corresponding
to the maximum concentration, only the first
direction, of the directions with the same maximum
concentrations, is indicated as the maximum.

* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
* (PPM)

	REC0001	REC0002	REC0003	REC0004	REC0005	REC0006	REC0007	REC0008	REC0009	REC0010
MAX+BKG	0.1401	0.1360	0.1326	0.1527	0.1257	0.1155	0.1042	0.1149	0.2227	0.2161
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1401	0.1360	0.1326	0.1527	0.1257	0.1155	0.1042	0.1149	0.2227	0.2161
WIND DIR	342	314	314	337	58	58	51	58	348	304
JULIAN	103	199	199	221	300	300	262	300	269	228
HOUR	2	5	5	1	3	3	2	3	24	23

	REC0011	REC0012	REC0013	REC0014	REC0015	REC0016	REC0017	REC0018	REC0019	REC0020
MAX+BKG	0.2204	0.2167	0.1452	0.1268	0.1359	0.1384	0.1143	0.1176	0.1268	0.1250
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.2204	0.2167	0.1452	0.1268	0.1359	0.1384	0.1143	0.1176	0.1268	0.1250
WIND DIR	347	310	131	165	245	58	342	167	313	45
JULIAN	104	268	328	20	265	300	103	358	72	60
HOUR	4	20	10	7	4	3	2	7	23	7

	REC0021	REC0022	REC0023	REC0024	REC0025	REC0026	REC0027	REC0028	REC0029	REC0030
MAX+BKG	0.1644	0.1431	0.1288	0.1271	0.1950	0.2520	0.1996	0.3011	0.2411	0.2337
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1644	0.1431	0.1288	0.1271	0.1950	0.2520	0.1996	0.3011	0.2411	0.2337
WIND DIR	72	234	245	58	58	110	160	245	308	165
JULIAN	18	278	265	300	300	85	21	265	182	20
HOUR	6	3	4	3	3	3	10	4	1	7

	REC0031	REC0032	REC0033	REC0034	REC0035	REC0036	REC0037	REC0038	REC0039	REC0040
MAX+BKG	0.2652	0.2553	0.1214	0.1326	0.1276	0.1160	0.1651	0.1788	0.1786	0.2024
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.2652	0.2553	0.1214	0.1326	0.1276	0.1160	0.1651	0.1788	0.1786	0.2024
WIND DIR	347	342	48	245	230	72	72	72	89	247
JULIAN	104	103	146	265	13	18	18	18	20	248
HOUR	4	2	3	4	6	6	6	6	23	20

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
* (PPM)

	REC0041	REC0042	REC0043	REC0044	REC0045	REC0046
MAX+BKG	0.1958	0.2888	0.3001	0.2606	0.2564	0.2334
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1958	0.2888	0.3001	0.2606	0.2564	0.2334
WIND DIR	272	16	234	169	207	45
JULIAN	103	96	343	360	179	60
HOUR	10	1	18	2	7	7

THE HIGHEST CONCENTRATION OF 0.3011 PPM OCCURRED AT RECEPTOR REC0028.

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Output Section
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NOTES PERTAINING TO THE REPORT

1. THE HIGHEST AVERAGE IN EACH OF THE FIRST TWO COLUMNS OF EACH TABLE BELOW ARE SUFFIXED BY AN ASTERISK (*). FOR PM OUTPUT, THERE IS ONLY ONE COLUMN AND ASTERISK FOR THE ANNUAL AVERAGE/PERIOD OF CONCERN TABLE.

2. THE NUMBERS IN PARENTHESES ARE THE JULIAN DAY AND ENDING HOUR FOR THE PRECEDING AVERAGE.

3. THE NUMBER OF CALM HOURS USED IN PRODUCING EACH AVERAGE ARE PREFIXED BY A C.

PRIMARY AVERAGES.

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor Number	Highest Conc	Highest Ending Day Hr	Highest Calm	Second highest Conc	Second highest Ending Day Hr	Second highest Calm
1	0.09	(221, 8)	C 1	0.09	(103, 3)	C 2
2	0.09	(267, 3)	C 0	0.08	(269, 2)	C 0
3	0.08	(267, 3)	C 0	0.07	(269, 2)	C 0
4	0.10	(221, 8)	C 1	0.10	(103, 3)	C 2
5	0.07	(147,12)	C 2	0.06	(240, 6)	C 1
6	0.06	(147,12)	C 2	0.05	(300, 3)	C 0
7	0.05	(146, 7)	C 2	0.05	(147,12)	C 2
8	0.06	(240, 6)	C 1	0.05	(146, 5)	C 2
9	0.17	(281, 6)	C 0	0.17	(239, 7)	C 2
10	0.18	(267, 3)	C 0	0.17	(269, 2)	C 0
11	0.15	(221, 8)	C 1	0.14	(104, 6)	C 0
12	0.18	(267, 2)	C 1	0.16	(269, 1)	C 0
13	0.10	(20, 5)	C 1	0.09	(341, 6)	C 0
14	0.10	(268, 4)	C 0	0.10	(136, 8)	C 1
15	0.11	(267, 1)	C 1	0.11	(136, 6)	C 1
16	0.09	(240, 6)	C 1	0.09	(18, 7)	C 1
17	0.08	(221, 8)	C 1	0.08	(104, 5)	C 0
18	0.09	(268, 8)	C 0	0.09	(267, 3)	C 0
19	0.10	(267, 2)	C 1	0.10	(269, 2)	C 0
20	0.09	(240, 5)	C 1	0.09	(104, 6)	C 0
21	0.10	(239, 9)	C 2	0.09	(147,12)	C 2
22	0.11	(136, 7)	C 1	0.11	(269, 3)	C 0
23	0.11	(267, 2)	C 1	0.10	(136, 6)	C 1
24	0.08	(146, 7)	C 2	0.08	(104, 6)	C 0

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor	Highest				Second highest			
Number	Conc	Ending Day	Hr	Calm	Conc	Ending Day	Hr	Calm
25	0.14	(267,	4)	C 0	0.14	(18,	7)	C 1
26	0.18	(341,	6)	C 0	0.15	(303,	19)	C 0
27	0.14	(320,	5)	C 0	0.13	(268,	8)	C 0
28	0.24	(136,	8)	C 1	0.24	(268,	2)	C 0
29	0.21	(267,	3)	C 0	0.19	(269,	3)	C 0
30	0.18	(90,	2)	C 2	0.17	(268,	2)	C 0
31	0.19	(239,	7)	C 2	0.19	(281,	6)	C 0
32	0.18	(221,	8)	C 1	0.17	(104,	6)	C 0
33	0.08	(146,	7)	C 2	0.08	(267,	3)	C 0
34	0.10	(136,	6)	C 1	0.10	(267,	1)	C 1
35	0.10	(136,	8)	C 1	0.09	(268,	5)	C 0
36	0.08	(341,	8)	C 0	0.07	(147,	12)	C 2
37	0.11	(341,	8)	C 0	0.11	(91,	6)	C 2
38	0.13	(147,	12)	C 2	0.12	(240,	6)	C 1
39	0.13	(168,	6)	C 2	0.13	(341,	7)	C 0
40	0.17	(267,	1)	C 1	0.16	(136,	6)	C 1
41	0.15	(267,	3)	C 0	0.14	(136,	6)	C 1
42	0.19	(91,	6)	C 2	0.19	(263,	4)	C 0
43	0.24*	(269,	6)	C 0	0.24*	(136,	7)	C 1
44	0.19	(320,	5)	C 0	0.19	(268,	8)	C 0
45	0.18	(168,	6)	C 2	0.17	(110,	8)	C 0
46	0.16	(146,	7)	C 2	0.16	(240,	5)	C 1

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr	Highest				Second Highest				Third Highest				Fourth Highest				Fifth Highest				Sixth Highest			
No.	Conc	Ending Day	Hr	Calm	Conc	Ending Day	Hr	Calm	Conc	Ending Day	Hr	Calm	Conc	Ending Day	Hr	Calm	Conc	Ending Day	Hr	Calm	Conc	Ending Day	Hr	Calm
1	0.1401	(103,	2)	C 0	0.1384	(221,	5)	C 0	0.1369	(221,	1)	C 0	0.1341	(104,	4)	C 0	0.1324	(87,	8)	C 0	0.1324	(91,	19)	C 0
2	0.1360	(199,	5)	C 0	0.1360	(259,	24)	C 0	0.1358	(72,	23)	C 0	0.1353	(306,	17)	C 0	0.1353	(340,	19)	C 0	0.1342	(14,	23)	C 0
3	0.1326	(199,	5)	C 0	0.1326	(259,	24)	C 0	0.1322	(14,	23)	C 0	0.1322	(268,	21)	C 0	0.1320	(72,	23)	C 0	0.1314	(75,	21)	C 0
4	0.1527	(221,	1)	C 0	0.1527	(221,	5)	C 0	0.1513	(87,	8)	C 0	0.1513	(91,	19)	C 0	0.1513	(130,	2)	C 0	0.1513	(249,	23)	C 0
5	0.1257	(300,	3)	C 0	0.1201	(137,	1)	C 0	0.1201	(260,	11)	C 0	0.1181	(86,	3)	C 0	0.1088	(18,	6)	C 0	0.1061	(262,	2)	C 0
6	0.1155	(300,	3)	C 0	0.1084	(137,	1)	C 0	0.1084	(260,	11)	C 0	0.1082	(18,	6)	C 0	0.0996	(86,	3)	C 0	0.0943	(49,	24)	C 0
7	0.1042	(262,	2)	C 0	0.1035	(86,	3)	C 0	0.1028	(137,	1)	C 0	0.1028	(260,	11)	C 0	0.1026	(146,	3)	C 0	0.1012	(103,	24)	C 0
8	0.1149	(300,	3)	C 0	0.1144	(137,	1)	C 0	0.1144	(260,	11)	C 0	0.1141	(86,	3)	C 0	0.1120	(262,	2)	C 0	0.1078	(146,	3)	C 0
9	0.2227	(269,	24)	C 0	0.2227	(278,	19)	C 0	0.2217	(104,	4)	C 0	0.2216	(102,	24)	C 0	0.2215	(262,	23)	C 0	0.2215	(269,	4)	C 0
10	0.2161	(228,	23)	C 0	0.2154	(176,	22)	C 0	0.2154	(267,	2)	C 0	0.2154	(14,	16)	C 0	0.2154	(165,	21)	C 0	0.2154	(271,	19)	C 0
11	0.2204	(104,	4)	C 0	0.2189	(269,	24)	C 0	0.2189	(278,	19)	C 0	0.2140	(103,	2)	C 0	0.2123	(262,	23)	C 0	0.2123	(269,	4)	C 0
12	0.2167	(268,	20)	C 0	0.2167	(21,	1)	C 0	0.2154	(306,	17)	C 0	0.2154	(340,	19)	C 0	0.2140	(72,	23)	C 0	0.2122	(182,	1)	C 0
13	0.1452	(328,	10)	C 0	0.1452	(341,	6)	C 0	0.1451	(306,	2)	C 0	0.1448	(288,	18)	C 0	0.1438	(20,	4)	C 0	0.1427	(103,	23)	C 0

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr No.	Highest Conc	Ending Day Hr	Calm	Second Highest Conc	Ending Day Hr	Calm	Third Highest Conc	Ending Day Hr	Calm	Fourth Highest Conc	Ending Day Hr	Calm	Fifth Highest Conc	Ending Day Hr	Calm	Sixth Highest Conc	Ending Day Hr	Calm
14	0.1268	(20, 7)	C 0	0.1268	(47, 1)	C 0	0.1268	(201, 5)	C 0	0.1268	(261, 9)	C 0	0.1266	(77, 5)	C 0	0.1266	(141,22)	C 0
15	0.1359	(265, 4)	C 0	0.1294	(79,22)	C 0	0.1294	(91,23)	C 0	0.1294	(350, 2)	C 0	0.1293	(248,20)	C 0	0.1293	(221,21)	C 0
16	0.1384	(300, 3)	C 0	0.1346	(137, 1)	C 0	0.1346	(260,11)	C 0	0.1337	(86, 3)	C 0	0.1299	(262, 2)	C 0	0.1255	(146, 3)	C 0
17	0.1143	(103, 2)	C 0	0.1141	(300, 3)	C 0	0.1119	(104, 4)	C 0	0.1109	(269,24)	C 0	0.1109	(278,19)	C 0	0.1106	(221, 5)	C 0
18	0.1176	(358, 7)	C 0	0.1174	(90, 1)	C 0	0.1174	(90, 6)	C 0	0.1174	(112, 3)	C 0	0.1171	(20, 7)	C 0	0.1171	(47, 1)	C 0
19	0.1268	(72,23)	C 0	0.1268	(306,17)	C 0	0.1268	(340,19)	C 0	0.1265	(199, 5)	C 0	0.1265	(259,24)	C 0	0.1261	(268,20)	C 0
20	0.1250	(60, 7)	C 0	0.1242	(146, 3)	C 0	0.1237	(239,23)	C 0	0.1235	(103,24)	C 0	0.1235	(271, 6)	C 0	0.1233	(146, 2)	C 0
21	0.1644	(18, 6)	C 0	0.1464	(121,20)	C 0	0.1464	(261, 4)	C 0	0.1440	(239, 2)	C 0	0.1438	(288, 3)	C 0	0.1426	(300, 3)	C 0
22	0.1431	(278, 3)	C 0	0.1420	(13, 6)	C 0	0.1418	(259,21)	C 0	0.1418	(77, 5)	C 0	0.1418	(141,22)	C 0	0.1410	(266,22)	C 0
23	0.1288	(265, 4)	C 0	0.1217	(268,20)	C 0	0.1215	(306,17)	C 0	0.1215	(340,19)	C 0	0.1215	(21, 1)	C 0	0.1211	(72,23)	C 0
24	0.1271	(300, 3)	C 0	0.1239	(137, 1)	C 0	0.1239	(260,11)	C 0	0.1232	(86, 3)	C 0	0.1204	(262, 2)	C 0	0.1166	(146, 3)	C 0
25	0.1950	(300, 3)	C 0	0.1940	(18, 5)	C 0	0.1937	(85, 3)	C 0	0.1937	(157, 5)	C 0	0.1937	(283,20)	C 0	0.1937	(341, 1)	C 0
26	0.2520	(85, 3)	C 0	0.2520	(157, 5)	C 0	0.2520	(283,20)	C 0	0.2515	(50, 1)	C 0	0.2515	(340,21)	C 0	0.2501	(18, 5)	C 0
27	0.1996	(21,10)	C 0	0.1996	(157, 4)	C 0	0.1995	(268, 6)	C 0	0.1990	(71, 6)	C 0	0.1984	(359,18)	C 0	0.1981	(96, 2)	C 0
28	0.3011*	(265, 4)	C 0	0.2959	(214, 1)	C 0	0.2956	(102, 8)	C 0	0.2956	(136, 5)	C 0	0.2956	(267,22)	C 0	0.2954	(340,22)	C 0
29	0.2411	(182, 1)	C 0	0.2404	(21, 1)	C 0	0.2394	(268,20)	C 0	0.2369	(14,16)	C 0	0.2369	(165,21)	C 0	0.2369	(271,19)	C 0
30	0.2337	(20, 7)	C 0	0.2337	(47, 1)	C 0	0.2337	(201, 5)	C 0	0.2337	(261, 9)	C 0	0.2331	(96, 2)	C 0	0.2331	(90, 1)	C 0
31	0.2652	(104, 4)	C 0	0.2619	(262,23)	C 0	0.2619	(269, 4)	C 0	0.2619	(280,24)	C 0	0.2619	(281,24)	C 0	0.2613	(269,24)	C 0
32	0.2553	(103, 2)	C 0	0.2538	(104, 4)	C 0	0.2476	(221, 5)	C 0	0.2473	(269,24)	C 0	0.2473	(278,19)	C 0	0.2443	(221, 1)	C 0
33	0.1214	(146, 3)	C 0	0.1207	(103,24)	C 0	0.1207	(271, 6)	C 0	0.1206	(60, 7)	C 0	0.1195	(262, 2)	C 0	0.1169	(239,23)	C 0
34	0.1326	(265, 4)	C 0	0.1302	(248,20)	C 0	0.1301	(205, 8)	C 0	0.1301	(269, 3)	C 0	0.1301	(356,17)	C 0	0.1298	(350, 2)	C 0
35	0.1276	(13, 6)	C 0	0.1276	(259,21)	C 0	0.1271	(77, 5)	C 0	0.1271	(141,22)	C 0	0.1268	(278, 3)	C 0	0.1265	(135,21)	C 0
36	0.1160	(18, 6)	C 0	0.1128	(300, 3)	C 0	0.1039	(137, 1)	C 0	0.1039	(260,11)	C 0	0.1024	(121,20)	C 0	0.1024	(261, 4)	C 0
37	0.1651	(18, 6)	C 0	0.1527	(121,20)	C 0	0.1527	(261, 4)	C 0	0.1505	(239, 2)	C 0	0.1505	(288, 3)	C 0	0.1460	(260, 2)	C 0
38	0.1788	(18, 6)	C 0	0.1782	(121,20)	C 0	0.1782	(261, 4)	C 0	0.1772	(239, 2)	C 0	0.1772	(288, 3)	C 0	0.1755	(281, 2)	C 0
39	0.1786	(20,23)	C 0	0.1786	(303,21)	C 0	0.1781	(54, 3)	C 0	0.1763	(260, 2)	C 0	0.1731	(239, 2)	C 0	0.1731	(288, 3)	C 0
40	0.2024	(248,20)	C 0	0.2021	(205, 8)	C 0	0.2021	(269, 3)	C 0	0.2021	(356,17)	C 0	0.2020	(350, 2)	C 0	0.2018	(79,22)	C 0
41	0.1958	(103,10)	C 0	0.1958	(135,24)	C 0	0.1958	(30,16)	C 0	0.1957	(296,18)	C 0	0.1955	(30,14)	C 0	0.1955	(204,24)	C 0
42	0.2888	(96, 1)	C 0	0.2888	(210, 7)	C 0	0.2887	(255,24)	C 0	0.2887	(103, 6)	C 0	0.2883	(17,22)	C 0	0.2883	(219, 5)	C 0
43	0.3001	(343,18)	C 0	0.2995*	(269, 6)	C 0	0.2995	(135,21)	C 0	0.2995	(218, 9)	C 0	0.2989	(91,24)	C 0	0.2989	(160, 7)	C 0
44	0.2606	(360, 2)	C 0	0.2606	(71, 1)	C 0	0.2606	(71,24)	C 0	0.2606	(343,11)	C 0	0.2603	(62, 2)	C 0	0.2603	(74, 4)	C 0
45	0.2564	(179, 7)	C 0	0.2564	(227, 2)	C 0	0.2563	(278, 4)	C 0	0.2563	(268,24)	C 0	0.2563	(296,19)	C 0	0.2558	(198, 4)	C 0
46	0.2334	(60, 7)	C 0	0.2314	(239,23)	C 0	0.2309	(103,24)	C 0	0.2309	(271, 6)	C 0	0.2301	(146, 3)	C 0	0.2295	(146, 2)	C 0

CALM DURATION FREQUENCY

Hours of Consecutive Calm Winds	Frequency of Occurrence	(Julian day/hour ending) of Significant Occurrences
1	123	(1,23)(10, 9)(17,24)(19, 1)(19,24)(20, 8)(20,14)(20,24)(21, 3)(21, 7) (48,24)(50, 3)(50, 6)(51, 7)(54, 1)(54, 9)(54,11)(55, 7)(59,12)(62, 4) (62, 6)(64, 2)(71, 5)(74, 1)(76,12)(77, 3)(85, 1)(87, 4)(87, 7)(88, 3) (88, 5)(88, 8)(89, 5)(89,12)(89,17)(89,23)(90, 8)(91, 1)(91, 4)(92,10) (95,23)(96,24)(97, 2)(99, 3)(102, 5)(103, 1)(107,20)(122,21)(123, 2)(123, 4) (123, 9)(136, 4)(142,24)(143, 2)(143, 9)(145,24)(146, 4)(147,21)(148, 6)(148,15) (154, 4)(156, 3)(156,17)(156,19)(156,21)(156,23)(159, 2)(168,24)(173, 3)(175,13) (176,24)(177, 2)(178, 5)(182,23)(183,13)(185, 5)(186, 5)(188, 4)(192,24)(196, 5) (201, 3)(201, 6)(203, 1)(205, 1)(208, 1)(208, 4)(209, 2)(210, 4)(210, 6)(214, 2) (220, 4)(221, 7)(223, 3)(223, 7)(229, 8)(231, 3)(231,24)(232, 2)(232,24)(235,22) (235,24)(237, 4)(238, 4)(238, 6)(239, 5)(239, 7)(240, 3)(244, 7)(244, 9)(247,24) (248, 3)(251, 8)(253, 5)(254, 2)(254, 4)(260,10)(265,20)(266,19)(271, 4)(306,14) (341,10)(341,15)(345, 9)
2	25	(17, 2)(54, 7)(60, 3)(65,19)(71, 3)(77, 7)(85, 7)(95, 3)(109, 3)(122,24) (125, 3)(146,21)(147, 3)(153,24)(165, 8)(203, 4)(209, 5)(217, 3)(222, 2)(222, 6) (224, 2)(240, 8)(244, 3)(249, 3)(250, 3)
3	8	(15, 5)(70, 9)(103, 5)(147,13)(194, 6)(202, 4)(226, 1)(232, 8)
4	5	(90, 5)(156, 8)(160, 6)(168, 8)(226, 7)
5	1	(150, 4)

Program terminated normally

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

General Information

Run start date: 01/01/90 Julian: 1
end date: 12/31/90 Julian: 365

A Tier 1 approach was used for input data preparation.

The MODE flag has been set to C for calculating CO averages.

Ambient background concentrations are excluded from the averages below.

Site & Meteorological Constants

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 100. CM ATIM = 60.

Met. Sfc. Sta. Id & Yr = 24233 90
Upper Air Sta. Id & Yr = 94240 90

Urban mixing heights were processed.

In 1990, Julian day 1 is a Monday.

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
1.	Link_1	551840.62	5273806.00	551936.38	5273866.00	113.	58.	AG	0.0	12.0	
2.	Link_2	551936.38	5273872.50	551840.31	5273813.00	113.	238.	AG	0.0	12.0	
3.	Link_3	551936.38	5273866.00	552043.88	5273933.50	127.	58.	AG	0.0	12.0	
4.	Link_4	552044.06	5273941.50	551936.38	5273872.50	128.	237.	AG	0.0	12.0	
5.	Link_5	551933.31	5273867.00	551935.19	5273775.00	92.	179.	AG	0.0	10.0	
6.	Link_6	551939.00	5273775.00	551938.12	5273823.00	48.	359.	AG	0.0	10.0	
7.	Link_7	551937.12	5273869.00	551938.19	5274028.00	159.	0.	AG	0.0	10.0	
8.	Link_8	551934.12	5274028.50	551933.31	5273918.00	111.	180.	AG	0.0	10.0	
9.	Link_9	551938.00	5273822.50	551937.06	5273867.00	45.	359.	AG	0.0	10.0	
10.	Link_10	551933.19	5273918.00	551933.19	5273867.50	50.	180.	AG	0.0	10.0	
11.	Link_11	552530.38	5274329.00	552606.12	5274407.00	109.	44.	AG	0.0	10.0	
12.	Link_12	552605.94	5274407.00	552724.75	5274526.00	168.	45.	AG	0.0	10.0	
13.	Link_13	552605.69	5274413.00	552724.06	5274531.00	167.	45.	AG	0.0	10.0	
14.	Link_14	552605.50	5274412.50	552522.19	5274329.00	118.	225.	AG	0.0	10.0	
15.	Link_15	552611.81	5274328.00	552611.56	5274368.00	40.	360.	AG	0.0	10.0	

Link Data Constants - (Variable data in *.LNK file)

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	LENGTH (M)	BRG (DEG)	TYPE	H (M)	W (M)	NLANES
16.	Link_16	552605.50	5274410.00	552605.69	5274328.00	82.	180.	AG	0.0	10.0	
17.	Link_17	552611.12	5274416.00	552609.75	5274587.50	172.	360.	AG	0.0	10.0	
18.	Link_18	552604.81	5274457.50	552603.88	5274587.00	130.	360.	AG	0.0	10.0	
19.	Link_19	552604.81	5274458.00	552605.50	5274411.00	47.	179.	AG	0.0	10.0	
20.	Link_20	552611.12	5274368.00	552610.94	5274416.50	49.	360.	AG	0.0	10.0	
21.	Link_21	552802.50	5274609.00	552864.81	5274673.50	90.	44.	AG	0.0	12.0	
22.	Link_22	552864.62	5274674.00	552936.94	5274746.50	102.	45.	AG	0.0	12.0	
23.	Link_23	552934.00	5274748.50	552880.38	5274694.00	76.	225.	AG	0.0	12.0	
24.	Link_24	552880.44	5274694.00	552799.88	5274611.50	115.	224.	AG	0.0	12.0	
25.	Link_25	552884.25	5274622.50	552866.75	5274679.00	59.	343.	AG	0.0	12.0	
26.	Link_26	552863.69	5274675.50	552880.31	5274620.00	58.	163.	AG	0.0	12.0	
27.	Link_27	552881.31	5274693.00	552861.69	5274713.00	28.	316.	AG	0.0	12.0	
28.	Link_28	552861.69	5274713.00	552852.38	5274727.00	17.	326.	AG	0.0	12.0	
29.	Link_29	552852.38	5274727.00	552851.06	5274750.00	23.	357.	AG	0.0	12.0	
30.	Link_30	552848.00	5274749.50	552849.75	5274725.00	25.	176.	AG	0.0	12.0	
31.	Link_31	552849.75	5274725.00	552852.56	5274707.00	18.	171.	AG	0.0	12.0	
32.	Link_32	552852.56	5274707.00	552864.19	5274677.00	32.	159.	AG	0.0	12.0	
33.	Link_33	552859.00	5274690.50	552863.00	5274680.50	11.	158.	AG	0.0	10.0	1
34.	Link_34	552875.75	5274651.00	552868.12	5274674.50	25.	342.	AG	0.0	12.0	1
35.	Link_35	552847.19	5274657.50	552862.06	5274672.50	21.	45.	AG	0.0	12.0	1
36.	Link_36	552896.00	5274711.00	552881.81	5274697.00	20.	225.	AG	0.0	12.0	2
37.	Link_37	552847.31	5274654.50	552862.56	5274671.00	22.	43.	AG	0.0	6.0	1
38.	Link_38	552889.94	5274701.50	552883.75	5274695.50	9.	226.	AG	0.0	6.0	1

Receptor Data

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	R_001	551942.62	5273885.00	1.8
2.	R_002	551942.81	5273862.50	1.8
3.	R_003	551928.00	5273853.00	1.8
4.	R_004	551927.81	5273875.00	1.8
5.	R_005	552616.31	5274431.00	1.8
6.	R_006	552616.12	5274410.00	1.8
7.	R_007	552600.06	5274393.00	1.8
8.	R_008	552599.81	5274415.00	1.8
9.	R_009	552880.31	5274703.00	1.8
10.	R_010	552890.94	5274691.50	1.8
11.	R_011	552882.81	5274683.50	1.8

Receptor Data

RECEPTOR		COORDINATES (M) X	Y	Z
12.	R_012	552871.69	5274694.00	1.8
13.	R_013	552866.50	5274688.50	1.8
14.	R_014	552874.44	5274675.00	1.8
15.	R_015	552861.56	5274661.50	1.8
16.	R_016	552856.81	5274679.00	1.8

****
Please check the meteorological data listed in CAL3HR.ERR.
****

Model Results

Remarks : In search of the wind direction corresponding
to the maximum concentration, only the first
direction, of the directions with the same maximum
concentrations, is indicated as the maximum.

* MAXIMUM HOURLY CONCENTRATIONS WITH ANY AMBIENT BACKGROUND CONCENTRATIONS (BKG) ADDED
(PPM)

	REC0001	REC0002	REC0003	REC0004	REC0005	REC0006	REC0007	REC0008	REC0009	REC0010
MAX+BKG	0.1378	0.1834	0.1965	0.1317	0.1429	0.1396	0.1433	0.1415	0.1909	0.1654
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1378	0.1834	0.1965	0.1317	0.1429	0.1396	0.1433	0.1415	0.1909	0.1654
WIND DIR	196	253	45	72	210	237	29	58	72	1
JULIAN	75	18	60	18	341	261	281	300	18	281
HOUR	23	23	7	6	3	8	2	3	6	4

	REC0011	REC0012	REC0013	REC0014	REC0015	REC0016
MAX+BKG	0.1820	0.1741	0.2023	0.2290	0.2214	0.1887
- BKG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MAX	0.1820	0.1741	0.2023	0.2290	0.2214	0.1887
WIND DIR	234	58	176	234	29	145
JULIAN	278	300	205	278	281	62
HOUR	3	3	7	3	2	24

THE HIGHEST CONCENTRATION OF 0.2290 PPM OCCURRED AT RECEPTOR REC0014.

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Output Section
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NOTES PERTAINING TO THE REPORT

1. THE HIGHEST AVERAGE IN EACH OF THE FIRST TWO COLUMNS OF EACH TABLE BELOW ARE SUFFIXED BY AN ASTERISK (*). FOR PM OUTPUT, THERE IS ONLY ONE COLUMN AND ASTERISK FOR THE ANNUAL AVERAGE/PERIOD OF CONCERN TABLE.

2. THE NUMBERS IN PARENTHESES ARE THE JULIAN DAY AND ENDING HOUR FOR THE PRECEDING AVERAGE.

3. THE NUMBER OF CALM HOURS USED IN PRODUCING EACH AVERAGE ARE PREFIXED BY A C.

PRIMARY AVERAGES.

MAXIMUM 8-HOUR RUNNING NONOVERLAPPING AVERAGE CONCENTRATIONS
IN PARTS PER MILLION (PPM),
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Receptor	Highest			Second highest		
Number	Conc	Ending Day Hr	Calm	Conc	Ending Day Hr	Calm
1	0.11	(168, 6)	C 2	0.10	(109, 6)	C 2
2	0.15	(267, 1)	C 1	0.14	(136, 6)	C 1
3	0.12	(146, 7)	C 2	0.11	(49,10)	C 0
4	0.10	(341, 8)	C 0	0.09	(360, 1)	C 0
5	0.10	(168, 6)	C 2	0.10	(109, 6)	C 2
6	0.12	(136, 6)	C 1	0.11	(267, 1)	C 1
7	0.10	(136, 6)	C 1	0.09	(263, 4)	C 0
8	0.09	(341, 8)	C 0	0.09	(147,12)	C 2
9	0.14	(341, 7)	C 0	0.13	(168, 6)	C 2
10	0.13	(269, 8)	C 0	0.13	(136, 6)	C 1
11	0.14	(136, 6)	C 1	0.13	(269, 6)	C 0
12	0.14	(168, 6)	C 2	0.13	(109, 6)	C 2
13	0.16	(268, 8)	C 0	0.16	(109, 6)	C 2
14	0.19*	(136, 6)	C 1	0.17*	(267, 1)	C 1
15	0.15	(263, 4)	C 0	0.14	(240, 5)	C 1
16	0.13	(360, 1)	C 0	0.13	(20, 5)	C 1

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr	Highest Ending			Second Highest Ending			Third Highest Ending			Fourth Highest Ending			Fifth Highest Ending			Sixth Highest Ending		
No.	Conc	Day Hr	Calm	Conc	Day Hr	Calm	Conc	Day Hr	Calm	Conc	Day Hr	Calm	Conc	Day Hr	Calm	Conc	Day Hr	Calm
1	0.1378	(75,23)	C 0	0.1378	(226, 3)	C 0	0.1378	(39,19)	C 0	0.1378	(121, 4)	C 0	0.1378	(147, 8)	C 0	0.1378	(281, 1)	C 0

JOB: C:\Lakes\CALRoads View\Projects\150820 S RUN: CAL3QHCR RUN

SIX HIGHEST 1-HOUR END-TO-END AVERAGE CONCENTRATIONS IN PARTS PER MILLION
EXCLUDING AMBIENT BACKGROUND CONCENTRATIONS.

Rcptr No.	Highest Conc	Ending Day Hr	Calm	Second Highest Conc	Ending Day Hr	Calm	Third Highest Conc	Ending Day Hr	Calm	Fourth Highest Conc	Ending Day Hr	Calm	Fifth Highest Conc	Ending Day Hr	Calm	Sixth Highest Conc	Ending Day Hr	Calm
2	0.1834	(18,23)	C 0	0.1834	(92, 1)	C 0	0.1834	(108,11)	C 0	0.1834	(136, 2)	C 0	0.1834	(255,18)	C 0	0.1834	(266,23)	C 0
3	0.1965	(60, 7)	C 0	0.1938	(103,24)	C 0	0.1938	(271, 6)	C 0	0.1929	(146, 3)	C 0	0.1922	(239,23)	C 0	0.1893	(146, 2)	C 0
4	0.1317	(18, 6)	C 0	0.1282	(121,20)	C 0	0.1282	(261, 4)	C 0	0.1274	(239, 2)	C 0	0.1274	(288, 3)	C 0	0.1254	(260, 2)	C 0
5	0.1429	(341, 3)	C 0	0.1428	(13,13)	C 0	0.1428	(296,21)	C 0	0.1428	(198, 4)	C 0	0.1428	(165,24)	C 0	0.1427	(287, 5)	C 0
6	0.1396	(261, 8)	C 0	0.1396	(136, 6)	C 0	0.1396	(360, 9)	C 0	0.1393	(71, 7)	C 0	0.1393	(341,22)	C 0	0.1393	(136, 3)	C 0
7	0.1433	(281, 2)	C 0	0.1426	(172,23)	C 0	0.1419	(199, 6)	C 0	0.1403	(224, 3)	C 0	0.1385	(147, 5)	C 0	0.1363	(146, 2)	C 0
8	0.1415	(300, 3)	C 0	0.1412	(137, 1)	C 0	0.1412	(260,11)	C 0	0.1405	(86, 3)	C 0	0.1362	(262, 2)	C 0	0.1286	(146, 3)	C 0
9	0.1909	(18, 6)	C 0	0.1879	(121,20)	C 0	0.1879	(261, 4)	C 0	0.1873	(239, 2)	C 0	0.1873	(288, 3)	C 0	0.1857	(260, 2)	C 0
10	0.1654	(281, 4)	C 0	0.1653	(81, 6)	C 0	0.1652	(55,12)	C 0	0.1651	(54, 2)	C 0	0.1651	(216, 4)	C 0	0.1651	(290, 6)	C 0
11	0.1820	(278, 3)	C 0	0.1810	(343,18)	C 0	0.1810	(269, 6)	C 0	0.1810	(135,21)	C 0	0.1810	(218, 9)	C 0	0.1808	(91,24)	C 0
12	0.1741	(300, 3)	C 0	0.1738	(305, 2)	C 0	0.1738	(341, 2)	C 0	0.1738	(55,11)	C 0	0.1738	(112, 5)	C 0	0.1738	(77, 4)	C 0
13	0.2023	(205, 7)	C 0	0.2023	(266, 8)	C 0	0.2023	(319,23)	C 0	0.2023	(341, 4)	C 0	0.2021	(350, 6)	C 0	0.2019	(89,20)	C 0
14	0.2290*	(278, 3)	C 0	0.2284*	(91,24)	C 0	0.2284	(160, 7)	C 0	0.2284	(233, 1)	C 0	0.2283	(136, 3)	C 0	0.2283	(267,23)	C 0
15	0.2214	(281, 2)	C 0	0.2209	(172,23)	C 0	0.2203	(199, 6)	C 0	0.2138	(224, 3)	C 0	0.2074	(209, 3)	C 0	0.2056	(147, 5)	C 0
16	0.1887	(62,24)	C 0	0.1880	(140,20)	C 0	0.1880	(342, 1)	C 0	0.1868	(91, 6)	C 0	0.1868	(282, 4)	C 0	0.1863	(316, 2)	C 0

CALM DURATION FREQUENCY

Hours of Consecutive Calm Winds	Frequency of Occurrence	(Julian day/hour ending) of Significant Occurrences
1	123	(1,23)(10, 9)(17,24)(19, 1)(19,24)(20, 8)(20,14)(20,24)(21, 3)(21, 7) (48,24)(50, 3)(50, 6)(51, 7)(54, 1)(54, 9)(54,11)(55, 7)(59,12)(62, 4) (62, 6)(64, 2)(71, 5)(74, 1)(76,12)(77, 3)(85, 1)(87, 4)(87, 7)(88, 3) (88, 5)(88, 8)(89, 5)(89,12)(89,17)(89,23)(90, 8)(91, 1)(91, 4)(92,10) (95,23)(96,24)(97, 2)(99, 3)(102, 5)(103, 1)(107,20)(122,21)(123, 2)(123, 4) (123, 9)(136, 4)(142,24)(143, 2)(143, 9)(145,24)(146, 4)(147,21)(148, 6)(148,15) (154, 4)(156, 3)(156,17)(156,19)(156,21)(156,23)(159, 2)(168,24)(173, 3)(175,13) (176,24)(177, 2)(178, 5)(182,23)(183,13)(185, 5)(186, 5)(188, 4)(192,24)(196, 5) (201, 3)(201, 6)(203, 1)(205, 1)(208, 1)(208, 4)(209, 2)(210, 4)(210, 6)(214, 2) (220, 4)(221, 7)(223, 3)(223, 7)(229, 8)(231, 3)(231,24)(232, 2)(232,24)(235,22) (235,24)(237, 4)(238, 4)(238, 6)(239, 5)(239, 7)(240, 3)(244, 7)(244, 9)(247,24) (248, 3)(251, 8)(253, 5)(254, 2)(254, 4)(260,10)(265,20)(266,19)(271, 4)(306,14) (341,10)(341,15)(345, 9)
2	25	(17, 2)(54, 7)(60, 3)(65,19)(71, 3)(77, 7)(85, 7)(95, 3)(109, 3)(122,24) (125, 3)(146,21)(147, 3)(153,24)(165, 8)(203, 4)(209, 5)(217, 3)(222, 2)(222, 6) (224, 2)(240, 8)(244, 3)(249, 3)(250, 3)
3	8	(15, 5)(70, 9)(103, 5)(147,13)(194, 6)(202, 4)(226, 1)(232, 8)
4	5	(90, 5)(156, 8)(160, 6)(168, 8)(226, 7)
5	1	(150, 4)

Program terminated normally