*Prepared For:*

New Hampshire DOT

# Bow Concord I-93 Improvements Project

## Bow and Concord, NH

# *Final* Air Quality Analysis

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**NHDOT Project No. 13742**

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# 1 INTRODUCTION

This report documents the methods and results of a microscale air quality analysis completed for the Bow-Concord 13742 project located on Interstate 93. FHWA's technical advisory on environmental documents requires consideration of air quality effects as part of NEPA compliance. This may include compliance with transportation conformity requirements under the Clean Air Act, emissions analysis to determine compliance with national standards, mobile source air toxics, and greenhouse gas emissions.

The Federal Clean Air Act requires that the Environmental Protection Agency (EPA) establish health-based National Ambient Air Quality Standards (NAAQS). The EPA has identified "criteria" pollutants for which NAAQS have been promulgated. The management of criteria pollutants is largely accomplished through control measures tailored by state, local, and tribal governments in their State Implementation Plans (SIP). The process of determining the classification of the SIP begins with State and Local Air Monitoring Stations (SLAMS) indicating Ambient Air Pollutants. The EPA monitors these stations and revises the ambient air standards every 5 years based on new scientific findings. The EPA then classifies state regions according to recent standards. This classification indicates "attainment" or meeting NAAQS, "non-attainment" or not meeting NAAQS, and "maintenance" or in remediation from previous non-attainment classification. The states amend or cater SIPs to meet the current standards pending EPA approval.

On July 18, 1997, the EPA adopted a new NAAQS for ozone and fine particulate matter. Under the 97' NAAQS the New Hampshire Counties of Merrimack, Hillsborough, Rockingham, and Strafford were classified as either serious or marginal nonattainment. On July 20, 2013, all of New Hampshire was re-classified as unclassifiable/attainment under the 2008 8-hour Ozone NAAQS, also known as the 2008 ozone standard, and the 1997 8-Hour Ozone NAAQS was revoked for transportation conformity purposes in the Boston-Manchester-Portsmouth (SE) NH area. On April 23, 2018 Federal Highway Administration sent out the memorandum "Interim Guidance on Conformity Requirements for the 1997 Ozone NAAQS" that states recent court proceedings struck down portions of the 2008 Ozone NAAQS and reinstituted the 1997 8-Hour Ozone NAAQS. It should be noted that the project is not located within the '97 Boston-Manchester-Portsmouth (SE) NH area. On March 10, 2014, EPA approved maintenance plans, known as "limited maintenance plans," for the City of Manchester and City of Nashua. These limited maintenance plans have a 2021 horizon year. (The second ten-year carbon monoxide (CO) maintenance period terminates on January 29, 2021.)

On June 2, 2010 the EPA issued a final rule revising the primary sulfur dioxide ($SO_2$) NAAQS, and simultaneously revoked both the existing 24-hour and annual primary $SO_2$ standard redesignating parts of central New Hampshire under Non-attainment.

Section 176(c) of the Clean Air Act prohibits Federal agencies from funding or approving activities that do not conform to an applicable SIP for achieving compliance with the NAAQS. A conformity determination may involve analysis of both regional and project level air quality effects.

This project is included in the latest Statewide Transportation Improvement Program (STIP) plan (amended 02/05/2018) and is listed as a regionally significant project. The 2017 – 2020 NH STIP has been developed through a statewide and metropolitan planning process that is consistent with the requirements of 23 CFR Part 450.216. All projects designated as regionally significant by the Metropolitan Planning Organizations (MPO) and Interagency Consultation (IAC), regardless of the funding source, are included in the STIP. The proposed widening of I-93 to 3 travel lanes and one auxiliary lane between exits in each direction, as embodied in the proposed alternative, was included as part of this conformity determination. Therefore, a regional analysis outside of that completed for the STIP conformity determination is not necessary.

The National Environmental Policy Act (NEPA) requires, to the fullest extent possible, that policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with its environmental protection goals, and Federal agencies use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment (42 U.S.C. 4332). Beginning October 7, 2016, project sponsors are required to use Motor Vehicle Emission Simulator (MOVES) to conduct emission analysis for both transportation conformity determinations and for NEPA purposes. Under NEPA this project is classified as requiring “quantitative analysis for projects with low potential MSAT effects”.

This hot-spot analysis is required per the Clean Air Act to show project-level conformity. Project-level conformity requires an analysis of Carbon Monoxide (CO), fine particles with a diameter of 2.5 micrometers or less (PM2.5), and coarser particles with a diameter of 10 micrometers or less (PM10). Vehicle travel has been identified as a major contributor to these criteria pollutants and as a result the microscale analysis was completed for the three most congested intersections during the period of highest traffic volumes, specifically the 2035 Build Alternative. Methods and results are reported below.

The levels for attainment for CO as established in the NAAQS are a primary 1-hour concentration of 35 ppm and an 8-hour concentration of 9 ppm. For particulate pollution PM2.5, the threshold is a primary 1-year annual average of 12 $\mu g/m^3$ and a 24-hour average of 35 $\mu g/m^3$. For particulate pollution PM10, the standard is set to a primary 24-hour average of 150 $\mu g/m^3$.

This microscale analysis was done for the preferred alternative build design year 2035, which had the highest traffic volumes of the build and no-build alternatives.

# 2 METHODOLOGY

The three Intersections in the analysis were chosen based on throughput traffic volumes, levels of service, and distance from or connection with the Interstate. The intersections are as follows:

- Exit 13 SPUI and Manchester Street (Figure 1).
- Exit 14 Northbound off Ramp with Ft Eddy Road (Figure 2).
- Exit 14 Southbound off and on ramp with Loudon Road (Figure 2).

The analysis was done with the EPA Motor Vehicle Emissions Simulator (MOVES2014a) and dispersion modeling software CAL3QHC through the CAL3i Windows interface. The function of the MOVES modeling was to determine emission factors and emission inventories from on-road motor vehicles. MOVES models the emissions produced from cars and trucks at the identified signalized intersections based on vehicle types, time period of analysis, geographical area, vehicle operating characteristics, and road types. The pollution output from motor vehicles as calculated through MOVES2014a is then used as input for the CAL3QHC dispersion modeling. The CAL3QHC dispersion modeling determines concentrations of the pollutants at set distances from the intersection based on roadway geometries, receptor locations, meteorological conditions and vehicular emission rates. This analysis is used to determine the concentrations of pollutants at receptor locations intended to replicate likely pedestrian experiences, essentially recording the air quality for someone walking along the sidewalk or nearby.

The worst-case scenario was modeled for the build design year with the presumption that if the concentrations of CO, $PM_{2.5}$, and PM10 are substantially below the NAAQS limits, then it can be safe to assume the project will meet these standards during other scenarios, and no further modeling is necessary. The worst-case modeling assumptions were made for traffic, meteorological conditions, and other inputs to generate estimates of the maximum concentrations. Traffic volumes used in the model were the peak hours for the AM and PM. The model was run for January because the winter months historically are found to have higher concentrations of air pollutants.

# 3 EMISSION RATES – MOVES2014A

## 3.1 MOVES Inputs

All modeling inputs and procedures were developed based on EPA guidance, including *EPA 1992 Guideline for Modeling Carbon Monoxide from Roadway Intersections*, *Using MOVES2014 in Project-Level Carbon Monoxide Analyses*, and *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas*. These inputs reflect the traffic information in Appendix B, including vehicle volumes and classifications (trucks, etc.). For vehicle speeds, the best method with available information to model the various links was determined to be the Average Speed Method. It was determined that a speed of 55 mph would be used on I-93 and 30 mph would be used for all other free flow links. Free flow link speeds are based on best engineering judgement and observations made by the engineer at peak hour conditions. The traffic was separated out by "links" depicting three distinct behaviors. Links were classified as queue links (Q), departing free flow links (DFF), or approach free flow links (AFF). Queue links represented vehicles waiting idle at the light. DFF and AFF represented vehicle movement as departing or approaching the intersection in absence of the traffic light, only constrained by geometry and volume.

Input data for MOVES is summarized in Tables 1 and 2.

Table 1. MOVES Input Parameters and Data Sources

| Parameter | Project Specific Inputs for I-93 Exit 13 and Exit 14 Intersections |
|---|---|
| Scale | • On Road<br>• Project<br>• Inventory (CO, and PM10 queue and PM2.5 queue)<br>• Emission Rates (PM2.5 and PM10 free flow links) |
| Time Span | • 2035 (Future design year)<br>• January (Worst Case Scenario/ Conservative)<br>• Weekday<br>• AM (7am – 8am), PM (5pm – 6pm) |
| Geographic Bounds | • New Hampshire – Merrimack County<br>• Database – see Table 2 below |
| Vehicles/Equipment<br>On Road Vehicles | • Fuel – Diesel Fuel<br>• Fuel – Gasoline<br>• Source Type – Combination Short Haul Truck<br>• Source Type – Motorcycle<br>• Source Type – Passenger Car<br>• Source Type – Passenger Truck<br>• Source Type – Single Unit Short Haul Truck<br>• Source Type – Transit Buses |
| Road Type | • Urban Unrestricted Access |
| Pollutants and Process | • Process<br>  ○ Running Exhaust<br>  ○ Start Exhaust<br>  ○ Evap Permeation<br>  ○ Evap Fuel Leaks<br>  ○ Crankcase Running Exhaust<br>  ○ Crankcase Start Exhaust<br>  ○ Crankcase Extended Idle Exhaust<br>  ○ Extended Idle Exhaust<br>  ○ Auxiliary Power Exhaust<br>  ○ Breakwear<br>  ○ Tirewear<br>• Pollutant<br>  ○ Total Gaseous Hydrocarbons<br>  ○ Primary Exhaust PM2.5 – Total<br>  ○ Primary Exhaust PM2.5 – Species*<br>  ○ Primary PM2.5 – Breakwear Particulate<br>  ○ Primary PM2.5 – Tirewear Particulate<br>  ○ Primary Exhaust PM10 – Total<br>  ○ Primary PM10 – Breakwear Particulate<br>  ○ Primary PM10 – Tirewear Particulate |
| General Output | • Units – Grams, Joules and Miles<br>• Activity – Distance Traveled; Population (CO, and PM10 queue and PM2.5 queue)<br>• Activity – Default (PM2.5 and PM10 free flow links) |

* Species Include – Aluminum, Ammonium (NH4), Calcium, Chloride< CMAQ5.0 Unspeciated (PMOTHR), Composite – NonECPM, Elemental Carbon, H2O (aerosol), Iron, Magnesium, Manganese Compounds, Nitrate (No3), Non – Carbon Organic Mater (NCOM)

Table 2. Additional MOVES Input Data

| MOVES Project Data Manager | |
|---|---|
| Age Distribution | National Default Age Distribution by Source Type from EPA |
| Fuel | Exported Default Data from MOVES |
| Meteorology Data | Exported Default Data from MOVES |
| I/M Program | Exported Default Data from MOVES |
| Link Source Types | See Appendix B |
| Links | Using average speed method - See Appendix A |

## 3.2 MOVES Output

The MOVES2014a model had to be run twice for both the AM and the PM design hours at each location to produce the pollutants in units of both Grams Per Vehicle-Miles for free flow links and Grams Per Vehicle-Hour for queue links. Those runs are reported in Table 3, Table 4, and Table 5 for CO, PM10, and PM2.5, respectively.

Table 3. CO Emission Rates Calculated from MOVES

| Location | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB Q | | 1.74022 |
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB AFF | 0.95095 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB DFF | 0.93990 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB Q | | 1.74022 |
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB AFF | 1.29565 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB DFF | 0.95095 | |
| Exit 14 NB 2035 Build A.M. | Exit 14 NB off Ramp NB Q | | 1.74022 |
| Exit 14 NB 2035 Build A.M. | Exit 14 NB off Ramp NB AFF | 0.69434 | |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd NB DFF | 0.75718 | |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd SB Q | | 1.74022 |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd SB AFF | 1.25942 | |
| Exit 14 NB 2035 Build A.M. | I 93 SB | 0.756598 | |
| Exit 14 NB 2035 Build A.M. | I 93 NB | 0.756597 | |
| | | | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB Q | | 1.75284 |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB AFF | 0.96167 | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB DFF | 0.96435 | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB Q | | 1.75284 |
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB AFF | 1.32238 | |

| Location | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB DFF | 0.96168 | |
| Exit 14 NB 2035 Build P.M. | Exit 14 NB off Ramp NB Q | | 1.75284 |
| Exit 14 NB 2035 Build P.M. | Exit 14 NB off Ramp NB AFF | 0.70224 | |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd NB DFF | 0.76604 | |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd SB Q | | 1.75284 |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd SB AFF | 1.29435 | |
| Exit 14 NB 2035 Build P.M. | I 93 SB | 0.796697 | |
| Exit 14 NB 2035 Build P.M. | I 93 NB | 0.796697 | |
| | | | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB Q | | 1.74021 |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB AFF | 1.09756 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB DFF | 1.53496 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB Q | | 1.74022 |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB AFF | 0.68022 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB DFF | 1.09756 | |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB off Ramp SB Q | | 1.74022 |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB off Ramp SB AFF | 0.69434 | |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB on Ramp SB DFF | 0.79329 | |
| Exit 14 SB 2035 Build A.M. | I 93 SB | 0.766368 | |
| Exit 14 SB 2035 Build A.M. | I 93 NB | 0.766367 | |
| | | | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB Q | | 1.75284 |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB AFF | 1.12343 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB DFF | 1.55125 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB Q | | 1.75285 |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB AFF | 0.68856 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB DFF | 1.12343 | |
| Exit 14 SB 2035 Build P.M. | Exit 14 SB off Ramp SB Q | | 1.75285 |
| Exit 14 SB 2035 Build P.M. | Exit 14 SB off Ramp SB AFF | 0.70224 | |
| Exit 14 SB 2035 Build P.M. | Exit 14 SB on Ramp SB DFF | 0.80260 | |
| Exit 14 SB 2035 Build P.M. | I 93 SB | 0.787965 | |
| Exit 14 SB 2035 Build P.M. | I 93 NB | 0.787964 | |
| | | | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB Q | | 1.74022 |
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB AFF | 0.78848 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB DFF | 0.97898 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB Q | | 1.74022 |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB AFF | 1.07498 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB DFF | 1.14533 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB off Ramp Q | | 1.74022 |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB off Ramp AFF | 0.95082 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB on Ramp DFF | 1.25492 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off Ramp Q | | 1.74022 |

| Location | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off Ramp AFF | 0.94776 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB on Ramp DFF | 0.91078 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB on slip ramp | 1.00031 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off slip ramp | 1.88178 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB on slip ramp | 1.03398 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB | 0.7646755 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB | 0.7646755 | |
| | | | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB Q | | 1.75285 |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB AFF | 0.79730 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB DFF | 0.99855 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB Q | | 1.75284 |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB AFF | 1.09320 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB DFF | 1.15653 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB off Ramp Q | | 1.75284 |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB off Ramp AFF | 0.96154 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB on Ramp DFF | 1.26723 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off Ramp Q | | 1.75285 |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off Ramp AFF | 0.95816 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB on Ramp DFF | 0.95446 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB on slip ramp | 1.01081 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off slip ramp | 1.93739 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB on slip ramp | 1.08501 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB | 0.796697 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB | 0.796697 | |
| | | | |

Table 4. PM10 Emission Rates Calculated from MOVES

| RUN | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB Q | | 0.04602 |
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB AFF | 0.06743 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB DFF | 0.08079 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB Q | | 0.04602 |
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB AFF | 0.05964 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB DFF | 0.06743 | |
| Exit 14 NB 2035 Build A.M. | Exit 14 NB off Ramp NB Q | | 0.04602 |
| Exit 14 NB 2035 Build A.M. | Exit 14 NB off Ramp NB AFF | 0.09919 | |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd NB DFF | 0.08623 | |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd SB Q | | 0.04602 |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd SB AFF | 0.01824 | |

| RUN | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 14 NB 2035 Build A.M. | I 93 SB | 0.020448 | |
| Exit 14 NB 2035 Build A.M. | I 93 NB | 0.020448 | |
| | | | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB Q | | 0.03961 |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB AFF | 0.06368 | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB DFF | 0.07584 | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB Q | | 0.03961 |
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB AFF | 0.05655 | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB DFF | 0.06368 | |
| Exit 14 NB 2035 Build P.M. | Exit 14 NB off Ramp NB Q | | 0.03961 |
| Exit 14 NB 2035 Build P.M. | Exit 14 NB off Ramp NB AFF | 0.09310 | |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd NB DFF | 0.08089 | |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd SB Q | | 0.03961 |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd SB AFF | 0.01722 | |
| Exit 14 NB 2035 Build P.M. | I 93 SB | 0.019433 | |
| Exit 14 NB 2035 Build P.M. | I 93 NB | 0.019433 | |
| | | | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB Q | | 0.04602 |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB AFF | 0.06743 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB DFF | 0.05246 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB Q | | 0.04602 |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB AFF | 0.10620 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB DFF | 0.06743 | |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB off Ramp SB Q | | 0.04602 |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB off Ramp SB AFF | 0.09919 | |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB on Ramp SB DFF | 0.08079 | |
| Exit 14 SB 2035 Build A.M. | I 93 SB | 0.026213 | |
| Exit 14 SB 2035 Build A.M. | I 93 NB | 0.026213 | |
| | | | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB Q | | 0.03961 |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB AFF | 0.06368 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB DFF | 0.04974 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB Q | | 0.03961 |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB AFF | 0.09960 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB DFF | 0.06368 | |
| Exit 14 SB 2035 Build P.M. | Exit 14 SB off Ramp SB Q | | 0.03961 |
| Exit 14 SB 2035 Build P.M. | Exit 14 SB off Ramp SB AFF | 0.09310 | |
| Exit 14 SB 2035 Build P.M. | Exit 14 SB on Ramp SB DFF | 0.07584 | |
| Exit 14 SB 2035 Build P.M. | I 93 SB | 0.024712 | |
| Exit 14 SB 2035 Build P.M. | I 93 NB | 0.024712 | |
| | | | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB Q | | 0.04602 |
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB AFF | 0.08079 | |

| RUN | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB DFF | 0.07103 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB Q | | 0.04602 |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB AFF | 0.06406 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB DFF | 0.05964 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB off Ramp Q | | 0.04602 |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB off Ramp AFF | 0.06743 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB on Ramp DFF | 0.05729 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off Ramp Q | | 0.04602 |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off Ramp AFF | 0.06743 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB on Ramp DFF | 0.06836 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB on slip ramp | 0.06406 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off slip ramp | 0.05306 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB on slip ramp | 0.06260 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB | 0.021193 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB | 0.021193 | |
| | | | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB Q | | 0.03961 |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB AFF | 0.07584 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB DFF | 0.06701 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB Q | | 0.03961 |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB AFF | 0.06053 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB DFF | 0.05655 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB off Ramp Q | | 0.03961 |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB off Ramp AFF | 0.06368 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB on Ramp DFF | 0.05438 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off Ramp Q | | 0.03961 |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off Ramp AFF | 0.06368 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB on Ramp DFF | 0.06368 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB on slip ramp | 0.06053 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off slip ramp | 0.05034 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB on slip ramp | 0.05798 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB | 0.019433 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB | 0.019433 | |

Table 5. PM2.5 Emission Rates Calculated from MOVES

| Location | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB Q | | 0.04159 |
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB AFF | 0.01278 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd WB DFF | 0.01366 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB Q | | 0.04159 |

| Location | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB AFF | 0.01290 | |
| Exit 14 NB 2035 Build A.M. | Loudon Rd EB DFF | 0.01278 | |
| Exit 14 NB 2035 Build A.M. | Exit 14 NB off Ramp NB Q | | 0.04159 |
| Exit 14 NB 2035 Build A.M. | Exit 14 NB off Ramp NB AFF | 0.01536 | |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd NB DFF | 0.01414 | |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd SB Q | | 0.04159 |
| Exit 14 NB 2035 Build A.M. | FT Eddy Rd SB AFF | 0.00657 | |
| Exit 14 NB 2035 Build A.M. | I 93 SB | 0.005768 | |
| Exit 14 NB 2035 Build A.M. | I 93 NB | 0.005768 | |
| | | | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB Q | | 0.03568 |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB AFF | 0.01173 | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd WB DFF | 0.01259 | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB Q | | 0.03568 |
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB AFF | 0.01179 | |
| Exit 14 NB 2035 Build P.M. | Loudon Rd EB DFF | 0.01173 | |
| Exit 14 NB 2035 Build P.M. | Exit 14 NB off Ramp NB Q | | 0.03568 |
| Exit 14 NB 2035 Build P.M. | Exit 14 NB off Ramp NB AFF | 0.01425 | |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd NB DFF | 0.01306 | |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd SB Q | | 0.03568 |
| Exit 14 NB 2035 Build P.M. | FT Eddy Rd SB AFF | 0.00601 | |
| Exit 14 NB 2035 Build P.M. | I 93 SB | 0.005202 | |
| Exit 14 NB 2035 Build P.M. | I 93 NB | 0.005202 | |
| | | | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB Q | | 0.04159 |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB AFF | 0.01278 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd WB DFF | 0.01389 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB Q | | 0.04159 |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB AFF | 0.01607 | |
| Exit 14 SB 2035 Build A.M. | Loudon Rd EB DFF | 0.01278 | |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB off Ramp SB Q | | 0.04159 |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB off Ramp SB AFF | 0.01536 | |
| Exit 14 SB 2035 Build A.M. | Exit 14 SB on Ramp SB DFF | 0.01366 | |
| Exit 14 SB 2035 Build A.M. | I 93 SB | 0.006525 | |
| Exit 14 SB 2035 Build A.M. | I 93 NB | 0.006525 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB Q | | 0.03568 |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB AFF | 0.01173 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd WB DFF | 0.01261 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB Q | | 0.03568 |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB AFF | 0.01491 | |
| Exit 14 SB 2035 Build P.M. | Loudon Rd EB DFF | 0.01173 | |
| Exit 14 SB 2035 Build P.M. | Exit 14 SB off Ramp SB Q | | 0.03568 |
| Exit 14 SB 2035 Build P.M. | Exit 14 SB off Ramp SB AFF | 0.01425 | |

| Location | Link Description | Grams Per Vehicle-Mile (free-flow) | Grams Per Vehicle/ Hour (queue links) |
|---|---|---|---|
| Exit 14 SB 2035 Build P.M. | Exit 14 SB on Ramp SB DFF | 0.01259 | |
| Exit 14 SB 2035 Build P.M. | I 93 SB | 0.005978 | |
| Exit 14 SB 2035 Build P.M. | I 93 NB | 0.005978 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB Q | | 0.04159 |
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB AFF | 0.01366 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St WB DFF | 0.01295 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB Q | | 0.04159 |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB AFF | 0.01266 | |
| Exit 13 SPUI 2035 Build A.M. | Manchester St EB DFF | 0.01290 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB off Ramp Q | | 0.04159 |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB off Ramp AFF | 0.01278 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB on Ramp DFF | 0.01306 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off Ramp Q | | 0.04159 |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off Ramp AFF | 0.01278 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB on Ramp DFF | 0.01305 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB on slip ramp | 0.01266 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB off slip ramp | 0.01379 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB on slip ramp | 0.01297 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 NB | 0.005938 | |
| Exit 13 SPUI 2035 Build A.M. | I 93 SB | 0.005938 | |
| | | | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB Q | | 0.03568 |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB AFF | 0.01259 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St WB DFF | 0.01192 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB Q | | 0.03568 |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB AFF | 0.01160 | |
| Exit 13 SPUI 2035 Build P.M. | Manchester St EB DFF | 0.01179 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB off Ramp Q | | 0.03568 |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB off Ramp AFF | 0.01173 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB on Ramp DFF | 0.01192 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off Ramp Q | | 0.03568 |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off Ramp AFF | 0.01173 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB on Ramp DFF | 0.01173 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB on slip ramp | 0.01160 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB off slip ramp | 0.01254 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB on slip ramp | 0.01159 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 NB | 0.005202 | |
| Exit 13 SPUI 2035 Build P.M. | I 93 SB | 0.005202 | |

# 4 EMISSIONS DISPERSION ANALYSIS – CAL3QHC

## 4.1 CAL3QHC Input

The traffic signal timings used reflect the existing timings and no analysis was made to change the timings to adjust for the build condition in the design year. Also, every run was with an assumed 0.0 concentration for ambient pollutant. All inputs were per the EPA guidance, including *Users Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections*. These inputs were modeled to show the one-hour CO and PM concentrations based on a varying wind direction. Each run modeled one of the 28 receptors under a varying wind. The input and output files for each run can be found in Appendix A.

Input data for CAL3QHC are shown in Table 6.

## 4.2 CAL3QHC Output

Receptor locations were per guidance and are located at every corner of the intersection, at intervals of 25 meters from the intersection on each leg for both sides of the roadway, at intervals of 50 meters from the intersection on each leg for both sides, and at the midpoint of each free flow link for both sides. These receptor locations are shown for each intersection in Figures 1, 2, and 3. The results of each run by receptor is shown in Appendix A. The length of a link was 300 meters or the distance from center point of the intersection of interest and center point of the nearest intersection; lengths used were the lesser of the two values, as anything further than that presumably would not have a measurable impact to the air quality at the intersection.

The largest concentrations found by receptor are shown in Table 7.

Table 6. CAL3QHC Input

| | |
|---|---|
| Program Control Data | • Model Selection – CAL3QHC<br>• Screening Level – EPA Default Data Values<br>• Input / Output Control<br>  ○ Units – Feet<br>  ○ Pollutant – CO (ppm) or PM2.5 (Ug/m3) or PM10 (Ug/m3) |
| Link Data | • Free Flow Links – By Volume per hr and gram per veh mi<br>• Queue Links – By Volume per hr and Gram Per veh hr<br>• Type – At grade or Bridge<br>• Link location and length – Feet<br>• Signal Timings – Signal timing per queue link |
| Meteorological Data | • Average Time (min) – 60<br>• Surface Roughness (cm) – 175 Office<br>• Settling Velocity (cm/s) – 0.0<br>• Deposition Velocity (cm/s) – 0.0<br>• (for CO) 1-hr to 9-hr Persistence Factor – 0.7<br>• (for pm2.5/pm10) 1-hour to 24-hour Persistence Factor – 0.4<br>• (for pm2.5) 1-hour to annual persistence factor – 0.1<br>• Transport Wind Speed U (m/s) – 1.0<br>• Wind Direction in Degrees BRG – 0 (varies)<br>• Pasquill Atmospheric Stability Class – 4 (D)<br>• Mixing Height MIXH (m) – 1000<br>• Ambient CO concentrations AMB (ppm) – 0.0<br>• DEGR – 10<br>• VAI (1) – 1<br>• VAI (2) – 2 |

Table 7. CAL3QHC Output: Highest Concentrations of Each Parameter at Each Intersection

| Location | Pollutant | Receptor Location | Concentration |
|---|---|---|---|
| | | | |
| Exit 14 NB 2035 Build AM | CO | Rec #22 – East Leg South Side 25 m | 0.10 ppm |
| Exit 14 NB 2035 Build AM | PM 2.5 | Rec #17 – East Leg North Side 25 m | 2.40 µg/m$^3$ |
| Exit 14 NB 2035 Build AM | PM 10 | Rec #23 – East Leg South Side 50 m | 9.50 µg/m$^3$ |
| | | | |
| Exit 14 NB 2035 Build PM | CO | Rec #19– East Leg North Side Mid Block | 0.20 ppm |
| Exit 14 NB 2035 Build PM | PM 2.5 | Rec #5 – North Leg West Side Corner | 2.60 µg/m$^3$ |
| Exit 14 NB 2035 Build PM | PM 10 | Rec #19 – East Leg North Side Mid Block | 12.7 µg/m$^3$ |
| | | | |
| Exit 14 SB 2035 Build AM | CO | Rec #17 – East Leg North Side 25 m | 0.30 ppm |
| Exit 14 SB 2035 Build AM | PM 2.5 | Rec #13 – South Leg West Side Corner | 2.80 µg/m$^3$ |
| Exit 14 SB 2035 Build AM | PM 10 | Rec #28 – West Leg South Side Mid Block | 13.30 µg/m$^3$ |
| | | | |
| Exit 14 SB 2035 Build PM | CO | Rec #17 – East Leg North Side 25 m | 0.30 ppm |
| Exit 14 SB 2035 Build PM | PM 2.5 | Rec #13 – South Leg West Side Corner | 2.60 µg/m$^3$ |
| Exit 14 SB 2035 Build PM | PM 10 | Rec #28 – West Leg South Side Mid Block | 12.5 µg/m$^3$ |
| | | | |
| Exit 13 SPUI 2035 Build AM | CO | Rec #5 – North Leg West Side Corner | 0.10 ppm |
| Exit 13 SPUI 2035 Build AM | PM 2.5 | Rec #5 – North Leg West Side Corner | 2.50 µg/m$^3$ |
| Exit 13 SPUI 2035 Build AM | PM 10 | Rec #5 – North Leg West Side Corner | 11.7 µg/m$^3$ |
| | | | |
| Exit 13 SPUI 2035 Build PM | CO | Rec #15 – South Leg West Side 50 m | 0.20 ppm |
| Exit 13 SPUI 2035 Build PM | PM 2.5 | Rec #9 – South Leg East Side Corner | 2.40 µg/m$^3$ |
| Exit 13 SPUI 2035 Build PM | PM 10 | Rec #9 – South Leg East Side Corner | 11.30 µg/m$^3$ |
| | | | |

# 5 MOBILE SOURCE AIR TOXIC ANALYSIS IN NEPA DOCUMENTS

## 5.1 Low potential MSAT Effects from Projects with Minor Widening

For each alternative in this EA, the amount of mobile source air toxics (MSAT) emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for each of the Build Alternatives is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to the Environmental Protection Agency's (EPA) MOVES2014 model, emissions of all of the priority MSAT decrease as speed increases. Regardless of the effects of this project, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

# 6 CONCLUSIONS

## 6.1 CO Emission Rates

The highest CO concentrations modeled ranged from 0.10 - 0.30 ppm at the three locations over the 24-hour period. With the majority of the receptors recording a negligible concentration of CO under the aforementioned worst-case scenario, it can be assumed that this project will not cause exceedances of the current 1-hour CO NAAQS of 35 ppm. Recent CO samples taken from the Londonderry Air Monitoring Station operated by NHDES at Moose Hill School in Londonderry, NH (approximately 29 miles southeast of the project area) show a maximum of 2.65 ppm over 8,600 hourly samples taken in 2011. Even if the ambient CO levels at the intersections of interest are equivalent to the highest measured concentrations at the Londonderry station, the concentrations would still be well below the 1-hour standard of 35 ppm. Due to these findings, no additional analysis of CO is deemed necessary.

## 6.2 PM10

Modeled PM10 concentrations ranged from 9.5 $\mu g/m^3$ to 13.3 $\mu g/m^3$ at the three locations over both time periods. The concentration limit in the NAAQS is 150 $\mu g/m^3$ averaged over a 24-hour period. There is no information in the SIP regarding an ambient concentration to consider in the modeling. Since modeled concentrations for the worst-case scenario are substantially below the NAAQS, no additional analysis of PM10 is believed to be necessary.

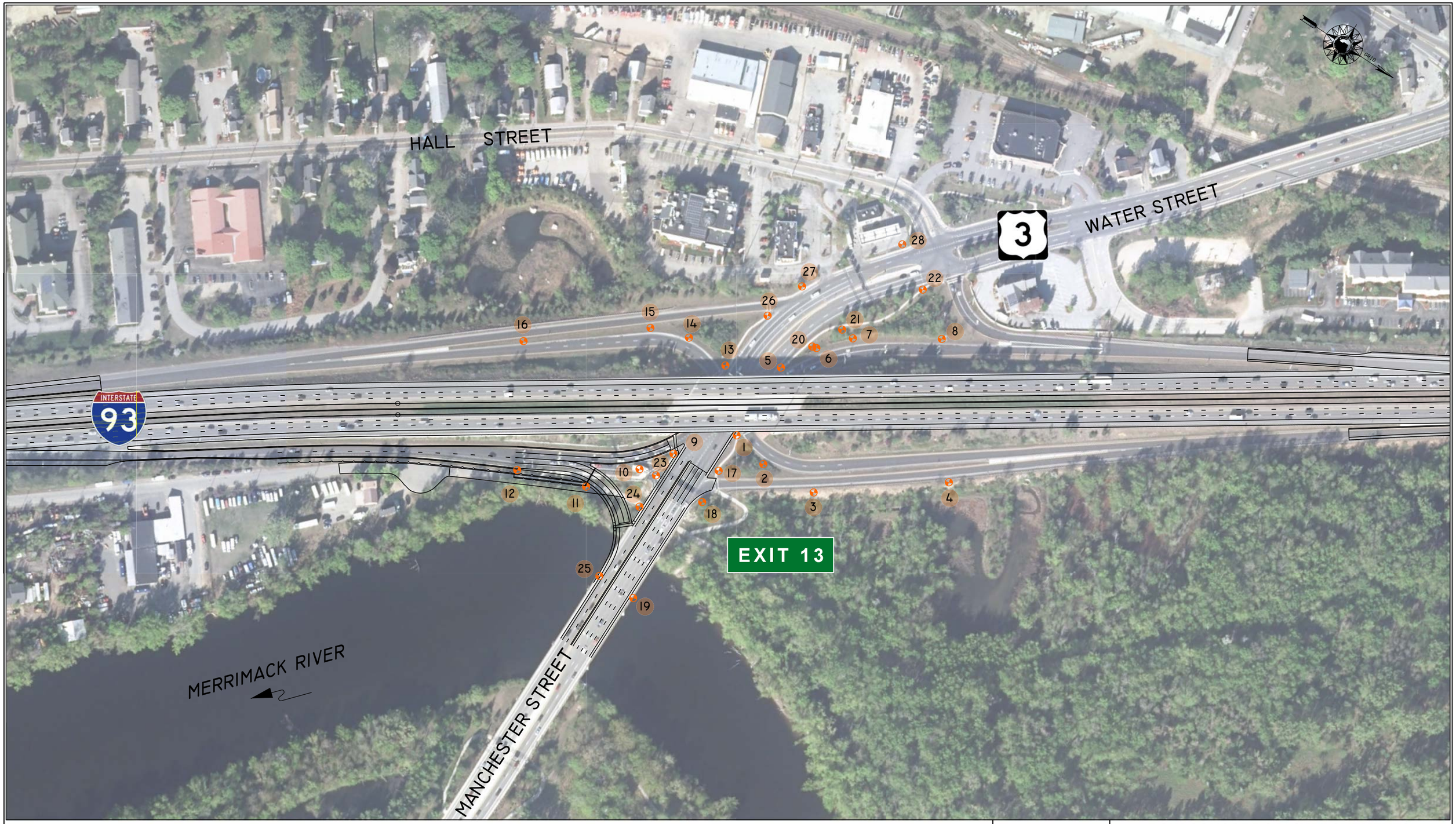
## 6.3 PM2.5

Modeled PM2.5 concentrations ranged from 2.4 $\mu g/m^3$ to 2.8 $\mu g/m^3$ at the three intersections over both time periods and are well below the 24-hour NAAQS concentration of 35 $\mu g/m^3$. Because these results represent the worst-case scenario for one hour, it is assumed the 24-hour average is well below the threshold and no further analysis is needed.

## 6.4 In Summary

The build conditions for the design year are well below the CO, PM2.5, and PM10 standards. Therefore, it is concluded that this project will not cause or contribute to exceedances of the NAAQS. No analysis of additional alternatives or design years is warranted.

# FIGURES




**LEGEND**

EXIT 13 RECEPTOR LOCATIONS

PROPOSED IMPROVEMENTS

100 0 100 200

SCALE IN FEET

New Hampshire DOT

McFarland Johnson

**BOW-CONCORD I-93 IMPROVEMENTS**

AIR QUALITY ANALYSIS
RECEPTOR LOCATIONS

DATE: MAY 2018

SCALE: 1" = 200'

FIGURE 1

STORRS STREET

RALPH PILL

STICKNEY AVENUE

INTERSTATE 93

EXIT 14

MERRIMACK RIVER

LOUDON ROAD

FORT EDDY ROAD

GRID

## LEGEND

EXIT 14 NB FT EDDY ROAD RECEPTOR LOCATIONS

EXIT 14 SB RECEPTOR LOCATIONS

PROPOSED IMPROVEMENTS

100 0 100 200

SCALE IN FEET

New Hampshire DOT

McFarland Johnson

**BOW-CONCORD I-93 IMPROVEMENTS**

AIR QUALITY ANALYSIS
RECEPTOR LOCATIONS

DATE: MAY 2018

SCALE: 1" = 200'

FIGURE 2

# APPENDIX A
# CAL3QHC MODELING RESULTS

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 NB Ft Eddy 2035 Build AM CO

DATE : 3/ 2/18
TIME : 9:44:42

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) X1 | Y1 | X2 | Y2 | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. N Leg App - FreeFlow | * | -20.0 | 0.0 | 80.0 | 470.0 | * | 481. | 12. | AG | 273. | 1.3 | 0.0 | 56.0 | | |
| 2. N Leg App - Queue | * | -2.9 | 80.5 | 7.3 | 128.2 | * | 49. | 12. | AG | 11. | 100.0 | 0.0 | 56.0 | 0.38 | 2.5 |
| 3. N Leg Dep - FreeFlow | * | 30.0 | 0.0 | 120.0 | 460.0 | * | 469. | 11. | AG | 379. | 0.7 | 0.0 | 44.0 | | |
| 4. S Leg App - FreeFlow | * | 30.0 | 0.0 | -70.0 | -450.0 | * | 461. | 193. | AG | 1112. | 0.7 | 0.0 | 72.0 | | |
| 5. S Leg App - FF #2 | * | -70.0 | -450.0 | -70.0 | -820.0 | * | 370. | 180. | AG | 1112. | 0.7 | 0.0 | 51.0 | | |
| 6. E Leg App - FreeFlow | * | 0.0 | 20.0 | 980.0 | 10.0 | * | 980. | 91. | AG | 803. | 0.9 | 0.0 | 56.0 | | |
| 7. E Leg App - Queue | * | 73.7 | 19.2 | 183.2 | 18.1 | * | 109. | 91. | AG | 9. | 100.0 | 0.0 | 56.0 | 0.49 | 5.6 |
| 8. E Leg Dep - FreeFlow | * | 0.0 | -10.0 | 980.0 | -40.0 | * | 980. | 92. | AG | 1304. | 1.3 | 0.0 | 47.0 | | |
| 9. W Leg App - FreeFlow | * | 0.0 | -10.0 | -430.0 | -110.0 | * | 441. | 257. | AG | 673. | 1.3 | 0.0 | 68.0 | | |
| 10. W Leg App - Queue | * | 0.0 | -10.0 | -67.1 | -25.6 | * | 69. | 257. | AG | 12. | 100.0 | 0.0 | 68.0 | 0.31 | 3.5 |
| 11. W Leg Dep - FreeFlow | * | -10.0 | 40.0 | -440.0 | -50.0 | * | 439. | 258. | AG | 1177. | 0.9 | 0.0 | 78.0 | | |
| 12. N Leg App - FF #2 | * | 80.0 | 470.0 | 0.0 | 980.0 | * | 516. | 351. | AG | 273. | 1.3 | 0.0 | 40.0 | | |
| 13. N Leg Dep - FF #2 | * | 120.0 | 460.0 | 30.0 | 990.0 | * | 538. | 350. | AG | 379. | 0.7 | 0.0 | 52.0 | | |
| 14. S Leg App - FF #3 | * | -70.0 | -820.0 | -40.0 | -970.0 | * | 153. | 169. | AG | 1112. | 0.7 | 0.0 | 36.0 | | |
| 15. I93 NB N Leg - FF | * | -270.0 | -40.0 | -420.0 | 940.0 | * | 991. | 351. | BR | 3863. | 0.8 | 22.0 | 80.0 | | |
| 16. I 93 NB S Leg - FF | * | -270.0 | -40.0 | -60.0 | -1030.0 | * | 1012. | 168. | BR | 3863. | 0.8 | 22.0 | 80.0 | | |
| 17. I 93 SB N Leg - FF | * | -350.0 | -50.0 | -500.0 | 940.0 | * | 1001. | 351. | BR | 3304. | 0.8 | 22.0 | 95.0 | | |
| 18. I 93 SB S Leg - FF | * | -350.0 | -50.0 | -120.0 | -1040.0 | * | 1016. | 167. | BR | 3304. | 0.8 | 22.0 | 95.0 | | |

JOB: Bow Concord RUN: Exit 14 NB Ft Eddy 2035 Build AM CO

DATE : 3/ 2/18
TIME : 9:44:42

ADDITIONAL QUEUE LINK PARAMETERS

| LINK DESCRIPTION | CYCLE LENGTH (SEC) | RED TIME (SEC) | CLEARANCE LOST TIME (SEC) | APPROACH VOL (VPH) | SATURATION FLOW RATE (VPH) | IDLE EM FAC (gm/hr) | SIGNAL ARRIVAL TYPE RATE |
|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | 120 | 98 | 2.0 | 273 | 1600 | 1.74 | 2 3 |
| 7. E Leg App - Queue | 120 | 75 | 2.0 | 803 | 1600 | 1.74 | 2 3 |
| 10. W Leg App - Queue | 120 | 75 | 2.0 | 673 | 1600 | 1.74 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 80.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.0 | 140.0 | 5.9 |
| 3. N Leg, E Side - 50 m | 100.0 | 230.0 | 5.9 |
| 4. N Leg, E Side-Midblk | 130.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -50.0 | 60.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -20.0 | 170.0 | 5.9 |
| 7. N Leg, W Side - 50 m | 0.0 | 250.0 | 5.9 |
| 8. N Leg, W Side-Midblk | 40.0 | 500.0 | 5.9 |
| 9. S Leg, E Side-Corner | 60.0 | -50.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 30.0 | -180.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 10.0 | -240.0 | 5.9 |
| 12. S Leg, E Side-Midblk | -40.0 | -510.0 | 5.9 |
| 13. S Leg, W Side-Corner | -30.0 | -60.0 | 5.9 |
| 14. S Leg, W Side - 25 m | -50.0 | -160.0 | 5.9 |
| 15. S Leg, W Side - 50 m | -70.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | -110.0 | -490.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 170.0 | 50.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 250.0 | 40.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 490.0 | 30.0 | 5.9 |
| 20. W Leg, N Side - 25 m | -130.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -210.0 | 40.0 | 5.9 |
| 22. E Leg, S Side - 25 m | 170.0 | -40.0 | 5.9 |
| 23. E Leg, S Side - 50 m | 250.0 | -40.0 | 5.9 |
| 24. E Leg, S Side-Midblk | 490.0 | -50.0 | 5.9 |
| 25. W Leg, S Side - 25 m | -110.0 | -80.0 | 5.9 |
| 26. W Leg, S Side - 50 m | -190.0 | -90.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 |
| 80. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 |
| 90. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 280. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 290. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 300. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 310. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

```
 330.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 340.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------------
-------------------------
 MAX   *  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 DEGR. *     10      10      10      10     250      10      10      10      50      10      10      10
70      10      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 20. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 30. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 40. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 50. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 60. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 70. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 80. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 90. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 100. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 190. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 200. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 210. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 280. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 290. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 300. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 310. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 320. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 330. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 |
| 340. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 |
| 350. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 360. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| MAX | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 |
| DEGR. | 180 | 10 | 10 | 10 | 10 | 180 | 10 | 10 | 10 | 10 | 180 |

THE HIGHEST CONCENTRATION OF 0.1000 PPM OCCURRED AT RECEPTOR 22.

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 NB Ft Eddy 2035 Build AM pm2.5

DATE : 3/ 2/18
TIME : 10: 5:22

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) X1 | Y1 | X2 | Y2 | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. N Leg App - FreeFlow | * | -20.0 | 0.0 | 80.0 | 470.0 | * | 481. | 12. | AG | 273. | 0.0 | 0.0 | 56.0 | | |
| 2. N Leg App - Queue | * | -2.9 | 80.5 | 7.3 | 128.2 | * | 49. | 12. | AG | 0. | 100.0 | 0.0 | 56.0 | 0.38 | 2.5 |
| 3. N Leg Dep - FreeFlow | * | 30.0 | 0.0 | 120.0 | 460.0 | * | 469. | 11. | AG | 379. | 0.0 | 0.0 | 44.0 | | |
| 4. S Leg App - FreeFlow | * | 30.0 | 0.0 | -70.0 | -450.0 | * | 461. | 193. | AG | 1112. | 0.0 | 0.0 | 72.0 | | |
| 5. S Leg App - FF #2 | * | -70.0 | -450.0 | -70.0 | -820.0 | * | 370. | 180. | AG | 1112. | 0.0 | 0.0 | 51.0 | | |
| 6. E Leg App - FreeFlow | * | 0.0 | 20.0 | 980.0 | 10.0 | * | 980. | 91. | AG | 803. | 0.0 | 0.0 | 56.0 | | |
| 7. E Leg App - Queue | * | 73.7 | 19.2 | 183.2 | 18.1 | * | 109. | 91. | AG | 0. | 100.0 | 0.0 | 56.0 | 0.49 | 5.6 |
| 8. E Leg Dep - FreeFlow | * | 0.0 | -10.0 | 980.0 | -40.0 | * | 980. | 92. | AG | 1304. | 0.0 | 0.0 | 47.0 | | |
| 9. W Leg App - FreeFlow | * | 0.0 | -10.0 | -430.0 | -110.0 | * | 441. | 257. | AG | 673. | 0.0 | 0.0 | 68.0 | | |
| 10. W Leg App - Queue | * | 0.0 | -10.0 | -67.1 | -25.6 | * | 69. | 257. | AG | 0. | 100.0 | 0.0 | 68.0 | 0.31 | 3.5 |
| 11. W Leg Dep - FreeFlow | * | -10.0 | 40.0 | -440.0 | -50.0 | * | 439. | 258. | AG | 1177. | 0.0 | 0.0 | 78.0 | | |
| 12. N Leg App - FF #2 | * | 80.0 | 470.0 | 0.0 | 980.0 | * | 516. | 351. | AG | 273. | 0.0 | 0.0 | 40.0 | | |
| 13. N Leg Dep - FF #2 | * | 120.0 | 460.0 | 30.0 | 990.0 | * | 538. | 350. | AG | 379. | 0.0 | 0.0 | 52.0 | | |
| 14. S Leg App - FF #3 | * | -70.0 | -820.0 | -40.0 | -970.0 | * | 153. | 169. | AG | 1112. | 0.0 | 0.0 | 36.0 | | |
| 15. I93 NB N Leg - FF | * | -270.0 | -40.0 | -420.0 | 940.0 | * | 991. | 351. | BR | 3863. | 0.0 | 22.0 | 80.0 | | |
| 16. I 93 NB S Leg - FF | * | -270.0 | -40.0 | -60.0 | -1030.0 | * | 1012. | 168. | BR | 3863. | 0.0 | 22.0 | 80.0 | | |
| 17. I 93 SB N Leg - FF | * | -350.0 | -50.0 | -500.0 | 940.0 | * | 1001. | 351. | BR | 3304. | 0.0 | 22.0 | 95.0 | | |
| 18. I 93 SB S Leg - FF | * | -350.0 | -50.0 | -120.0 | -1040.0 | * | 1016. | 167. | BR | 3304. | 0.0 | 22.0 | 95.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 98 | 2.0 | 273 | 1600 | 0.04 | 2 3 |
| 7. E Leg App - Queue | * | 120 | 75 | 2.0 | 803 | 1600 | 0.04 | 2 3 |
| 10. W Leg App - Queue | * | 120 | 75 | 2.0 | 673 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 80.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.0 | 140.0 | 5.9 |
| 3. N Leg, E Side - 50 m | 100.0 | 230.0 | 5.9 |
| 4. N Leg, E Side-Midblk | 130.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -50.0 | 60.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -20.0 | 170.0 | 5.9 |
| 7. N Leg, W Side - 50 m | 0.0 | 250.0 | 5.9 |
| 8. N Leg, W Side-Midblk | 40.0 | 500.0 | 5.9 |
| 9. S Leg, E Side-Corner | 60.0 | -50.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 30.0 | -180.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 10.0 | -240.0 | 5.9 |
| 12. S Leg, E Side-Midblk | -40.0 | -510.0 | 5.9 |
| 13. S Leg, W Side-Corner | -30.0 | -60.0 | 5.9 |
| 14. S Leg, W Side - 25 m | -50.0 | -160.0 | 5.9 |
| 15. S Leg, W Side - 50 m | -70.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | -110.0 | -490.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 170.0 | 50.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 250.0 | 40.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 490.0 | 30.0 | 5.9 |
| 20. W Leg, N Side - 25 m | -130.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -210.0 | 40.0 | 5.9 |
| 22. E Leg, S Side - 25 m | 170.0 | -40.0 | 5.9 |
| 23. E Leg, S Side - 50 m | 250.0 | -40.0 | 5.9 |
| 24. E Leg, S Side-Midblk | 490.0 | -50.0 | 5.9 |
| 25. W Leg, S Side - 25 m | -110.0 | -80.0 | 5.9 |
| 26. W Leg, S Side - 50 m | -190.0 | -90.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 0.1000 | 0.3000 | 0.3000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.2000 | 1.1000 | 1.0000 | 1.1000 | 0.7000 | 1.8000 | 1.0000 | 0.8000 |
| 20. | 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.4000 | 0.1000 | 0.2000 | 0.2000 | 1.2000 | 0.6000 | 0.7000 | 0.4000 | 1.7000 | 1.3000 | 0.9000 |
| 30. | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.5000 | 0.2000 | 0.2000 | 0.2000 | 1.1000 | 0.6000 | 0.6000 | 0.3000 | 1.6000 | 1.2000 | 1.0000 |
| 40. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.7000 | 0.2000 | 0.2000 | 0.2000 | 1.2000 | 0.5000 | 0.5000 | 0.2000 | 1.6000 | 1.0000 | 1.1000 |
| 50. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.8000 | 0.2000 | 0.2000 | 0.2000 | 1.3000 | 0.3000 | 0.4000 | 0.2000 | 1.8000 | 1.0000 | 1.0000 |
| 60. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.9000 | 0.2000 | 0.2000 | 0.2000 | 1.3000 | 0.3000 | 0.4000 | 0.1000 | 1.8000 | 1.0000 | 0.9000 |
| 70. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.8000 | 0.2000 | 0.2000 | 0.2000 | 1.2000 | 0.3000 | 0.4000 | 0.0000 | 1.9000 | 0.9000 | 0.8000 |
| 80. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.0000 | 0.2000 | 0.2000 | 0.2000 | 1.2000 | 0.3000 | 0.1000 | 0.0000 | 1.4000 | 0.8000 | 0.6000 |
| 90. | 0.6000 | 0.1000 | 0.0000 | 0.0000 | 1.3000 | 0.2000 | 0.2000 | 0.2000 | 0.8000 | 0.1000 | 0.0000 | 0.0000 | 1.0000 | 0.6000 | 0.5000 |
| 100. | 1.2000 | 0.2000 | 0.2000 | 0.0000 | 1.5000 | 0.4000 | 0.4000 | 0.2000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.5000 |
| 110. | 1.5000 | 0.4000 | 0.2000 | 0.0000 | 1.7000 | 0.6000 | 0.4000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.5000 | 0.5000 | 0.5000 |
| 120. | 1.5000 | 0.4000 | 0.3000 | 0.0000 | 1.5000 | 0.7000 | 0.5000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.5000 | 0.5000 | 0.5000 |
| 130. | 1.5000 | 0.5000 | 0.3000 | 0.2000 | 1.3000 | 1.0000 | 0.5000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.5000 | 0.5000 | 0.5000 |
| 140. | 1.4000 | 0.6000 | 0.3000 | 0.3000 | 1.4000 | 1.0000 | 0.6000 | 0.3000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.6000 | 0.6000 | 0.6000 |
| 150. | 1.2000 | 0.7000 | 0.4000 | 0.3000 | 1.4000 | 1.2000 | 0.5000 | 0.3000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.6000 | 0.6000 | 0.6000 |
| 160. | 1.2000 | 0.7000 | 0.4000 | 0.3000 | 1.7000 | 1.2000 | 0.7000 | 0.4000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.7000 | 0.7000 | 0.7000 |
| 170. | 1.1000 | 0.7000 | 0.4000 | 0.5000 | 1.8000 | 1.2000 | 0.9000 | 0.5000 | 0.1000 | 0.1000 | 0.2000 | 0.4000 | 0.8000 | 0.9000 | 0.9000 |
| 180. | 1.4000 | 1.0000 | 0.5000 | 0.8000 | 1.9000 | 1.6000 | 1.2000 | 0.5000 | 0.4000 | 0.4000 | 0.5000 | 1.0000 | 1.0000 | 1.2000 | 1.1000 |
| 190. | 1.6000 | 1.3000 | 1.0000 | 0.9000 | 1.7000 | 1.3000 | 1.1000 | 0.4000 | 0.8000 | 0.9000 | 1.1000 | 1.5000 | 0.9000 | 1.1000 | 1.0000 |
| 200. | 1.8000 | 1.5000 | 1.3000 | 0.9000 | 1.5000 | 1.0000 | 0.9000 | 0.3000 | 1.2000 | 1.1000 | 1.4000 | 1.5000 | 0.7000 | 0.8000 | 0.7000 |
| 210. | 1.7000 | 1.5000 | 1.1000 | 0.7000 | 1.3000 | 0.8000 | 0.6000 | 0.4000 | 1.1000 | 1.3000 | 1.3000 | 1.3000 | 0.5000 | 0.6000 | 0.5000 |
| 220. | 1.7000 | 1.4000 | 1.1000 | 0.9000 | 1.3000 | 0.7000 | 0.6000 | 0.3000 | 1.1000 | 1.1000 | 1.2000 | 1.2000 | 0.4000 | 0.5000 | 0.5000 |
| 230. | 1.8000 | 1.3000 | 0.9000 | 0.4000 | 1.4000 | 0.7000 | 0.6000 | 0.3000 | 1.0000 | 1.1000 | 1.1000 | 1.2000 | 0.4000 | 0.4000 | 0.5000 |
| 240. | 1.6000 | 1.3000 | 0.8000 | 0.4000 | 1.4000 | 0.6000 | 0.4000 | 0.3000 | 0.9000 | 0.9000 | 1.1000 | 1.1000 | 0.3000 | 0.4000 | 0.5000 |
| 250. | 1.5000 | 1.2000 | 0.5000 | 0.4000 | 1.4000 | 0.4000 | 0.3000 | 0.2000 | 1.0000 | 0.9000 | 1.0000 | 1.1000 | 0.5000 | 0.4000 | 0.5000 |
| 260. | 1.2000 | 0.8000 | 0.4000 | 0.4000 | 1.1000 | 0.3000 | 0.3000 | 0.3000 | 1.1000 | 0.8000 | 0.9000 | 1.1000 | 0.7000 | 0.4000 | 0.4000 |
| 270. | 0.8000 | 0.7000 | 0.4000 | 0.4000 | 0.8000 | 0.3000 | 0.3000 | 0.3000 | 1.7000 | 0.8000 | 1.0000 | 1.1000 | 1.1000 | 0.4000 | 0.5000 |
| 280. | 0.9000 | 0.6000 | 0.4000 | 0.4000 | 0.6000 | 0.3000 | 0.3000 | 0.2000 | 1.9000 | 1.1000 | 0.9000 | 1.1000 | 1.2000 | 0.5000 | 0.5000 |
| 290. | 0.9000 | 0.5000 | 0.5000 | 0.4000 | 0.6000 | 0.3000 | 0.3000 | 0.3000 | 1.9000 | 1.1000 | 1.1000 | 1.0000 | 1.3000 | 0.8000 | 0.7000 |
| 300. | 0.9000 | 0.5000 | 0.5000 | 0.4000 | 0.5000 | 0.3000 | 0.3000 | 0.2000 | 1.9000 | 1.1000 | 1.2000 | 1.1000 | 1.5000 | 0.6000 | 0.7000 |
| 310. | 0.8000 | 0.5000 | 0.5000 | 0.3000 | 0.5000 | 0.4000 | 0.3000 | 0.2000 | 1.9000 | 1.2000 | 1.2000 | 1.2000 | 1.5000 | 0.8000 | 0.7000 |
| 320. | 0.7000 | 0.5000 | 0.4000 | 0.4000 | 0.6000 | 0.3000 | 0.3000 | 0.1000 | 1.7000 | 1.4000 | 1.3000 | 1.5000 | 1.7000 | 0.8000 | 0.8000 |

```
 330.  *  0.5000  0.3000  0.3000  0.4000  0.4000  0.3000  0.2000  0.0000  1.7000  1.4000  1.4000
1.4000  1.6000  0.8000  0.7000
 340.  *  0.2000  0.3000  0.3000  0.4000  0.2000  0.1000  0.0000  0.0000  1.4000  1.3000  1.4000
1.6000  1.7000  0.7000  0.7000
 350.  *  0.2000  0.3000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  1.3000  1.3000  1.2000
1.1000  1.6000  0.6000  0.5000
 360.  *  0.2000  0.4000  0.4000  0.3000  0.0000  0.0000  0.0000  0.2000  1.3000  1.1000  1.4000
0.9000  1.6000  0.8000  0.4000
 ------*-------------------------------------------------------------------------------------------
-------------------------
 MAX   *  1.8000  1.5000  1.3000  0.9000  1.9000  1.6000  1.2000  0.5000  1.9000  1.4000  1.4000
1.6000  1.9000  1.3000  1.1000
 DEGR. *    230     200     200     220     180     180     180     170     300     320     200     340
70      20      40
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 0.6000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 1.1000 | 0.9000 | 0.8000 | 0.6000 | 0.6000 |
| 20. | 0.9000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 1.1000 | 0.9000 | 0.8000 | 0.8000 | 0.6000 |
| 30. | 1.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 1.0000 | 0.9000 | 0.8000 | 1.1000 | 0.6000 |
| 40. | 0.9000 | 0.0000 | 0.1000 | 0.1000 | 0.2000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 | 1.2000 | 1.0000 |
| 50. | 0.9000 | 0.0000 | 0.1000 | 0.1000 | 0.3000 | 0.1000 | 1.0000 | 1.1000 | 1.0000 | 1.3000 | 1.0000 |
| 60. | 0.7000 | 0.0000 | 0.1000 | 0.2000 | 0.5000 | 0.2000 | 1.1000 | 1.2000 | 1.1000 | 1.3000 | 1.2000 |
| 70. | 0.6000 | 0.1000 | 0.2000 | 0.3000 | 0.6000 | 0.3000 | 1.3000 | 1.3000 | 1.3000 | 1.3000 | 1.2000 |
| 80. | 0.5000 | 0.3000 | 0.5000 | 0.6000 | 1.0000 | 0.8000 | 1.4000 | 1.5000 | 1.3000 | 1.2000 | 1.1000 |
| 90. | 0.5000 | 0.7000 | 0.9000 | 0.9000 | 1.4000 | 1.3000 | 1.2000 | 1.3000 | 1.0000 | 0.7000 | 0.7000 |
| 100. | 0.5000 | 1.1000 | 1.1000 | 1.2000 | 1.6000 | 1.6000 | 0.6000 | 0.7000 | 0.5000 | 0.4000 | 0.3000 |
| 110. | 0.5000 | 1.2000 | 1.2000 | 1.2000 | 1.6000 | 1.3000 | 0.2000 | 0.3000 | 0.2000 | 0.3000 | 0.2000 |
| 120. | 0.5000 | 1.1000 | 1.1000 | 1.1000 | 1.5000 | 1.2000 | 0.1000 | 0.1000 | 0.1000 | 0.3000 | 0.2000 |
| 130. | 0.6000 | 1.0000 | 1.0000 | 0.9000 | 1.5000 | 1.1000 | 0.1000 | 0.1000 | 0.1000 | 0.3000 | 0.2000 |
| 140. | 0.6000 | 1.0000 | 0.8000 | 0.8000 | 1.2000 | 0.9000 | 0.0000 | 0.1000 | 0.0000 | 0.3000 | 0.2000 |
| 150. | 0.7000 | 1.1000 | 0.8000 | 0.8000 | 1.0000 | 0.9000 | 0.0000 | 0.0000 | 0.0000 | 0.3000 | 0.2000 |
| 160. | 0.8000 | 1.1000 | 0.8000 | 0.7000 | 0.9000 | 1.0000 | 0.0000 | 0.0000 | 0.0000 | 0.3000 | 0.4000 |
| 170. | 1.1000 | 1.3000 | 0.8000 | 0.7000 | 1.2000 | 1.4000 | 0.0000 | 0.0000 | 0.0000 | 0.4000 | 0.7000 |
| 180. | 1.1000 | 1.5000 | 0.8000 | 0.7000 | 1.3000 | 1.6000 | 0.0000 | 0.0000 | 0.0000 | 0.6000 | 1.0000 |
| 190. | 1.0000 | 1.6000 | 0.8000 | 0.7000 | 1.2000 | 1.5000 | 0.1000 | 0.0000 | 0.0000 | 0.7000 | 0.9000 |
| 200. | 0.8000 | 1.8000 | 1.1000 | 0.7000 | 1.2000 | 1.5000 | 0.4000 | 0.3000 | 0.0000 | 0.5000 | 0.8000 |
| 210. | 0.7000 | 2.0000 | 1.2000 | 0.9000 | 1.3000 | 1.5000 | 0.6000 | 0.4000 | 0.1000 | 0.5000 | 0.7000 |
| 220. | 0.7000 | 2.1000 | 1.2000 | 1.1000 | 1.3000 | 1.4000 | 0.4000 | 0.5000 | 0.3000 | 0.5000 | 0.6000 |
| 230. | 0.5000 | 2.1000 | 1.4000 | 1.2000 | 1.5000 | 1.4000 | 0.6000 | 0.5000 | 0.4000 | 0.5000 | 0.5000 |
| 240. | 0.5000 | 2.3000 | 1.6000 | 1.3000 | 1.3000 | 1.3000 | 0.6000 | 0.5000 | 0.4000 | 0.5000 | 0.6000 |
| 250. | 0.5000 | 2.4000 | 2.1000 | 1.4000 | 1.3000 | 1.1000 | 0.5000 | 0.6000 | 0.4000 | 0.6000 | 0.7000 |
| 260. | 0.5000 | 2.2000 | 2.1000 | 1.8000 | 1.0000 | 0.9000 | 1.0000 | 1.1000 | 0.7000 | 0.7000 | 0.8000 |
| 270. | 0.5000 | 1.6000 | 1.6000 | 1.4000 | 0.8000 | 0.7000 | 1.7000 | 1.7000 | 1.4000 | 1.0000 | 1.0000 |
| 280. | 0.5000 | 0.8000 | 1.0000 | 1.1000 | 0.7000 | 0.6000 | 1.9000 | 2.1000 | 1.6000 | 1.2000 | 1.1000 |
| 290. | 0.5000 | 0.6000 | 0.7000 | 0.5000 | 0.6000 | 0.6000 | 2.0000 | 2.1000 | 1.6000 | 1.1000 | 1.3000 |
| 300. | 0.7000 | 0.5000 | 0.4000 | 0.4000 | 0.6000 | 0.6000 | 2.0000 | 1.8000 | 1.4000 | 1.0000 | 1.3000 |
| 310. | 0.7000 | 0.4000 | 0.4000 | 0.3000 | 0.6000 | 0.7000 | 2.1000 | 1.8000 | 1.3000 | 1.1000 | 1.3000 |
| 320. | 0.8000 | 0.3000 | 0.4000 | 0.1000 | 0.6000 | 0.8000 | 1.9000 | 1.4000 | 1.0000 | 1.1000 | 1.4000 |
| 330. | 1.1000 | 0.2000 | 0.1000 | 0.1000 | 0.5000 | 0.9000 | 1.6000 | 1.2000 | 0.8000 | 1.1000 | 1.4000 |
| 340. | 1.1000 | 0.1000 | 0.0000 | 0.1000 | 0.4000 | 0.8000 | 1.5000 | 0.9000 | 0.8000 | 1.0000 | 1.5000 |
| 350. | 0.8000 | 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.5000 | 1.4000 | 0.8000 | 0.8000 | 0.7000 | 1.1000 |
| 360. | 0.5000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.1000 | 1.3000 | 0.9000 | 0.8000 | 0.6000 | 0.7000 |
| MAX | 1.1000 | 2.4000 | 2.1000 | 1.8000 | 1.6000 | 1.6000 | 2.1000 | 2.1000 | 1.6000 | 1.3000 | 1.5000 |
| DEGR. | 170 | 250 | 260 | 260 | 110 | 100 | 310 | 280 | 280 | 50 | 340 |

THE HIGHEST CONCENTRATION OF 2.4000 UG/M**3 OCCURRED AT RECEPTOR 17.

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 NB Ft Eddy 2035 Build AM pm10

DATE : 3/ 2/18
TIME : 10:15:47

The MODE flag has been set for calculating concentrations for POLLUTANT: PM-10

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) X1 | Y1 | X2 | Y2 | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. N Leg App - FreeFlow | * | -20.0 | 0.0 | 80.0 | 470.0 | * | 481. | 12. | AG | 273. | 0.0 | 0.0 | 56.0 | | |
| 2. N Leg App - Queue | * | -2.9 | 80.5 | 7.3 | 128.2 | * | 49. | 12. | AG | 0. | 100.0 | 0.0 | 56.0 | 0.38 | 2.5 |
| 3. N Leg Dep - FreeFlow | * | 30.0 | 0.0 | 120.0 | 460.0 | * | 469. | 11. | AG | 379. | 0.1 | 0.0 | 44.0 | | |
| 4. S Leg App - FreeFlow | * | 30.0 | 0.0 | -70.0 | -450.0 | * | 461. | 193. | AG | 1112. | 0.1 | 0.0 | 72.0 | | |
| 5. S Leg App - FF #2 | * | -70.0 | -450.0 | -70.0 | -820.0 | * | 370. | 180. | AG | 1112. | 0.1 | 0.0 | 51.0 | | |
| 6. E Leg App - FreeFlow | * | 0.0 | 20.0 | 980.0 | 10.0 | * | 980. | 91. | AG | 803. | 0.1 | 0.0 | 56.0 | | |
| 7. E Leg App - Queue | * | 73.7 | 19.2 | 183.2 | 18.1 | * | 109. | 91. | AG | 0. | 100.0 | 0.0 | 56.0 | 0.49 | 5.6 |
| 8. E Leg Dep - FreeFlow | * | 0.0 | -10.0 | 980.0 | -40.0 | * | 980. | 92. | AG | 1304. | 0.1 | 0.0 | 47.0 | | |
| 9. W Leg App - FreeFlow | * | 0.0 | -10.0 | -430.0 | -110.0 | * | 441. | 257. | AG | 673. | 0.1 | 0.0 | 68.0 | | |
| 10. W Leg App - Queue | * | 0.0 | -10.0 | -67.1 | -25.6 | * | 69. | 257. | AG | 0. | 100.0 | 0.0 | 68.0 | 0.31 | 3.5 |
| 11. W Leg Dep - FreeFlow | * | -10.0 | 40.0 | -440.0 | -50.0 | * | 439. | 258. | AG | 1177. | 0.1 | 0.0 | 78.0 | | |
| 12. N Leg App - FF #2 | * | 80.0 | 470.0 | 0.0 | 980.0 | * | 516. | 351. | AG | 273. | 0.0 | 0.0 | 40.0 | | |
| 13. N Leg Dep - FF #2 | * | 120.0 | 460.0 | 30.0 | 990.0 | * | 538. | 350. | AG | 379. | 0.1 | 0.0 | 52.0 | | |
| 14. S Leg App - FF #3 | * | -70.0 | -820.0 | -40.0 | -970.0 | * | 153. | 169. | AG | 1112. | 0.1 | 0.0 | 36.0 | | |
| 15. I93 NB N Leg - FF | * | -270.0 | -40.0 | -420.0 | 940.0 | * | 991. | 351. | BR | 3863. | 0.0 | 22.0 | 80.0 | | |
| 16. I 93 NB S Leg - FF | * | -270.0 | -40.0 | -60.0 | -1030.0 | * | 1012. | 168. | BR | 3863. | 0.0 | 22.0 | 80.0 | | |
| 17. I 93 SB N Leg - FF | * | -350.0 | -50.0 | -500.0 | 940.0 | * | 1001. | 351. | BR | 3304. | 0.0 | 22.0 | 95.0 | | |
| 18. I 93 SB S Leg - FF | * | -350.0 | -50.0 | -120.0 | -1040.0 | * | 1016. | 167. | BR | 3304. | 0.0 | 22.0 | 95.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 98 | 2.0 | 273 | 1600 | 0.05 | 2 3 |
| 7. E Leg App - Queue | * | 120 | 75 | 2.0 | 803 | 1600 | 0.05 | 2 3 |
| 10. W Leg App - Queue | * | 120 | 75 | 2.0 | 673 | 1600 | 0.05 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 80.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.0 | 140.0 | 5.9 |
| 3. N Leg, E Side - 50 m | 100.0 | 230.0 | 5.9 |
| 4. N Leg, E Side-Midblk | 130.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -50.0 | 60.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -20.0 | 170.0 | 5.9 |
| 7. N Leg, W Side - 50 m | 0.0 | 250.0 | 5.9 |
| 8. N Leg, W Side-Midblk | 40.0 | 500.0 | 5.9 |
| 9. S Leg, E Side-Corner | 60.0 | -50.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 30.0 | -180.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 10.0 | -240.0 | 5.9 |
| 12. S Leg, E Side-Midblk | -40.0 | -510.0 | 5.9 |
| 13. S Leg, W Side-Corner | -30.0 | -60.0 | 5.9 |
| 14. S Leg, W Side - 25 m | -50.0 | -160.0 | 5.9 |
| 15. S Leg, W Side - 50 m | -70.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | -110.0 | -490.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 170.0 | 50.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 250.0 | 40.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 490.0 | 30.0 | 5.9 |
| 20. W Leg, N Side - 25 m | -130.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -210.0 | 40.0 | 5.9 |
| 22. E Leg, S Side - 25 m | 170.0 | -40.0 | 5.9 |
| 23. E Leg, S Side - 50 m | 250.0 | -40.0 | 5.9 |
| 24. E Leg, S Side-Midblk | 490.0 | -50.0 | 5.9 |
| 25. W Leg, S Side - 25 m | -110.0 | -80.0 | 5.9 |
| 26. W Leg, S Side - 50 m | -190.0 | -90.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 1.0000 | 2.0000 | 1.6000 | 0.9000 | 0.8000 | 0.5000 | 0.7000 | 1.0000 | 5.9000 | 5.2000 | 6.5000 | 4.7000 | 5.1000 | 4.3000 | 3.7000 |
| 20. | 0.4000 | 1.0000 | 0.8000 | 0.5000 | 1.2000 | 0.8000 | 0.8000 | 1.0000 | 4.9000 | 3.5000 | 4.5000 | 2.7000 | 6.0000 | 5.5000 | 5.2000 |
| 30. | 0.1000 | 0.4000 | 0.3000 | 0.3000 | 1.5000 | 0.8000 | 0.8000 | 1.0000 | 4.6000 | 2.5000 | 2.9000 | 1.4000 | 6.6000 | 6.2000 | 6.0000 |
| 40. | 0.0000 | 0.2000 | 0.1000 | 0.2000 | 1.8000 | 0.9000 | 0.9000 | 0.9000 | 4.8000 | 2.2000 | 2.3000 | 1.1000 | 6.9000 | 6.1000 | 5.8000 |
| 50. | 0.0000 | 0.1000 | 0.1000 | 0.2000 | 2.0000 | 0.9000 | 0.9000 | 0.9000 | 5.0000 | 2.1000 | 2.0000 | 1.0000 | 7.6000 | 6.0000 | 5.5000 |
| 60. | 0.0000 | 0.1000 | 0.1000 | 0.2000 | 2.5000 | 0.9000 | 0.9000 | 0.8000 | 5.4000 | 2.2000 | 2.1000 | 0.7000 | 8.1000 | 5.9000 | 5.3000 |
| 70. | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 3.0000 | 0.8000 | 0.8000 | 0.8000 | 5.8000 | 2.0000 | 1.8000 | 0.3000 | 8.2000 | 5.5000 | 4.8000 |
| 80. | 0.9000 | 0.1000 | 0.0000 | 0.1000 | 3.9000 | 0.8000 | 0.8000 | 0.8000 | 5.6000 | 1.4000 | 0.9000 | 0.0000 | 7.8000 | 4.8000 | 4.0000 |
| 90. | 2.7000 | 0.6000 | 0.2000 | 0.1000 | 5.7000 | 1.2000 | 1.0000 | 0.8000 | 3.8000 | 0.5000 | 0.4000 | 0.0000 | 6.2000 | 3.9000 | 3.5000 |
| 100. | 4.8000 | 1.6000 | 0.6000 | 0.1000 | 7.4000 | 2.1000 | 1.4000 | 0.8000 | 1.6000 | 0.1000 | 0.0000 | 0.0000 | 4.5000 | 3.6000 | 3.4000 |
| 110. | 5.6000 | 2.2000 | 1.2000 | 0.4000 | 7.8000 | 2.7000 | 2.0000 | 1.0000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 | 3.5000 | 3.4000 | 3.3000 |
| 120. | 5.1000 | 2.3000 | 1.5000 | 0.6000 | 7.7000 | 3.1000 | 2.3000 | 1.3000 | 0.0000 | 0.0000 | 0.2000 | 0.1000 | 3.1000 | 3.2000 | 3.1000 |
| 130. | 4.9000 | 2.3000 | 1.5000 | 1.0000 | 7.5000 | 3.1000 | 2.3000 | 1.7000 | 0.1000 | 0.1000 | 0.3000 | 0.2000 | 3.3000 | 3.3000 | 3.3000 |
| 140. | 4.6000 | 2.4000 | 1.6000 | 1.2000 | 7.1000 | 3.4000 | 2.3000 | 1.7000 | 0.2000 | 0.2000 | 0.4000 | 0.2000 | 3.6000 | 3.7000 | 3.6000 |
| 150. | 4.2000 | 2.3000 | 1.6000 | 1.5000 | 6.8000 | 3.5000 | 2.4000 | 1.6000 | 0.3000 | 0.3000 | 0.5000 | 0.3000 | 3.9000 | 4.0000 | 3.9000 |
| 160. | 4.1000 | 2.4000 | 1.6000 | 1.8000 | 7.2000 | 4.1000 | 2.7000 | 1.8000 | 0.3000 | 0.3000 | 0.6000 | 0.7000 | 4.4000 | 4.5000 | 4.6000 |
| 170. | 4.4000 | 2.9000 | 2.0000 | 2.5000 | 7.8000 | 4.9000 | 3.6000 | 2.2000 | 0.6000 | 0.8000 | 1.4000 | 2.4000 | 5.4000 | 5.7000 | 5.8000 |
| 180. | 5.7000 | 4.5000 | 3.5000 | 3.9000 | 7.9000 | 5.7000 | 4.8000 | 2.9000 | 2.1000 | 2.4000 | 3.5000 | 5.2000 | 6.2000 | 6.6000 | 6.5000 |
| 190. | 7.7000 | 6.7000 | 5.3000 | 5.3000 | 7.3000 | 5.3000 | 4.5000 | 2.9000 | 4.8000 | 5.0000 | 6.4000 | 7.7000 | 5.3000 | 5.7000 | 5.2000 |
| 200. | 8.8000 | 7.3000 | 6.2000 | 5.1000 | 6.3000 | 4.0000 | 3.4000 | 2.1000 | 6.9000 | 6.8000 | 7.8000 | 7.9000 | 3.2000 | 3.5000 | 3.3000 |
| 210. | 8.8000 | 6.7000 | 5.5000 | 4.2000 | 5.9000 | 3.3000 | 2.8000 | 1.9000 | 6.8000 | 7.0000 | 7.4000 | 7.2000 | 2.0000 | 2.3000 | 2.2000 |
| 220. | 8.0000 | 5.7000 | 4.9000 | 3.3000 | 6.6000 | 3.3000 | 2.8000 | 1.5000 | 5.9000 | 6.1000 | 6.8000 | 6.4000 | 1.7000 | 1.7000 | 1.8000 |
| 230. | 7.3000 | 5.5000 | 4.3000 | 2.6000 | 7.1000 | 3.3000 | 2.4000 | 1.1000 | 5.4000 | 5.6000 | 6.1000 | 5.9000 | 1.6000 | 1.6000 | 1.7000 |
| 240. | 7.4000 | 5.4000 | 3.7000 | 2.3000 | 7.5000 | 2.5000 | 1.7000 | 1.0000 | 5.0000 | 5.2000 | 5.4000 | 5.5000 | 1.5000 | 1.6000 | 1.6000 |
| 250. | 7.3000 | 4.7000 | 2.9000 | 2.1000 | 7.5000 | 1.8000 | 1.3000 | 0.9000 | 5.2000 | 4.8000 | 5.1000 | 5.2000 | 1.9000 | 1.5000 | 1.6000 |
| 260. | 6.3000 | 3.3000 | 2.2000 | 2.1000 | 6.3000 | 1.4000 | 1.1000 | 0.9000 | 6.1000 | 4.5000 | 4.7000 | 5.3000 | 3.3000 | 1.5000 | 1.5000 |
| 270. | 4.6000 | 2.6000 | 2.1000 | 2.1000 | 4.2000 | 1.2000 | 1.1000 | 0.9000 | 7.5000 | 4.8000 | 4.8000 | 5.6000 | 4.6000 | 1.7000 | 1.6000 |
| 280. | 3.2000 | 2.4000 | 2.2000 | 2.1000 | 2.8000 | 1.1000 | 1.1000 | 0.9000 | 8.6000 | 5.7000 | 5.2000 | 5.4000 | 5.3000 | 2.5000 | 1.7000 |
| 290. | 2.9000 | 2.3000 | 2.2000 | 2.2000 | 2.3000 | 1.2000 | 1.1000 | 1.0000 | 9.3000 | 6.1000 | 5.7000 | 5.2000 | 5.3000 | 3.0000 | 2.2000 |
| 300. | 2.7000 | 2.2000 | 2.1000 | 2.1000 | 2.1000 | 1.2000 | 1.2000 | 0.9000 | 9.4000 | 6.1000 | 6.0000 | 5.7000 | 5.3000 | 3.3000 | 2.8000 |
| 310. | 2.5000 | 2.3000 | 2.2000 | 1.9000 | 2.1000 | 1.3000 | 1.2000 | 0.6000 | 9.3000 | 6.4000 | 6.3000 | 6.6000 | 5.3000 | 3.4000 | 3.4000 |
| 320. | 2.4000 | 2.4000 | 2.1000 | 2.0000 | 1.9000 | 1.2000 | 1.0000 | 0.3000 | 9.1000 | 6.8000 | 6.8000 | 7.4000 | 5.5000 | 3.5000 | 3.3000 |

```
 330.  *  2.0000  2.1000  1.9000  2.2000  1.7000  0.9000  0.6000  0.0000  8.3000  7.0000  7.1000
8.0000  5.3000  3.5000  3.3000
 340.  *  1.6000  2.0000  1.8000  2.5000  1.0000  0.3000  0.1000  0.1000  7.3000  6.8000  7.3000
7.8000  4.7000  3.2000  2.9000
 350.  *  1.7000  2.2000  2.4000  2.4000  0.3000  0.1000  0.1000  0.4000  6.8000  6.9000  7.3000
7.1000  4.7000  2.6000  2.3000
 360.  *  1.6000  2.5000  2.5000  1.7000  0.2000  0.2000  0.5000  0.8000  6.7000  6.6000  7.5000
6.5000  4.5000  3.1000  2.3000
 ------*-------------------------------------------------------------------------------------------
-------------------------
 MAX   *  8.8000  7.3000  6.2000  5.3000  7.9000  5.7000  4.8000  2.9000  9.4000  7.0000  7.8000
8.0000  8.2000  6.6000  6.5000
 DEGR. *    200     200     200     190     180     180     180     190     300     210     200     330
70     180     180
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 4.8000 | 0.1000 | 0.0000 | 0.3000 | 0.4000 | 0.3000 | 4.8000 | 4.5000 | 4.3000 | 3.3000 | 3.4000 |
| 20. | 6.2000 | 0.0000 | 0.1000 | 0.3000 | 0.6000 | 0.4000 | 4.5000 | 4.5000 | 4.3000 | 4.0000 | 3.7000 |
| 30. | 6.2000 | 0.1000 | 0.2000 | 0.4000 | 0.8000 | 0.6000 | 4.7000 | 4.6000 | 4.5000 | 4.2000 | 3.9000 |
| 40. | 5.4000 | 0.1000 | 0.3000 | 0.5000 | 1.1000 | 0.6000 | 4.9000 | 5.1000 | 4.8000 | 4.4000 | 4.3000 |
| 50. | 5.1000 | 0.1000 | 0.3000 | 0.6000 | 1.2000 | 0.8000 | 5.5000 | 5.6000 | 5.3000 | 4.7000 | 4.6000 |
| 60. | 4.7000 | 0.2000 | 0.5000 | 0.9000 | 1.7000 | 1.1000 | 6.1000 | 6.3000 | 5.9000 | 5.1000 | 4.9000 |
| 70. | 4.0000 | 0.4000 | 1.0000 | 1.6000 | 2.8000 | 2.1000 | 6.9000 | 7.2000 | 6.5000 | 5.9000 | 5.2000 |
| 80. | 3.4000 | 1.4000 | 2.5000 | 3.1000 | 4.7000 | 4.5000 | 7.6000 | 7.8000 | 6.8000 | 5.4000 | 5.1000 |
| 90. | 3.3000 | 3.5000 | 4.8000 | 5.0000 | 6.8000 | 7.0000 | 6.1000 | 6.6000 | 5.4000 | 4.0000 | 3.6000 |
| 100. | 3.2000 | 5.4000 | 6.2000 | 6.1000 | 8.5000 | 7.7000 | 3.3000 | 3.7000 | 2.7000 | 2.6000 | 2.0000 |
| 110. | 3.2000 | 5.8000 | 6.3000 | 6.2000 | 8.3000 | 7.0000 | 1.2000 | 1.5000 | 1.0000 | 1.9000 | 1.5000 |
| 120. | 3.4000 | 5.2000 | 5.5000 | 5.6000 | 7.2000 | 5.9000 | 0.5000 | 0.7000 | 0.4000 | 1.8000 | 1.4000 |
| 130. | 3.7000 | 4.7000 | 4.9000 | 4.8000 | 6.4000 | 5.4000 | 0.3000 | 0.4000 | 0.3000 | 1.8000 | 1.4000 |
| 140. | 4.0000 | 4.5000 | 4.5000 | 4.4000 | 5.8000 | 4.9000 | 0.3000 | 0.4000 | 0.3000 | 1.8000 | 1.5000 |
| 150. | 4.5000 | 4.2000 | 4.2000 | 4.1000 | 5.6000 | 5.0000 | 0.2000 | 0.3000 | 0.2000 | 2.1000 | 1.6000 |
| 160. | 5.3000 | 4.1000 | 4.0000 | 4.0000 | 5.7000 | 5.6000 | 0.1000 | 0.1000 | 0.1000 | 2.3000 | 2.4000 |
| 170. | 5.8000 | 4.3000 | 4.0000 | 3.8000 | 6.4000 | 6.9000 | 0.0000 | 0.0000 | 0.0000 | 3.0000 | 3.4000 |
| 180. | 5.1000 | 4.8000 | 4.0000 | 3.8000 | 6.5000 | 7.1000 | 0.3000 | 0.0000 | 0.0000 | 3.3000 | 3.6000 |
| 190. | 4.0000 | 5.6000 | 4.6000 | 3.8000 | 6.1000 | 6.7000 | 0.9000 | 0.4000 | 0.0000 | 2.9000 | 3.3000 |
| 200. | 3.0000 | 6.5000 | 5.3000 | 4.4000 | 6.0000 | 6.6000 | 1.9000 | 1.2000 | 0.2000 | 2.1000 | 2.9000 |
| 210. | 2.4000 | 7.4000 | 6.2000 | 4.7000 | 6.2000 | 6.5000 | 2.7000 | 2.1000 | 0.7000 | 1.9000 | 2.5000 |
| 220. | 2.1000 | 7.7000 | 6.6000 | 5.6000 | 6.6000 | 6.6000 | 2.9000 | 2.4000 | 1.4000 | 1.7000 | 2.3000 |
| 230. | 2.0000 | 8.2000 | 7.3000 | 6.2000 | 7.0000 | 6.8000 | 2.9000 | 2.6000 | 1.6000 | 1.7000 | 2.1000 |
| 240. | 1.8000 | 8.4000 | 7.6000 | 6.9000 | 7.1000 | 6.5000 | 3.0000 | 2.5000 | 1.8000 | 1.8000 | 2.2000 |
| 250. | 1.7000 | 8.4000 | 8.6000 | 7.7000 | 6.6000 | 5.5000 | 3.4000 | 3.0000 | 2.0000 | 2.1000 | 2.5000 |
| 260. | 1.7000 | 7.8000 | 8.6000 | 8.4000 | 5.4000 | 4.1000 | 5.2000 | 5.2000 | 3.8000 | 3.0000 | 3.5000 |
| 270. | 1.7000 | 5.6000 | 7.0000 | 7.2000 | 3.5000 | 2.9000 | 7.4000 | 7.8000 | 6.8000 | 4.2000 | 4.4000 |
| 280. | 1.9000 | 3.2000 | 4.1000 | 4.9000 | 2.5000 | 2.3000 | 9.1000 | 9.5000 | 8.4000 | 5.1000 | 5.2000 |
| 290. | 2.1000 | 2.2000 | 2.5000 | 2.8000 | 2.2000 | 2.2000 | 9.1000 | 9.3000 | 8.3000 | 5.1000 | 5.5000 |
| 300. | 2.3000 | 1.8000 | 1.7000 | 1.8000 | 2.2000 | 2.4000 | 8.4000 | 8.4000 | 7.0000 | 5.0000 | 5.8000 |
| 310. | 2.7000 | 1.7000 | 1.5000 | 1.4000 | 2.3000 | 2.6000 | 7.9000 | 7.5000 | 6.2000 | 5.1000 | 5.8000 |
| 320. | 3.4000 | 1.5000 | 1.1000 | 0.9000 | 2.3000 | 2.9000 | 7.2000 | 6.4000 | 5.5000 | 5.1000 | 6.1000 |
| 330. | 4.1000 | 1.0000 | 0.8000 | 0.6000 | 2.1000 | 3.2000 | 6.4000 | 5.6000 | 4.9000 | 5.2000 | 6.2000 |
| 340. | 4.1000 | 0.8000 | 0.5000 | 0.4000 | 1.3000 | 2.8000 | 5.7000 | 4.9000 | 4.4000 | 4.5000 | 6.2000 |
| 350. | 3.4000 | 0.7000 | 0.4000 | 0.3000 | 0.5000 | 1.7000 | 5.4000 | 4.7000 | 4.2000 | 3.7000 | 5.1000 |
| 360. | 3.2000 | 0.4000 | 0.1000 | 0.4000 | 0.3000 | 0.6000 | 5.5000 | 4.7000 | 4.5000 | 3.2000 | 3.8000 |
| MAX | 6.2000 | 8.4000 | 8.6000 | 8.4000 | 8.5000 | 7.7000 | 9.1000 | 9.5000 | 8.4000 | 5.9000 | 6.2000 |
| DEGR. | 20 | 250 | 250 | 260 | 100 | 100 | 280 | 280 | 280 | 70 | 330 |

THE HIGHEST CONCENTRATION OF 9.5000 UG/M**3 OCCURRED AT RECEPTOR 23.

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 NB Ft Eddy 2035 Build PM CO

DATE : 3/ 2/18
TIME : 11:29: 1

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) X1 | Y1 | X2 | Y2 | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. N Leg App - FreeFlow | * | -20.0 | 0.0 | 80.0 | 470.0 | * | 481. | 12. | AG | 812. | 1.3 | 0.0 | 56.0 | | |
| 2. N Leg App - Queue | * | -2.9 | 80.5 | 21.7 | 196.1 | * | 118. | 12. | AG | 9. | 100.0 | 0.0 | 56.0 | 0.56 | 6.0 |
| 3. N Leg Dep - FreeFlow | * | 30.0 | 0.0 | 120.0 | 460.0 | * | 469. | 11. | AG | 1036. | 0.8 | 0.0 | 44.0 | | |
| 4. S Leg App - FreeFlow | * | 30.0 | 0.0 | -70.0 | -450.0 | * | 461. | 193. | AG | 847. | 0.7 | 0.0 | 72.0 | | |
| 5. S Leg App - FF #2 | * | -70.0 | -450.0 | -70.0 | -820.0 | * | 370. | 180. | AG | 847. | 0.7 | 0.0 | 51.0 | | |
| 6. E Leg App - FreeFlow | * | 0.0 | 20.0 | 980.0 | 10.0 | * | 980. | 91. | AG | 1397. | 1.0 | 0.0 | 56.0 | | |
| 7. E Leg App - Queue | * | 73.7 | 19.2 | 1967.2 | -0.1 | * | 1894. | 91. | AG | 11. | 100.0 | 0.0 | 56.0 | 1.52 | 96.2 |
| 8. E Leg Dep - FreeFlow | * | 0.0 | -10.0 | 980.0 | -40.0 | * | 980. | 92. | AG | 1573. | 1.0 | 0.0 | 47.0 | | |
| 9. W Leg App - FreeFlow | * | 0.0 | -10.0 | -430.0 | -110.0 | * | 441. | 257. | AG | 1266. | 1.3 | 0.0 | 68.0 | | |
| 10. W Leg App - Queue | * | 0.0 | -10.0 | -122.9 | -38.6 | * | 126. | 257. | AG | 11. | 100.0 | 0.0 | 68.0 | 0.55 | 6.4 |
| 11. W Leg Dep - FreeFlow | * | -10.0 | 40.0 | -440.0 | -50.0 | * | 439. | 258. | AG | 1713. | 1.0 | 0.0 | 78.0 | | |
| 12. N Leg App - FF #2 | * | 80.0 | 470.0 | 0.0 | 980.0 | * | 516. | 351. | AG | 812. | 1.3 | 0.0 | 40.0 | | |
| 13. N Leg Dep - FF #2 | * | 120.0 | 460.0 | 30.0 | 990.0 | * | 538. | 350. | AG | 1036. | 0.8 | 0.0 | 52.0 | | |
| 14. S Leg App - FF #3 | * | -70.0 | -820.0 | -40.0 | -970.0 | * | 153. | 169. | AG | 847. | 0.7 | 0.0 | 36.0 | | |
| 15. I93 NB N Leg - FF | * | -270.0 | -40.0 | -420.0 | 940.0 | * | 991. | 351. | BR | 4380. | 0.8 | 22.0 | 80.0 | | |
| 16. I 93 NB S Leg - FF | * | -270.0 | -40.0 | -60.0 | -1030.0 | * | 1012. | 168. | BR | 4380. | 0.8 | 22.0 | 80.0 | | |
| 17. I 93 SB N Leg - FF | * | -350.0 | -50.0 | -500.0 | 940.0 | * | 1001. | 351. | BR | 4000. | 0.8 | 22.0 | 95.0 | | |
| 18. I 93 SB S Leg - FF | * | -350.0 | -50.0 | -120.0 | -1040.0 | * | 1016. | 167. | BR | 4000. | 0.8 | 22.0 | 95.0 | | |

ADDITIONAL QUEUE LINK PARAMETERS

| LINK DESCRIPTION | CYCLE LENGTH (SEC) | RED TIME (SEC) | CLEARANCE LOST TIME (SEC) | APPROACH VOL (VPH) | SATURATION FLOW RATE (VPH) | IDLE EM FAC (gm/hr) | SIGNAL TYPE | ARRIVAL RATE |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | 120 | 80 | 2.0 | 812 | 1600 | 1.75 | 2 | 3 |
| 7. E Leg App - Queue | 120 | 93 | 2.0 | 1397 | 1600 | 1.75 | 2 | 3 |
| 10. W Leg App - Queue | 120 | 73 | 2.0 | 1266 | 1600 | 1.75 | 2 | 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 80.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.0 | 140.0 | 5.9 |
| 3. N Leg, E Side - 50 m | 100.0 | 230.0 | 5.9 |
| 4. N Leg, E Side-Midblk | 130.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -50.0 | 60.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -20.0 | 170.0 | 5.9 |
| 7. N Leg, W Side - 50 m | 0.0 | 250.0 | 5.9 |
| 8. N Leg, W Side-Midblk | 40.0 | 500.0 | 5.9 |
| 9. S Leg, E Side-Corner | 60.0 | -50.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 30.0 | -180.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 10.0 | -240.0 | 5.9 |
| 12. S Leg, E Side-Midblk | -40.0 | -510.0 | 5.9 |
| 13. S Leg, W Side-Corner | -30.0 | -60.0 | 5.9 |
| 14. S Leg, W Side - 25 m | -50.0 | -160.0 | 5.9 |
| 15. S Leg, W Side - 50 m | -70.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | -110.0 | -490.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 170.0 | 50.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 250.0 | 40.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 490.0 | 30.0 | 5.9 |
| 20. W Leg, N Side - 25 m | -130.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -210.0 | 40.0 | 5.9 |
| 22. E Leg, S Side - 25 m | 170.0 | -40.0 | 5.9 |
| 23. E Leg, S Side - 50 m | 250.0 | -40.0 | 5.9 |
| 24. E Leg, S Side-Midblk | 490.0 | -50.0 | 5.9 |
| 25. W Leg, S Side - 25 m | -110.0 | -80.0 | 5.9 |
| 26. W Leg, S Side - 50 m | -190.0 | -90.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 80. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 90. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 |
| 280. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 |
| 290. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 |
| 300. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 |
| 310. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

```
 330.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 340.  *  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------------
-------------------------
 MAX   *  0.1000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 DEGR. *    100      10      10     340     200      10      10      10      60      10      10      10
270      10      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 30. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 40. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 |
| 50. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 |
| 60. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 |
| 70. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 |
| 80. | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 90. | 0.0000 | 0.1000 | 0.2000 | 0.2000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 100. | 0.0000 | 0.2000 | 0.2000 | 0.2000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | 0.0000 | 0.2000 | 0.2000 | 0.2000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | 0.0000 | 0.1000 | 0.2000 | 0.2000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 180. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 190. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 200. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 210. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 220. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | 0.0000 | 0.1000 | 0.1000 | 0.2000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | 0.0000 | 0.1000 | 0.2000 | 0.2000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | 0.0000 | 0.0000 | 0.2000 | 0.2000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 270. | 0.0000 | 0.0000 | 0.1000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 |
| 280. | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 |
| 290. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 |
| 300. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 |
| 310. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 |
| 320. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 |
| 330. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 340. | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 350. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2000 |
| 360. | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| MAX | 0.1000 | 0.2000 | 0.2000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.2000 |
| DEGR. | 180 | 100 | 90 | 80 | 100 | 90 | 40 | 40 | 40 | 40 | 350 |

THE HIGHEST CONCENTRATION OF 0.2000 PPM OCCURRED AT RECEPTOR 19.

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 NB Ft Eddy 2035 Build PM pm2.5

DATE : 3/ 2/18
TIME : 11:50:29

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) X1 | Y1 | X2 | Y2 | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. N Leg App - FreeFlow | * | -20.0 | 0.0 | 80.0 | 470.0 | * | 481. | 12. | AG | 812. | 0.0 | 0.0 | 56.0 | | |
| 2. N Leg App - Queue | * | -2.9 | 80.5 | 21.7 | 196.1 | * | 118. | 12. | AG | 0. | 100.0 | 0.0 | 56.0 | 0.56 | 6.0 |
| 3. N Leg Dep - FreeFlow | * | 30.0 | 0.0 | 120.0 | 460.0 | * | 469. | 11. | AG | 1036. | 0.0 | 0.0 | 44.0 | | |
| 4. S Leg App - FreeFlow | * | 30.0 | 0.0 | -70.0 | -450.0 | * | 461. | 193. | AG | 847. | 0.0 | 0.0 | 72.0 | | |
| 5. S Leg App - FF #2 | * | -70.0 | -450.0 | -70.0 | -820.0 | * | 370. | 180. | AG | 847. | 0.0 | 0.0 | 51.0 | | |
| 6. E Leg App - FreeFlow | * | 0.0 | 20.0 | 980.0 | 10.0 | * | 980. | 91. | AG | 1397. | 0.0 | 0.0 | 56.0 | | |
| 7. E Leg App - Queue | * | 73.7 | 19.2 | 1967.2 | -0.1 | * | 1894. | 91. | AG | 0. | 100.0 | 0.0 | 56.0 | 1.52 | 96.2 |
| 8. E Leg Dep - FreeFlow | * | 0.0 | -10.0 | 980.0 | -40.0 | * | 980. | 92. | AG | 1573. | 0.0 | 0.0 | 47.0 | | |
| 9. W Leg App - FreeFlow | * | 0.0 | -10.0 | -430.0 | -110.0 | * | 441. | 257. | AG | 1266. | 0.0 | 0.0 | 68.0 | | |
| 10. W Leg App - Queue | * | 0.0 | -10.0 | -122.9 | -38.6 | * | 126. | 257. | AG | 0. | 100.0 | 0.0 | 68.0 | 0.55 | 6.4 |
| 11. W Leg Dep - FreeFlow | * | -10.0 | 40.0 | -440.0 | -50.0 | * | 439. | 258. | AG | 1713. | 0.0 | 0.0 | 78.0 | | |
| 12. N Leg App - FF #2 | * | 80.0 | 470.0 | 0.0 | 980.0 | * | 516. | 351. | AG | 812. | 0.0 | 0.0 | 40.0 | | |
| 13. N Leg Dep - FF #2 | * | 120.0 | 460.0 | 30.0 | 990.0 | * | 538. | 350. | AG | 1036. | 0.0 | 0.0 | 52.0 | | |
| 14. S Leg App - FF #3 | * | -70.0 | -820.0 | -40.0 | -970.0 | * | 153. | 169. | AG | 847. | 0.0 | 0.0 | 36.0 | | |
| 15. I93 NB N Leg - FF | * | -270.0 | -40.0 | -420.0 | 940.0 | * | 991. | 351. | BR | 4380. | 0.0 | 22.0 | 80.0 | | |
| 16. I 93 NB S Leg - FF | * | -270.0 | -40.0 | -60.0 | -1030.0 | * | 1012. | 168. | BR | 4380. | 0.0 | 22.0 | 80.0 | | |
| 17. I 93 SB N Leg - FF | * | -350.0 | -50.0 | -500.0 | 940.0 | * | 1001. | 351. | BR | 4000. | 0.0 | 22.0 | 95.0 | | |
| 18. I 93 SB S Leg - FF | * | -350.0 | -50.0 | -120.0 | -1040.0 | * | 1016. | 167. | BR | 4000. | 0.0 | 22.0 | 95.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 80 | 2.0 | 812 | 1600 | 0.04 | 2 3 |
| 7. E Leg App - Queue | * | 120 | 93 | 2.0 | 1397 | 1600 | 0.04 | 2 3 |
| 10. W Leg App - Queue | * | 120 | 73 | 2.0 | 1266 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 80.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.0 | 140.0 | 5.9 |
| 3. N Leg, E Side - 50 m | 100.0 | 230.0 | 5.9 |
| 4. N Leg, E Side-Midblk | 130.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -50.0 | 60.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -20.0 | 170.0 | 5.9 |
| 7. N Leg, W Side - 50 m | 0.0 | 250.0 | 5.9 |
| 8. N Leg, W Side-Midblk | 40.0 | 500.0 | 5.9 |
| 9. S Leg, E Side-Corner | 60.0 | -50.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 30.0 | -180.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 10.0 | -240.0 | 5.9 |
| 12. S Leg, E Side-Midblk | -40.0 | -510.0 | 5.9 |
| 13. S Leg, W Side-Corner | -30.0 | -60.0 | 5.9 |
| 14. S Leg, W Side - 25 m | -50.0 | -160.0 | 5.9 |
| 15. S Leg, W Side - 50 m | -70.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | -110.0 | -490.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 170.0 | 50.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 250.0 | 40.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 490.0 | 30.0 | 5.9 |
| 20. W Leg, N Side - 25 m | -130.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -210.0 | 40.0 | 5.9 |
| 22. E Leg, S Side - 25 m | 170.0 | -40.0 | 5.9 |
| 23. E Leg, S Side - 50 m | 250.0 | -40.0 | 5.9 |
| 24. E Leg, S Side-Midblk | 490.0 | -50.0 | 5.9 |
| 25. W Leg, S Side - 25 m | -110.0 | -80.0 | 5.9 |
| 26. W Leg, S Side - 50 m | -190.0 | -90.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 0.4000 | 0.8000 | 0.6000 | 0.4000 | 0.6000 | 0.2000 | 0.4000 | 0.5000 | 1.6000 | 1.2000 | 1.2000 | 0.8000 | 2.2000 | 1.5000 | 1.0000 |
| 20. | 0.1000 | 0.4000 | 0.3000 | 0.2000 | 0.7000 | 0.5000 | 0.5000 | 0.5000 | 1.4000 | 0.9000 | 0.8000 | 0.5000 | 2.3000 | 1.3000 | 1.3000 |
| 30. | 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.9000 | 0.7000 | 0.5000 | 0.5000 | 1.4000 | 0.7000 | 0.8000 | 0.3000 | 2.1000 | 1.3000 | 0.9000 |
| 40. | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 1.1000 | 0.8000 | 0.5000 | 0.5000 | 1.5000 | 0.7000 | 0.7000 | 0.3000 | 1.9000 | 1.1000 | 1.1000 |
| 50. | 0.0000 | 0.1000 | 0.0000 | 0.1000 | 1.1000 | 0.8000 | 0.5000 | 0.5000 | 1.6000 | 0.7000 | 0.7000 | 0.3000 | 2.0000 | 1.2000 | 1.0000 |
| 60. | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 1.2000 | 0.9000 | 0.5000 | 0.4000 | 1.7000 | 0.8000 | 0.7000 | 0.3000 | 2.0000 | 1.2000 | 1.0000 |
| 70. | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 1.2000 | 1.0000 | 0.5000 | 0.4000 | 2.0000 | 0.7000 | 0.5000 | 0.1000 | 2.0000 | 1.2000 | 0.9000 |
| 80. | 0.6000 | 0.1000 | 0.0000 | 0.1000 | 1.4000 | 1.1000 | 0.5000 | 0.4000 | 1.9000 | 0.6000 | 0.4000 | 0.1000 | 1.9000 | 1.0000 | 0.7000 |
| 90. | 1.5000 | 0.4000 | 0.1000 | 0.0000 | 2.0000 | 1.4000 | 0.6000 | 0.4000 | 1.4000 | 0.2000 | 0.1000 | 0.0000 | 1.4000 | 0.8000 | 0.4000 |
| 100. | 2.2000 | 0.8000 | 0.4000 | 0.1000 | 2.6000 | 1.6000 | 0.9000 | 0.4000 | 0.6000 | 0.0000 | 0.0000 | 0.0000 | 0.8000 | 0.4000 | 0.4000 |
| 110. | 2.4000 | 1.1000 | 0.6000 | 0.2000 | 2.3000 | 2.0000 | 1.1000 | 0.5000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.4000 | 0.4000 | 0.4000 |
| 120. | 2.1000 | 1.0000 | 0.7000 | 0.3000 | 2.0000 | 1.9000 | 1.2000 | 0.8000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.3000 | 0.3000 | 0.3000 |
| 130. | 1.8000 | 1.0000 | 0.7000 | 0.4000 | 1.8000 | 1.7000 | 1.1000 | 0.8000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.4000 | 0.4000 | 0.4000 |
| 140. | 1.7000 | 0.9000 | 0.6000 | 0.5000 | 1.5000 | 1.7000 | 1.2000 | 0.7000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.4000 | 0.4000 | 0.4000 |
| 150. | 1.6000 | 0.9000 | 0.6000 | 0.5000 | 1.6000 | 1.6000 | 1.3000 | 0.7000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.4000 | 0.4000 | 0.4000 |
| 160. | 1.5000 | 0.9000 | 0.6000 | 0.7000 | 1.8000 | 1.6000 | 1.3000 | 0.8000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.5000 | 0.5000 | 0.4000 |
| 170. | 1.5000 | 0.9000 | 0.7000 | 0.9000 | 1.9000 | 1.6000 | 1.2000 | 0.8000 | 0.1000 | 0.1000 | 0.1000 | 0.3000 | 0.5000 | 0.7000 | 0.6000 |
| 180. | 1.6000 | 1.1000 | 0.9000 | 1.2000 | 2.0000 | 1.7000 | 1.6000 | 0.9000 | 0.2000 | 0.3000 | 0.4000 | 0.8000 | 0.8000 | 0.9000 | 0.9000 |
| 190. | 1.8000 | 1.5000 | 1.3000 | 1.7000 | 2.0000 | 1.4000 | 1.3000 | 0.9000 | 0.6000 | 0.7000 | 0.8000 | 1.1000 | 0.8000 | 0.9000 | 0.8000 |
| 200. | 1.9000 | 1.9000 | 1.8000 | 2.0000 | 2.0000 | 1.2000 | 1.1000 | 0.4000 | 0.9000 | 1.0000 | 1.0000 | 1.2000 | 0.7000 | 0.6000 | 0.6000 |
| 210. | 2.1000 | 2.0000 | 1.9000 | 1.5000 | 1.9000 | 1.0000 | 0.8000 | 0.5000 | 1.0000 | 1.0000 | 1.1000 | 1.1000 | 0.4000 | 0.6000 | 0.5000 |
| 220. | 2.0000 | 2.0000 | 1.8000 | 1.4000 | 2.0000 | 0.9000 | 0.6000 | 0.3000 | 0.8000 | 0.9000 | 1.0000 | 1.0000 | 0.4000 | 0.5000 | 0.5000 |
| 230. | 2.2000 | 1.8000 | 1.9000 | 1.0000 | 1.9000 | 0.8000 | 0.6000 | 0.3000 | 0.8000 | 0.9000 | 0.9000 | 1.0000 | 0.4000 | 0.4000 | 0.5000 |
| 240. | 2.4000 | 2.0000 | 1.6000 | 0.9000 | 1.7000 | 0.8000 | 0.4000 | 0.3000 | 0.7000 | 0.8000 | 0.9000 | 0.9000 | 0.5000 | 0.4000 | 0.5000 |
| 250. | 2.3000 | 1.7000 | 1.1000 | 0.8000 | 1.8000 | 0.4000 | 0.3000 | 0.3000 | 0.9000 | 0.8000 | 0.8000 | 0.9000 | 0.7000 | 0.4000 | 0.5000 |
| 260. | 1.8000 | 1.5000 | 1.0000 | 0.8000 | 1.4000 | 0.4000 | 0.3000 | 0.3000 | 1.2000 | 0.8000 | 0.8000 | 0.9000 | 1.2000 | 0.4000 | 0.5000 |
| 270. | 1.4000 | 1.3000 | 0.9000 | 0.8000 | 1.0000 | 0.4000 | 0.3000 | 0.3000 | 2.0000 | 0.9000 | 0.8000 | 0.9000 | 1.9000 | 0.5000 | 0.5000 |
| 280. | 1.1000 | 1.3000 | 0.8000 | 0.8000 | 0.7000 | 0.3000 | 0.3000 | 0.3000 | 2.0000 | 0.9000 | 0.9000 | 0.9000 | 2.0000 | 0.7000 | 0.5000 |
| 290. | 1.1000 | 1.3000 | 0.9000 | 0.8000 | 0.6000 | 0.4000 | 0.4000 | 0.3000 | 2.1000 | 1.2000 | 0.9000 | 0.9000 | 2.2000 | 0.9000 | 0.7000 |
| 300. | 1.1000 | 1.3000 | 0.9000 | 0.8000 | 0.5000 | 0.4000 | 0.4000 | 0.2000 | 2.2000 | 1.2000 | 1.3000 | 0.9000 | 2.0000 | 0.8000 | 0.7000 |
| 310. | 1.2000 | 1.2000 | 0.9000 | 0.8000 | 0.5000 | 0.4000 | 0.4000 | 0.2000 | 2.2000 | 1.3000 | 1.3000 | 0.9000 | 2.0000 | 1.0000 | 0.9000 |
| 320. | 1.2000 | 1.2000 | 0.8000 | 0.8000 | 0.6000 | 0.3000 | 0.3000 | 0.1000 | 2.1000 | 1.4000 | 1.3000 | 1.4000 | 2.1000 | 1.0000 | 0.9000 |

```
 330.  *  1.1000  0.9000  0.8000  1.0000  0.4000  0.3000  0.2000  0.0000  2.0000  1.5000  1.3000
1.5000  1.9000  1.1000  0.9000
 340.  *  0.8000  0.8000  0.9000  1.1000  0.3000  0.1000  0.0000  0.0000  1.7000  1.2000  1.3000
1.4000  1.9000  1.0000  1.0000
 350.  *  0.9000  1.0000  1.1000  1.1000  0.0000  0.0000  0.0000  0.2000  1.8000  1.3000  1.3000
1.1000  1.8000  0.8000  0.8000
 360.  *  0.7000  1.1000  1.1000  0.7000  0.1000  0.1000  0.3000  0.5000  2.0000  1.3000  1.5000
0.9000  1.9000  1.1000  0.7000
 ------*-------------------------------------------------------------------------------------------------
-------------------------
 MAX   *  2.4000  2.0000  1.9000  2.0000  2.6000  2.0000  1.6000  0.9000  2.2000  1.5000  1.5000
1.5000  2.3000  1.5000  1.3000
 DEGR. *    110     210     210     200     100     110     180     180     310     330     360     330
20      10      20
```

MODEL RESULTS
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REMARKS : In search of the angle corresponding to
the maximum concentration, only the first

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 NB Ft Eddy 2035 Build PM pm10

DATE : 3/ 2/18
TIME : 11:56:48

The MODE flag has been set for calculating concentrations for POLLUTANT: PM-10

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) X1 | Y1 | X2 | Y2 | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. N Leg App - FreeFlow | * | -20.0 | 0.0 | 80.0 | 470.0 | * | 481. | 12. | AG | 812. | 0.0 | 0.0 | 56.0 | | |
| 2. N Leg App - Queue | * | -2.9 | 80.5 | 21.7 | 196.1 | * | 118. | 12. | AG | 0. | 100.0 | 0.0 | 56.0 | 0.56 | 6.0 |
| 3. N Leg Dep - FreeFlow | * | 30.0 | 0.0 | 120.0 | 460.0 | * | 469. | 11. | AG | 1036. | 0.1 | 0.0 | 44.0 | | |
| 4. S Leg App - FreeFlow | * | 30.0 | 0.0 | -70.0 | -450.0 | * | 461. | 193. | AG | 847. | 0.1 | 0.0 | 72.0 | | |
| 5. S Leg App - FF #2 | * | -70.0 | -450.0 | -70.0 | -820.0 | * | 370. | 180. | AG | 847. | 0.1 | 0.0 | 51.0 | | |
| 6. E Leg App - FreeFlow | * | 0.0 | 20.0 | 980.0 | 10.0 | * | 980. | 91. | AG | 1397. | 0.1 | 0.0 | 56.0 | | |
| 7. E Leg App - Queue | * | 73.7 | 19.2 | 1967.2 | -0.1 | * | 1894. | 91. | AG | 0. | 100.0 | 0.0 | 56.0 | 1.52 | 96.2 |
| 8. E Leg Dep - FreeFlow | * | 0.0 | -10.0 | 980.0 | -40.0 | * | 980. | 92. | AG | 1573. | 0.1 | 0.0 | 47.0 | | |
| 9. W Leg App - FreeFlow | * | 0.0 | -10.0 | -430.0 | -110.0 | * | 441. | 257. | AG | 1266. | 0.1 | 0.0 | 68.0 | | |
| 10. W Leg App - Queue | * | 0.0 | -10.0 | -122.9 | -38.6 | * | 126. | 257. | AG | 0. | 100.0 | 0.0 | 68.0 | 0.55 | 6.4 |
| 11. W Leg Dep - FreeFlow | * | -10.0 | 40.0 | -440.0 | -50.0 | * | 439. | 258. | AG | 1713. | 0.1 | 0.0 | 78.0 | | |
| 12. N Leg App - FF #2 | * | 80.0 | 470.0 | 0.0 | 980.0 | * | 516. | 351. | AG | 812. | 0.0 | 0.0 | 40.0 | | |
| 13. N Leg Dep - FF #2 | * | 120.0 | 460.0 | 30.0 | 990.0 | * | 538. | 350. | AG | 1036. | 0.1 | 0.0 | 52.0 | | |
| 14. S Leg App - FF #3 | * | -70.0 | -820.0 | -40.0 | -970.0 | * | 153. | 169. | AG | 847. | 0.1 | 0.0 | 36.0 | | |
| 15. I93 NB N Leg - FF | * | -270.0 | -40.0 | -420.0 | 940.0 | * | 991. | 351. | BR | 4380. | 0.0 | 22.0 | 80.0 | | |
| 16. I 93 NB S Leg - FF | * | -270.0 | -40.0 | -60.0 | -1030.0 | * | 1012. | 168. | BR | 4380. | 0.0 | 22.0 | 80.0 | | |
| 17. I 93 SB N Leg - FF | * | -350.0 | -50.0 | -500.0 | 940.0 | * | 1001. | 351. | BR | 4000. | 0.0 | 22.0 | 95.0 | | |
| 18. I 93 SB S Leg - FF | * | -350.0 | -50.0 | -120.0 | -1040.0 | * | 1016. | 167. | BR | 4000. | 0.0 | 22.0 | 95.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 80 | 2.0 | 812 | 1600 | 0.04 | 2 3 |
| 7. E Leg App - Queue | * | 120 | 93 | 2.0 | 1397 | 1600 | 0.04 | 2 3 |
| 10. W Leg App - Queue | * | 120 | 73 | 2.0 | 1266 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 80.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.0 | 140.0 | 5.9 |
| 3. N Leg, E Side - 50 m | 100.0 | 230.0 | 5.9 |
| 4. N Leg, E Side-Midblk | 130.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -50.0 | 60.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -20.0 | 170.0 | 5.9 |
| 7. N Leg, W Side - 50 m | 0.0 | 250.0 | 5.9 |
| 8. N Leg, W Side-Midblk | 40.0 | 500.0 | 5.9 |
| 9. S Leg, E Side-Corner | 60.0 | -50.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 30.0 | -180.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 10.0 | -240.0 | 5.9 |
| 12. S Leg, E Side-Midblk | -40.0 | -510.0 | 5.9 |
| 13. S Leg, W Side-Corner | -30.0 | -60.0 | 5.9 |
| 14. S Leg, W Side - 25 m | -50.0 | -160.0 | 5.9 |
| 15. S Leg, W Side - 50 m | -70.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | -110.0 | -490.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 170.0 | 50.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 250.0 | 40.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 490.0 | 30.0 | 5.9 |
| 20. W Leg, N Side - 25 m | -130.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -210.0 | 40.0 | 5.9 |
| 22. E Leg, S Side - 25 m | 170.0 | -40.0 | 5.9 |
| 23. E Leg, S Side - 50 m | 250.0 | -40.0 | 5.9 |
| 24. E Leg, S Side-Midblk | 490.0 | -50.0 | 5.9 |
| 25. W Leg, S Side - 25 m | -110.0 | -80.0 | 5.9 |
| 26. W Leg, S Side - 50 m | -190.0 | -90.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | 2.700 | 5.100 | 4.300 | 2.400 | 2.000 | 1.500 | 1.800 | 2.600 | 8.600 | 6.100 | 6.500 | 4.600 | 8.000 | 5.700 | 4.900 |
| 20. | 1.100 | 2.800 | 2.100 | 1.300 | 2.700 | 2.300 | 2.200 | 2.700 | 6.700 | 4.100 | 4.600 | 2.900 | 8.600 | 6.300 | 5.600 |
| 30. | 0.200 | 1.200 | 0.900 | 0.800 | 3.000 | 2.600 | 2.500 | 2.500 | 5.900 | 3.100 | 3.200 | 1.800 | 8.800 | 6.500 | 5.700 |
| 40. | 0.000 | 0.500 | 0.400 | 0.600 | 3.400 | 2.700 | 2.500 | 2.400 | 6.000 | 2.800 | 2.600 | 1.500 | 8.400 | 5.800 | 5.100 |
| 50. | 0.000 | 0.400 | 0.200 | 0.500 | 3.500 | 2.700 | 2.400 | 2.200 | 6.400 | 2.900 | 2.500 | 1.300 | 8.600 | 5.700 | 5.000 |
| 60. | 0.100 | 0.300 | 0.200 | 0.400 | 4.100 | 2.700 | 2.200 | 2.200 | 7.000 | 2.900 | 2.600 | 1.100 | 9.000 | 5.700 | 4.900 |
| 70. | 0.400 | 0.200 | 0.100 | 0.300 | 4.900 | 2.600 | 2.100 | 2.200 | 7.500 | 2.700 | 2.300 | 0.500 | 9.300 | 5.500 | 4.500 |
| 80. | 1.800 | 0.400 | 0.000 | 0.300 | 6.500 | 2.600 | 2.000 | 2.100 | 7.400 | 2.000 | 1.400 | 0.200 | 8.600 | 4.600 | 3.400 |
| 90. | 4.600 | 1.200 | 0.300 | 0.200 | 9.100 | 3.600 | 2.300 | 2.100 | 5.300 | 0.700 | 0.500 | 0.000 | 6.500 | 3.400 | 2.700 |
| 100. | 7.300 | 2.500 | 1.000 | 0.400 | 11.000 | 4.800 | 3.100 | 2.200 | 2.300 | 0.100 | 0.000 | 0.000 | 4.100 | 2.700 | 2.400 |
| 110. | 7.900 | 3.500 | 1.900 | 0.700 | 11.500 | 5.500 | 3.900 | 2.600 | 0.500 | 0.000 | 0.000 | 0.000 | 2.600 | 2.400 | 2.300 |
| 120. | 7.100 | 3.700 | 2.300 | 1.300 | 10.500 | 5.700 | 4.200 | 3.000 | 0.100 | 0.000 | 0.100 | 0.100 | 2.200 | 2.300 | 2.200 |
| 130. | 6.500 | 3.500 | 2.400 | 1.900 | 9.600 | 5.600 | 4.500 | 3.300 | 0.100 | 0.100 | 0.200 | 0.100 | 2.300 | 2.400 | 2.300 |
| 140. | 6.000 | 3.400 | 2.500 | 2.300 | 8.700 | 5.400 | 4.200 | 3.400 | 0.200 | 0.200 | 0.300 | 0.200 | 2.500 | 2.600 | 2.500 |
| 150. | 5.700 | 3.400 | 2.300 | 2.700 | 8.300 | 5.500 | 4.700 | 3.200 | 0.200 | 0.200 | 0.400 | 0.200 | 2.800 | 2.800 | 2.800 |
| 160. | 5.500 | 3.400 | 2.400 | 3.800 | 8.300 | 5.500 | 4.700 | 3.400 | 0.200 | 0.300 | 0.500 | 0.700 | 3.100 | 3.200 | 3.300 |
| 170. | 5.600 | 4.000 | 2.800 | 5.200 | 8.600 | 5.700 | 5.500 | 3.800 | 0.600 | 0.600 | 1.200 | 1.900 | 4.000 | 4.100 | 4.200 |
| 180. | 6.600 | 5.700 | 4.600 | 7.300 | 9.100 | 6.600 | 5.500 | 4.100 | 1.700 | 2.000 | 2.800 | 4.100 | 4.600 | 4.900 | 5.000 |
| 190. | 8.300 | 8.300 | 7.000 | 9.300 | 9.000 | 6.100 | 5.500 | 3.800 | 3.700 | 4.000 | 4.700 | 5.900 | 4.400 | 4.500 | 4.400 |
| 200. | 9.400 | 9.500 | 8.600 | 9.600 | 8.600 | 5.000 | 4.400 | 2.900 | 5.100 | 5.200 | 5.900 | 6.200 | 3.000 | 3.300 | 3.100 |
| 210. | 10.100 | 9.900 | 9.000 | 8.400 | 8.500 | 4.500 | 3.900 | 2.200 | 5.300 | 5.300 | 5.800 | 5.700 | 2.100 | 2.300 | 2.500 |
| 220. | 10.200 | 9.400 | 8.400 | 6.400 | 9.200 | 4.600 | 3.300 | 1.900 | 4.700 | 4.900 | 5.300 | 5.200 | 1.800 | 1.900 | 1.900 |
| 230. | 10.600 | 9.400 | 7.800 | 5.200 | 9.900 | 4.300 | 3.000 | 1.400 | 4.300 | 4.500 | 4.800 | 4.900 | 1.700 | 1.700 | 1.900 |
| 240. | 11.200 | 9.100 | 6.900 | 4.300 | 10.200 | 3.300 | 2.100 | 1.100 | 4.100 | 4.100 | 4.400 | 4.600 | 2.000 | 1.700 | 1.800 |
| 250. | 11.300 | 7.700 | 5.400 | 4.000 | 9.700 | 2.200 | 1.400 | 1.100 | 4.700 | 3.900 | 4.100 | 4.400 | 2.900 | 1.700 | 1.700 |
| 260. | 10.000 | 6.000 | 4.600 | 4.100 | 8.200 | 1.500 | 1.200 | 1.100 | 6.300 | 3.800 | 3.900 | 4.400 | 4.900 | 1.700 | 1.600 |
| 270. | 7.600 | 5.200 | 4.300 | 4.000 | 5.700 | 1.300 | 1.200 | 1.100 | 8.400 | 4.200 | 4.000 | 4.600 | 6.800 | 2.200 | 1.800 |
| 280. | 5.700 | 5.100 | 4.400 | 4.100 | 3.600 | 1.200 | 1.100 | 1.100 | 9.600 | 5.200 | 4.600 | 4.500 | 7.700 | 3.100 | 2.000 |
| 290. | 4.600 | 4.800 | 4.400 | 4.300 | 2.700 | 1.300 | 1.300 | 1.100 | 9.900 | 5.900 | 5.200 | 4.400 | 7.800 | 3.900 | 2.700 |
| 300. | 4.300 | 4.800 | 4.300 | 4.300 | 2.500 | 1.400 | 1.300 | 0.900 | 10.200 | 6.200 | 5.700 | 4.800 | 7.800 | 4.300 | 3.400 |
| 310. | 4.500 | 4.800 | 4.300 | 4.700 | 2.400 | 1.400 | 1.300 | 0.700 | 10.400 | 6.400 | 6.200 | 5.600 | 7.500 | 4.400 | 4.000 |
| 320. | 4.500 | 4.900 | 4.300 | 5.100 | 2.200 | 1.300 | 1.100 | 0.300 | 10.100 | 6.600 | 6.500 | 6.700 | 7.500 | 4.800 | 4.300 |

```
 330.  *   4.200   4.800   4.400   5.700   1.900   0.900   0.600   0.100   9.900   6.700   6.700
7.000   7.100   4.700   4.200
 340.  *   4.100   5.000   4.900   6.400   1.100   0.400   0.200   0.300   9.400   6.800   6.800
6.900   6.600   4.300   3.800
 350.  *   4.300   5.800   5.800   6.000   0.700   0.400   0.400   1.100   9.800   6.900   6.800
6.300   6.400   3.800   3.300
 360.  *   4.000   6.200   5.900   4.300   0.900   0.800   1.000   2.000   9.700   7.100   7.000
5.900   6.900   4.500   3.400
 ------*-------------------------------------------------------------------------------------------
-------------------------
 MAX   *  11.300   9.900   9.000   9.600  11.500   6.600   5.500   4.100  10.400   7.100   7.000
7.000   9.300   6.500   5.700
 DEGR. *    250     210     210     200     110     180     180     180     310     360     360     330
70      30      30
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 4.700 | 0.300 | 0.200 | 0.800 | 0.800 | 0.400 | 6.700 | 6.500 | 6.200 | 6.300 | 5.400 |
| 20. | * 5.300 | 0.000 | 0.300 | 0.700 | 1.400 | 0.900 | 6.200 | 6.300 | 6.100 | 7.100 | 6.000 |
| 30. | * 4.900 | 0.100 | 0.500 | 0.800 | 1.900 | 1.200 | 6.500 | 6.600 | 6.300 | 7.600 | 6.700 |
| 40. | * 4.500 | 0.200 | 0.600 | 1.000 | 2.100 | 1.200 | 7.100 | 7.200 | 6.800 | 7.400 | 7.200 |
| 50. | * 4.300 | 0.300 | 0.800 | 1.300 | 2.200 | 1.600 | 7.600 | 7.900 | 7.400 | 7.400 | 7.400 |
| 60. | * 3.900 | 0.400 | 1.100 | 2.000 | 3.000 | 2.000 | 8.500 | 8.800 | 8.200 | 7.300 | 7.600 |
| 70. | * 3.200 | 1.000 | 2.300 | 3.600 | 4.400 | 3.400 | 9.400 | 9.700 | 8.800 | 7.500 | 7.700 |
| 80. | * 2.600 | 2.900 | 4.900 | 6.400 | 6.900 | 6.500 | 9.800 | 10.200 | 8.800 | 6.700 | 6.900 |
| 90. | * 2.400 | 6.300 | 8.700 | 9.300 | 9.800 | 9.400 | 8.000 | 8.500 | 6.800 | 4.600 | 4.300 |
| 100. | * 2.300 | 8.900 | 10.500 | 10.600 | 11.400 | 10.600 | 4.200 | 4.700 | 3.600 | 2.400 | 2.200 |
| 110. | * 2.300 | 9.100 | 10.300 | 10.300 | 10.800 | 9.100 | 1.500 | 1.900 | 1.400 | 1.500 | 1.300 |
| 120. | * 2.500 | 8.100 | 9.000 | 9.100 | 9.300 | 7.700 | 0.600 | 0.800 | 0.600 | 1.400 | 1.100 |
| 130. | * 2.600 | 7.200 | 8.200 | 7.800 | 8.000 | 6.800 | 0.400 | 0.500 | 0.400 | 1.300 | 1.100 |
| 140. | * 2.800 | 6.700 | 7.200 | 6.900 | 7.200 | 6.300 | 0.300 | 0.400 | 0.300 | 1.300 | 1.100 |
| 150. | * 3.300 | 6.100 | 6.600 | 6.500 | 7.000 | 6.200 | 0.200 | 0.300 | 0.200 | 1.500 | 1.100 |
| 160. | * 3.900 | 5.800 | 6.400 | 6.200 | 7.500 | 7.100 | 0.100 | 0.200 | 0.100 | 1.600 | 2.100 |
| 170. | * 4.600 | 5.900 | 6.400 | 6.000 | 8.000 | 8.500 | 0.000 | 0.000 | 0.000 | 2.400 | 3.100 |
| 180. | * 4.700 | 6.400 | 6.300 | 6.000 | 8.300 | 8.700 | 0.200 | 0.000 | 0.000 | 2.900 | 3.800 |
| 190. | * 3.900 | 6.900 | 6.900 | 6.000 | 8.100 | 8.500 | 0.900 | 0.400 | 0.000 | 2.700 | 3.600 |
| 200. | * 3.200 | 7.700 | 7.700 | 6.400 | 8.100 | 8.500 | 1.700 | 1.200 | 0.100 | 2.300 | 3.200 |
| 210. | * 2.600 | 8.400 | 8.300 | 7.000 | 8.200 | 8.500 | 2.400 | 1.900 | 0.700 | 2.200 | 2.800 |
| 220. | * 2.300 | 9.000 | 9.000 | 7.800 | 8.800 | 8.600 | 2.700 | 2.100 | 1.400 | 2.000 | 2.600 |
| 230. | * 2.200 | 9.600 | 9.700 | 8.800 | 9.200 | 8.700 | 2.500 | 2.300 | 1.400 | 1.900 | 2.600 |
| 240. | * 2.100 | 10.500 | 11.000 | 10.300 | 9.400 | 8.200 | 2.600 | 2.400 | 1.700 | 2.000 | 2.700 |
| 250. | * 1.900 | 11.400 | 11.900 | 11.500 | 8.700 | 7.100 | 3.500 | 3.400 | 2.400 | 2.800 | 3.500 |
| 260. | * 1.900 | 10.800 | 12.300 | 12.700 | 6.800 | 5.200 | 5.800 | 5.900 | 4.600 | 4.200 | 4.900 |
| 270. | * 1.900 | 8.200 | 10.600 | 12.000 | 4.500 | 3.500 | 8.800 | 9.100 | 8.100 | 5.800 | 6.300 |
| 280. | * 2.100 | 5.000 | 7.100 | 8.500 | 3.100 | 2.800 | 10.800 | 11.400 | 10.700 | 6.800 | 7.500 |
| 290. | * 2.200 | 3.400 | 4.200 | 5.200 | 2.600 | 2.600 | 11.000 | 11.800 | 10.900 | 7.200 | 7.900 |
| 300. | * 2.500 | 3.100 | 3.100 | 3.500 | 2.500 | 2.800 | 10.900 | 10.800 | 9.800 | 7.200 | 8.000 |
| 310. | * 3.000 | 2.900 | 2.700 | 2.500 | 2.600 | 2.900 | 10.100 | 10.000 | 8.900 | 7.000 | 7.700 |
| 320. | * 3.800 | 2.600 | 2.200 | 2.100 | 2.600 | 3.200 | 9.500 | 9.000 | 7.800 | 7.000 | 8.000 |
| 330. | * 4.800 | 2.000 | 2.100 | 1.500 | 2.300 | 3.400 | 8.700 | 8.100 | 7.100 | 6.900 | 8.100 |
| 340. | * 4.600 | 1.900 | 1.700 | 1.100 | 1.600 | 3.000 | 7.900 | 7.600 | 6.400 | 6.700 | 8.100 |
| 350. | * 3.700 | 1.700 | 1.100 | 0.900 | 0.700 | 1.800 | 7.800 | 7.400 | 6.200 | 5.900 | 7.100 |
| 360. | * 3.700 | 1.100 | 0.400 | 0.900 | 0.400 | 0.800 | 7.600 | 7.000 | 6.400 | 5.500 | 5.600 |
| MAX | * 5.300 | 11.400 | 12.300 | 12.700 | 11.400 | 10.600 | 11.000 | 11.800 | 10.900 | 7.600 | 8.100 |
| DEGR. | * 20 | 250 | 260 | 260 | 100 | 100 | 290 | 290 | 290 | 30 | 330 |

THE HIGHEST CONCENTRATION OF 12.700 UG/M**3 OCCURRED AT RECEPTOR 19.

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 SB 2035 Build AM co

DATE : 3/ 1/18
TIME : 11:32:45

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH | BRG | TYPE | VPH | EF | H | W | V/C | QUEUE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | X1 | Y1 | X2 | Y2 | * | (FT) | (DEG) | | | (G/MI) | (FT) | (FT) | | (VEH) |
| 1. N Leg App - FreeFlow | * | 0.0 | 0.0 | -110.0 | 990.0 | * | 996. | 354. | AG | 267. | 0.7 | 0.0 | 43.7 | | |
| 2. N Leg App - Queue | * | -7.1 | 63.9 | -110.8 | 996.9 | * | 939. | 354. | AG | 9. | 100.0 | 0.0 | 24.0 | 2.51 | 47.7 |
| 3. S Leg Dep - FreeFlow | * | 0.0 | 0.0 | 250.0 | -970.0 | * | 1002. | 166. | AG | 831. | 0.8 | 0.0 | 43.7 | | |
| 4. E Leg App - FreeFlow | * | 0.0 | 30.0 | 440.0 | 100.0 | * | 446. | 81. | AG | 1706. | 1.1 | 0.0 | 67.7 | | |
| 5. E Leg App - Queue | * | 25.5 | 34.1 | 94.5 | 45.1 | * | 70. | 81. | AG | 5. | 100.0 | 0.0 | 48.0 | 0.37 | 3.5 |
| 6. E Leg Dep - FreeFlow | * | 10.0 | -30.0 | 450.0 | 60.0 | * | 449. | 78. | AG | 1279. | 1.1 | 0.0 | 55.7 | | |
| 7. W Leg App - FreeFlow | * | 10.0 | -30.0 | -900.0 | -160.0 | * | 919. | 262. | AG | 1428. | 0.7 | 0.0 | 55.7 | | |
| 8. W Leg App - Queue | * | -7.7 | -32.5 | -162.2 | -54.6 | * | 156. | 262. | AG | 7. | 100.0 | 0.0 | 36.0 | 0.64 | 7.9 |
| 9. W Leg Dep - FreeFlow | * | 0.0 | 30.0 | -900.0 | -130.0 | * | 914. | 260. | AG | 1291. | 1.5 | 0.0 | 67.7 | | |
| 10. I93 NB N Leg - FF | * | 170.0 | 30.0 | 20.0 | 1010.0 | * | 991. | 351. | BR | 4380. | 0.8 | 22.0 | 62.0 | | |
| 11. I93 NB S Leg - FF | * | 170.0 | 30.0 | 380.0 | -940.0 | * | 992. | 168. | BR | 4380. | 0.8 | 22.0 | 62.0 | | |
| 12. I93 SB N Leg - FF | * | 90.0 | 20.0 | -70.0 | 1010.0 | * | 1003. | 351. | BR | 4000. | 0.8 | 22.0 | 62.0 | | |
| 13. I93 SB S Leg - FF | * | 90.0 | 20.0 | 310.0 | -970.0 | * | 1014. | 167. | BR | 4000. | 0.8 | 22.0 | 62.0 | | |

DATE : 3/ 1/18
TIME : 11:32:45

ADDITIONAL QUEUE LINK PARAMETERS

| LINK DESCRIPTION | CYCLE LENGTH (SEC) | RED TIME (SEC) | CLEARANCE LOST TIME (SEC) | APPROACH VOL (VPH) | SATURATION FLOW RATE (VPH) | IDLE EM FAC (gm/hr) | SIGNAL TYPE ARRIVAL RATE |
|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | 120 | 112 | 2.0 | 267 | 1600 | 1.74 | 2 3 |
| 5. E Leg App - Queue | 120 | 30 | 2.0 | 1706 | 1600 | 1.74 | 2 3 |
| 8. W Leg App - Queue | 120 | 60 | 2.0 | 1428 | 1600 | 1.74 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 20.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 0.0 | 160.0 | 5.9 |
| 3. N Leg, E Side - 50 m | -10.0 | 240.0 | 5.9 |
| 4. N Leg, E Side-Midblk | -40.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -40.0 | 50.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -50.0 | 150.0 | 5.9 |
| 7. N Leg, W Side - 50 m | -60.0 | 230.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -90.0 | 490.0 | 5.9 |
| 9. S Leg, E Side-Corner | 50.0 | -60.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 60.0 | -140.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 80.0 | -220.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 140.0 | -480.0 | 5.9 |
| 13. S Leg, W Side-Corner | -20.0 | -70.0 | 5.9 |
| 14. S Leg, W Side - 25 m | 10.0 | -150.0 | 5.9 |
| 15. S Leg, W Side - 50 m | 30.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | 90.0 | -500.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 130.0 | 90.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 230.0 | 100.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 339.7 | 115.6 | 5.9 |
| 20. W Leg, N Side - 25 m | -120.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -240.0 | 10.0 | 5.9 |
| 22. W Leg, N Side-Midblk | -460.0 | -30.0 | 5.9 |
| 23. E Leg, S Side - 25 m | 160.0 | -40.0 | 5.9 |
| 24. E Leg, S Side - 50 m | 260.0 | -20.0 | 5.9 |
| 25. E Leg, S Side-Midblk | 359.2 | 7.3 | 5.9 |
| 26. W Leg, S Side - 25 m | -120.0 | -100.0 | 5.9 |
| 27. W Leg, S Side - 50 m | -210.0 | -100.0 | 5.9 |
| 28. W Leg, S Side-Midblk | -440.0 | -120.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | * 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 80. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 90. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | * 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | * 0.2000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | * 0.2000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | * 0.2000 | 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 280. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 290. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 300. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 310. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 330. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

```
 340.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000
0.1000  0.0000  0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------------
-------------------------
 MAX   *  0.2000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000
 DEGR. *    140      10      10      10      80      10      10      10      10     130      20      10
10      10      10      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 80. | * 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 90. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | * 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | * 0.0000 | 0.3000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.0000 | 0.2000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.2000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 0.1000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 0.1000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 280. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 290. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 300. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 310. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 330. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

```
 340.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.0000
0.0000  0.0000
 350.  *  0.0000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.0000
0.0000  0.0000
 360.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------------
---------
 MAX   *  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000  0.0000
0.0000  0.1000
 DEGR. *     10     170     180      90     100      70      70     170     180     270      10      10
70

 THE HIGHEST CONCENTRATION OF   0.3000 PPM OCCURRED AT RECEPTOR    17.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 SB 2035 Build AM pm2.5

DATE : 3/ 1/18
TIME : 11:36:24

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | X1 | Y1 | X2 | Y2 | * | | | | | | | | | |
| 1. N Leg App - FreeFlow | * | 0.0 | 0.0 | -110.0 | 990.0 | * | 996. | 354. | AG | 267. | 0.0 | 0.0 | 43.7 | | |
| 2. N Leg App - Queue | * | -7.1 | 63.9 | -110.8 | 996.9 | * | 939. | 354. | AG | 0. | 100.0 | 0.0 | 24.0 | 2.51 | 47.7 |
| 3. S Leg Dep - FreeFlow | * | 0.0 | 0.0 | 250.0 | -970.0 | * | 1002. | 166. | AG | 831. | 0.0 | 0.0 | 43.7 | | |
| 4. E Leg App - FreeFlow | * | 0.0 | 30.0 | 440.0 | 100.0 | * | 446. | 81. | AG | 1706. | 0.0 | 0.0 | 67.7 | | |
| 5. E Leg App - Queue | * | 25.5 | 34.1 | 94.5 | 45.1 | * | 70. | 81. | AG | 0. | 100.0 | 0.0 | 48.0 | 0.37 | 3.5 |
| 6. E Leg Dep - FreeFlow | * | 10.0 | -30.0 | 450.0 | 60.0 | * | 449. | 78. | AG | 1279. | 0.0 | 0.0 | 55.7 | | |
| 7. W Leg App - FreeFlow | * | 10.0 | -30.0 | -900.0 | -160.0 | * | 919. | 262. | AG | 1428. | 0.0 | 0.0 | 55.7 | | |
| 8. W Leg App - Queue | * | -7.7 | -32.5 | -162.2 | -54.6 | * | 156. | 262. | AG | 0. | 100.0 | 0.0 | 36.0 | 0.64 | 7.9 |
| 9. W Leg Dep - FreeFlow | * | 0.0 | 30.0 | -900.0 | -130.0 | * | 914. | 260. | AG | 1291. | 0.0 | 0.0 | 67.7 | | |
| 10. I93 NB N Leg - FF | * | 170.0 | 30.0 | 20.0 | 1010.0 | * | 991. | 351. | BR | 4380. | 0.0 | 22.0 | 62.0 | | |
| 11. I93 NB S Leg - FF | * | 170.0 | 30.0 | 380.0 | -940.0 | * | 992. | 168. | BR | 4380. | 0.0 | 22.0 | 62.0 | | |
| 12. I93 SB N Leg - FF | * | 90.0 | 20.0 | -70.0 | 1010.0 | * | 1003. | 351. | BR | 4000. | 0.0 | 22.0 | 62.0 | | |
| 13. I93 SB S Leg - FF | * | 90.0 | 20.0 | 310.0 | -970.0 | * | 1014. | 167. | BR | 4000. | 0.0 | 22.0 | 62.0 | | |

DATE : 3/ 1/18
TIME : 11:36:24

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 112 | 2.0 | 267 | 1600 | 0.04 | 2 3 |
| 5. E Leg App - Queue | * | 120 | 30 | 2.0 | 1706 | 1600 | 0.04 | 2 3 |
| 8. W Leg App - Queue | * | 120 | 60 | 2.0 | 1428 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | * | COORDINATES (FT) X | Y | Z | * |
|---|---|---|---|---|---|
| 1. N Leg, E Side-Corner | * | 20.0 | 60.0 | 5.9 | * |
| 2. N Leg, E Side - 25 m | * | 0.0 | 160.0 | 5.9 | * |
| 3. N Leg, E Side - 50 m | * | -10.0 | 240.0 | 5.9 | * |
| 4. N Leg, E Side-Midblk | * | -40.0 | 500.0 | 5.9 | * |
| 5. N Leg, W Side-Corner | * | -40.0 | 50.0 | 5.9 | * |
| 6. N Leg, W Side - 25 m | * | -50.0 | 150.0 | 5.9 | * |
| 7. N Leg, W Side - 50 m | * | -60.0 | 230.0 | 5.9 | * |
| 8. N Leg, W Side-Midblk | * | -90.0 | 490.0 | 5.9 | * |
| 9. S Leg, E Side-Corner | * | 50.0 | -60.0 | 5.9 | * |
| 10. S Leg, E Side - 25 m | * | 60.0 | -140.0 | 5.9 | * |
| 11. S Leg, E Side - 50 m | * | 80.0 | -220.0 | 5.9 | * |
| 12. S Leg, E Side-Midblk | * | 140.0 | -480.0 | 5.9 | * |
| 13. S Leg, W Side-Corner | * | -20.0 | -70.0 | 5.9 | * |
| 14. S Leg, W Side - 25 m | * | 10.0 | -150.0 | 5.9 | * |
| 15. S Leg, W Side - 50 m | * | 30.0 | -240.0 | 5.9 | * |
| 16. S Leg, W Side-Midblk | * | 90.0 | -500.0 | 5.9 | * |
| 17. E Leg, N Side - 25 m | * | 130.0 | 90.0 | 5.9 | * |
| 18. E Leg, N Side - 50 m | * | 230.0 | 100.0 | 5.9 | * |
| 19. E Leg, N Side-Midblk | * | 339.7 | 115.6 | 5.9 | * |
| 20. W Leg, N Side - 25 m | * | -120.0 | 50.0 | 5.9 | * |
| 21. W Leg, N Side - 50 m | * | -240.0 | 10.0 | 5.9 | * |
| 22. W Leg, N Side-Midblk | * | -460.0 | -30.0 | 5.9 | * |
| 23. E Leg, S Side - 25 m | * | 160.0 | -40.0 | 5.9 | * |
| 24. E Leg, S Side - 50 m | * | 260.0 | -20.0 | 5.9 | * |
| 25. E Leg, S Side-Midblk | * | 359.2 | 7.3 | 5.9 | * |
| 26. W Leg, S Side - 25 m | * | -120.0 | -100.0 | 5.9 | * |
| 27. W Leg, S Side - 50 m | * | -210.0 | -100.0 | 5.9 | * |
| 28. W Leg, S Side-Midblk | * | -440.0 | -120.0 | 5.9 | * |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 1.4000 | 1.5000 | 1.5000 | 1.4000 | 1.7000 | 1.7000 | 1.7000 | 1.5000 | 2.3000 | 2.0000 | 1.7000 | 1.5000 | 2.8000 | 2.1000 | 1.7000 |
| 20. | * 1.1000 | 1.2000 | 1.2000 | 1.2000 | 1.7000 | 1.6000 | 1.6000 | 1.6000 | 2.1000 | 1.7000 | 1.5000 | 1.2000 | 2.6000 | 2.0000 | 1.8000 |
| 30. | * 1.0000 | 0.9000 | 0.9000 | 0.9000 | 1.5000 | 1.6000 | 1.5000 | 1.5000 | 2.0000 | 1.5000 | 1.3000 | 1.2000 | 2.3000 | 1.9000 | 1.7000 |
| 40. | * 0.9000 | 0.8000 | 0.8000 | 0.8000 | 1.4000 | 1.4000 | 1.4000 | 1.4000 | 1.8000 | 1.3000 | 1.1000 | 0.9000 | 2.4000 | 1.7000 | 1.5000 |
| 50. | * 0.9000 | 0.7000 | 0.7000 | 0.7000 | 1.3000 | 1.3000 | 1.3000 | 1.2000 | 1.8000 | 1.2000 | 0.9000 | 0.7000 | 2.4000 | 1.6000 | 1.2000 |
| 60. | * 1.0000 | 0.6000 | 0.6000 | 0.6000 | 1.4000 | 1.3000 | 1.2000 | 1.2000 | 1.8000 | 1.0000 | 0.7000 | 0.6000 | 2.2000 | 1.4000 | 1.2000 |
| 70. | * 1.4000 | 0.6000 | 0.6000 | 0.6000 | 1.8000 | 1.3000 | 1.2000 | 1.2000 | 1.6000 | 0.8000 | 0.6000 | 0.6000 | 2.0000 | 1.2000 | 1.0000 |
| 80. | * 2.0000 | 0.6000 | 0.6000 | 0.6000 | 2.1000 | 1.3000 | 1.2000 | 1.2000 | 1.1000 | 0.6000 | 0.6000 | 0.6000 | 1.4000 | 1.0000 | 1.0000 |
| 90. | * 2.4000 | 0.7000 | 0.6000 | 0.6000 | 2.5000 | 1.4000 | 1.2000 | 1.2000 | 0.8000 | 0.6000 | 0.6000 | 0.6000 | 1.1000 | 1.0000 | 1.0000 |
| 100. | * 2.8000 | 1.0000 | 0.7000 | 0.6000 | 2.4000 | 1.7000 | 1.3000 | 1.2000 | 0.7000 | 0.6000 | 0.6000 | 0.6000 | 1.0000 | 1.0000 | 1.0000 |
| 110. | * 2.5000 | 1.2000 | 1.0000 | 0.7000 | 2.2000 | 1.9000 | 1.5000 | 1.2000 | 0.7000 | 0.7000 | 0.7000 | 0.8000 | 1.0000 | 1.0000 | 1.0000 |
| 120. | * 2.4000 | 1.3000 | 1.0000 | 0.8000 | 2.1000 | 2.1000 | 1.7000 | 1.3000 | 0.8000 | 0.8000 | 0.8000 | 0.9000 | 1.1000 | 1.2000 | 1.1000 |
| 130. | * 2.5000 | 1.5000 | 1.2000 | 1.0000 | 2.2000 | 2.2000 | 1.9000 | 1.6000 | 0.9000 | 0.9000 | 1.0000 | 1.0000 | 1.1000 | 1.2000 | 1.2000 |
| 140. | * 2.4000 | 1.7000 | 1.3000 | 1.2000 | 2.0000 | 2.0000 | 2.0000 | 1.8000 | 1.0000 | 1.1000 | 1.1000 | 1.2000 | 1.2000 | 1.4000 | 1.2000 |
| 150. | * 2.6000 | 1.9000 | 1.7000 | 1.7000 | 2.3000 | 2.1000 | 2.2000 | 2.0000 | 1.2000 | 1.3000 | 1.3000 | 1.3000 | 1.2000 | 1.4000 | 1.3000 |
| 160. | * 2.4000 | 1.9000 | 1.9000 | 2.1000 | 2.0000 | 1.8000 | 2.0000 | 2.0000 | 1.3000 | 1.4000 | 1.3000 | 1.4000 | 0.8000 | 1.0000 | 0.9000 |
| 170. | * 2.2000 | 2.1000 | 2.1000 | 2.4000 | 1.8000 | 1.3000 | 1.3000 | 1.4000 | 1.0000 | 1.1000 | 1.1000 | 1.1000 | 0.4000 | 0.5000 | 0.4000 |
| 180. | * 1.8000 | 1.8000 | 1.9000 | 2.2000 | 1.4000 | 0.7000 | 0.8000 | 0.7000 | 0.7000 | 0.8000 | 0.8000 | 0.9000 | 0.1000 | 0.2000 | 0.1000 |
| 190. | * 1.7000 | 1.8000 | 2.0000 | 1.8000 | 1.3000 | 0.6000 | 0.5000 | 0.3000 | 0.5000 | 0.6000 | 0.6000 | 0.7000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 1.7000 | 1.7000 | 1.8000 | 1.6000 | 1.3000 | 0.7000 | 0.5000 | 0.2000 | 0.5000 | 0.6000 | 0.6000 | 0.6000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 1.6000 | 1.8000 | 1.7000 | 1.4000 | 1.5000 | 0.7000 | 0.4000 | 0.2000 | 0.4000 | 0.5000 | 0.5000 | 0.5000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 1.9000 | 1.8000 | 1.5000 | 1.3000 | 1.5000 | 0.6000 | 0.4000 | 0.2000 | 0.4000 | 0.4000 | 0.4000 | 0.5000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 1.8000 | 1.6000 | 1.4000 | 1.2000 | 1.6000 | 0.6000 | 0.4000 | 0.2000 | 0.4000 | 0.4000 | 0.4000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 2.0000 | 1.5000 | 1.4000 | 1.0000 | 1.7000 | 0.6000 | 0.4000 | 0.0000 | 0.4000 | 0.4000 | 0.4000 | 0.4000 | 0.1000 | 0.0000 | 0.0000 |
| 250. | * 1.9000 | 1.3000 | 1.1000 | 0.9000 | 1.7000 | 0.4000 | 0.2000 | 0.0000 | 0.9000 | 0.4000 | 0.4000 | 0.4000 | 0.4000 | 0.0000 | 0.0000 |
| 260. | * 1.7000 | 1.2000 | 0.9000 | 0.9000 | 1.4000 | 0.2000 | 0.0000 | 0.0000 | 1.5000 | 0.6000 | 0.4000 | 0.4000 | 1.1000 | 0.2000 | 0.0000 |
| 270. | * 1.2000 | 0.9000 | 0.9000 | 0.9000 | 0.8000 | 0.0000 | 0.0000 | 0.0000 | 2.0000 | 0.9000 | 0.6000 | 0.4000 | 1.8000 | 0.4000 | 0.2000 |
| 280. | * 0.7000 | 0.9000 | 1.0000 | 0.9000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 | 2.2000 | 1.1000 | 0.7000 | 0.4000 | 2.1000 | 0.6000 | 0.3000 |
| 290. | * 0.8000 | 1.0000 | 1.0000 | 1.0000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 | 2.0000 | 1.2000 | 0.9000 | 0.7000 | 1.9000 | 0.8000 | 0.5000 |
| 300. | * 0.7000 | 1.0000 | 1.0000 | 1.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.8000 | 1.3000 | 1.1000 | 0.7000 | 1.9000 | 0.7000 | 0.5000 |
| 310. | * 0.9000 | 1.1000 | 1.1000 | 1.2000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.5000 | 1.3000 | 1.1000 | 0.8000 | 1.7000 | 0.8000 | 0.6000 |
| 320. | * 0.9000 | 1.2000 | 1.2000 | 1.3000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.4000 | 1.3000 | 1.1000 | 0.9000 | 1.6000 | 0.8000 | 0.5000 |
| 330. | * 1.1000 | 1.4000 | 1.5000 | 1.5000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.5000 | 1.4000 | 1.1000 | 1.0000 | 1.5000 | 0.8000 | 0.5000 |

```
 340.  *  1.2000  1.7000  1.7000  1.8000  0.1000  0.1000  0.1000  0.1000  1.8000  1.6000  1.7000
1.5000  1.6000  1.2000  0.8000
 350.  *  1.5000  1.9000  2.0000  1.9000  0.8000  0.7000  0.6000  0.5000  2.2000  2.1000  1.8000
1.9000  2.5000  1.7000  1.5000
 360.  *  1.4000  1.8000  1.7000  1.8000  1.4000  1.4000  1.3000  1.1000  2.4000  2.1000  1.8000
1.9000  2.7000  2.2000  1.9000
 ------*-------------------------------------------------------------------------------------------
-------------------------
 MAX   *  2.8000  2.1000  2.1000  2.4000  2.5000  2.2000  2.2000  2.0000  2.4000  2.1000  1.8000
1.9000  2.8000  2.2000  1.9000
 DEGR. *    100     170     170     170      90     130     150     160     360     350     350     350
10     360     360
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 1.6000 | 1.0000 | 0.0000 | 0.0000 | 0.9000 | 0.4000 | 0.1000 | 1.8000 | 0.9000 | 1.0000 | 2.2000 | 1.6000 | 1.2000 |
| 20. | * 1.4000 | 0.7000 | 0.1000 | 0.1000 | 0.9000 | 0.7000 | 0.4000 | 1.5000 | 0.9000 | 1.0000 | 2.1000 | 1.7000 | 1.5000 |
| 30. | * 1.3000 | 0.5000 | 0.1000 | 0.1000 | 1.0000 | 0.7000 | 0.4000 | 1.4000 | 1.0000 | 1.0000 | 2.3000 | 1.9000 | 1.6000 |
| 40. | * 1.0000 | 0.4000 | 0.1000 | 0.1000 | 0.9000 | 0.8000 | 0.5000 | 1.3000 | 1.0000 | 0.9000 | 2.0000 | 1.9000 | 1.8000 |
| 50. | * 0.9000 | 0.4000 | 0.1000 | 0.1000 | 0.9000 | 0.8000 | 0.5000 | 1.3000 | 1.0000 | 0.8000 | 2.2000 | 2.1000 | 1.9000 |
| 60. | * 0.9000 | 0.4000 | 0.2000 | 0.2000 | 0.9000 | 0.9000 | 0.7000 | 1.2000 | 0.8000 | 0.6000 | 2.0000 | 2.1000 | 2.2000 |
| 70. | * 0.9000 | 0.5000 | 0.4000 | 0.3000 | 1.0000 | 1.4000 | 1.3000 | 0.9000 | 0.5000 | 0.4000 | 1.6000 | 2.2000 | 2.3000 |
| 80. | * 0.9000 | 0.9000 | 0.7000 | 0.5000 | 1.5000 | 1.7000 | 1.8000 | 0.6000 | 0.2000 | 0.2000 | 1.0000 | 1.5000 | 2.0000 |
| 90. | * 0.9000 | 1.2000 | 1.0000 | 0.7000 | 1.9000 | 2.2000 | 2.0000 | 0.3000 | 0.1000 | 0.1000 | 0.6000 | 1.0000 | 1.5000 |
| 100. | * 0.9000 | 1.5000 | 1.2000 | 0.9000 | 1.8000 | 2.3000 | 2.1000 | 0.2000 | 0.0000 | 0.0000 | 0.5000 | 0.6000 | 0.7000 |
| 110. | * 1.0000 | 1.5000 | 1.3000 | 1.0000 | 1.6000 | 2.3000 | 1.8000 | 0.3000 | 0.0000 | 0.0000 | 0.6000 | 0.5000 | 0.5000 |
| 120. | * 1.1000 | 1.6000 | 1.2000 | 1.1000 | 1.8000 | 2.0000 | 1.7000 | 0.4000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.4000 |
| 130. | * 1.1000 | 1.6000 | 1.1000 | 1.1000 | 2.0000 | 1.9000 | 1.6000 | 0.5000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.4000 |
| 140. | * 1.2000 | 1.7000 | 1.0000 | 1.0000 | 2.0000 | 1.7000 | 1.4000 | 0.7000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.3000 |
| 150. | * 1.1000 | 2.1000 | 1.0000 | 1.0000 | 1.8000 | 1.4000 | 1.1000 | 1.0000 | 0.0000 | 0.0000 | 0.5000 | 0.3000 | 0.0000 |
| 160. | * 0.7000 | 2.4000 | 1.2000 | 1.0000 | 1.7000 | 1.2000 | 1.1000 | 1.4000 | 0.2000 | 0.0000 | 0.2000 | 0.0000 | 0.0000 |
| 170. | * 0.3000 | 2.6000 | 1.8000 | 1.2000 | 1.5000 | 1.1000 | 1.1000 | 1.6000 | 0.5000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.1000 | 2.3000 | 2.1000 | 1.4000 | 1.1000 | 1.1000 | 1.1000 | 1.3000 | 1.0000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 1.9000 | 2.2000 | 1.7000 | 1.1000 | 1.1000 | 1.1000 | 1.1000 | 1.1000 | 0.7000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 1.9000 | 2.1000 | 1.8000 | 1.1000 | 1.1000 | 1.1000 | 0.9000 | 1.1000 | 0.8000 | 0.0000 | 0.0000 | 0.1000 |
| 210. | * 0.0000 | 1.9000 | 2.0000 | 1.8000 | 1.1000 | 1.2000 | 1.2000 | 0.7000 | 0.9000 | 0.6000 | 0.0000 | 0.0000 | 0.1000 |
| 220. | * 0.0000 | 2.0000 | 2.0000 | 1.9000 | 1.1000 | 1.3000 | 1.4000 | 0.5000 | 0.8000 | 0.6000 | 0.0000 | 0.0000 | 0.1000 |
| 230. | * 0.0000 | 2.1000 | 2.2000 | 2.0000 | 1.3000 | 1.5000 | 1.5000 | 0.5000 | 0.8000 | 0.6000 | 0.0000 | 0.0000 | 0.2000 |
| 240. | * 0.0000 | 2.2000 | 2.4000 | 2.3000 | 1.4000 | 1.7000 | 1.7000 | 0.5000 | 0.8000 | 0.7000 | 0.0000 | 0.1000 | 0.3000 |
| 250. | * 0.0000 | 2.1000 | 2.5000 | 2.5000 | 1.3000 | 1.7000 | 1.6000 | 0.9000 | 1.2000 | 1.1000 | 0.2000 | 0.3000 | 0.7000 |
| 260. | * 0.0000 | 1.7000 | 2.3000 | 2.1000 | 0.8000 | 1.4000 | 1.4000 | 1.4000 | 1.7000 | 1.9000 | 0.5000 | 0.8000 | 1.3000 |
| 270. | * 0.0000 | 1.1000 | 1.6000 | 1.4000 | 0.4000 | 0.9000 | 0.9000 | 1.8000 | 1.9000 | 2.1000 | 1.0000 | 1.3000 | 1.8000 |
| 280. | * 0.0000 | 0.8000 | 1.0000 | 0.9000 | 0.1000 | 0.4000 | 0.4000 | 1.8000 | 2.2000 | 2.1000 | 1.3000 | 1.5000 | 1.9000 |
| 290. | * 0.2000 | 0.8000 | 1.0000 | 0.8000 | 0.0000 | 0.2000 | 0.2000 | 1.8000 | 2.0000 | 1.8000 | 1.2000 | 1.4000 | 1.7000 |
| 300. | * 0.2000 | 0.7000 | 1.0000 | 0.7000 | 0.0000 | 0.2000 | 0.2000 | 1.6000 | 1.9000 | 1.8000 | 1.1000 | 1.3000 | 1.6000 |
| 310. | * 0.2000 | 0.8000 | 1.1000 | 0.7000 | 0.0000 | 0.1000 | 0.1000 | 1.9000 | 2.0000 | 1.7000 | 1.2000 | 1.2000 | 1.3000 |
| 320. | * 0.2000 | 1.0000 | 1.3000 | 0.9000 | 0.0000 | 0.1000 | 0.1000 | 1.9000 | 2.1000 | 1.8000 | 1.1000 | 1.1000 | 1.2000 |
| 330. | * 0.3000 | 1.2000 | 1.3000 | 0.7000 | 0.0000 | 0.1000 | 0.1000 | 2.4000 | 2.1000 | 1.7000 | 1.2000 | 1.1000 | 1.2000 |

```
 340.  *  0.6000  1.5000  1.1000  0.3000  0.0000  0.1000  0.1000  2.5000  1.9000  1.5000  1.3000
1.0000  1.2000
 350.  *  1.1000  1.6000  0.6000  0.1000  0.2000  0.1000  0.1000  2.6000  1.4000  1.2000  1.4000
1.0000  1.2000
 360.  *  1.6000  1.3000  0.2000  0.0000  0.5000  0.3000  0.1000  2.2000  1.0000  1.0000  1.8000
1.2000  1.2000
 ------*-------------------------------------------------------------------------------------------
---------
 MAX   *  1.6000  2.6000  2.5000  2.5000  2.0000  2.3000  2.1000  2.6000  2.2000  2.1000  2.3000
2.2000  2.3000
 DEGR. *    360     170     250     250     130     100     100     350     280     270      30      70
70

 THE HIGHEST CONCENTRATION OF   2.8000 UG/M**3 OCCURRED AT RECEPTOR    13.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 SB 2035 Build AM pm10

DATE : 3/ 1/18
TIME : 11:40:30

The MODE flag has been set for calculating concentrations for POLLUTANT: PM-10

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | X1 | Y1 | X2 | Y2 | * | | | | | | | | | |
| 1. N Leg App - FreeFlow | * | 0.0 | 0.0 | -110.0 | 990.0 | * | 996. | 354. | AG | 267. | 0.1 | 0.0 | 43.7 | | |
| 2. N Leg App - Queue | * | -7.1 | 63.9 | -110.8 | 996.9 | * | 939. | 354. | AG | 0. | 100.0 | 0.0 | 24.0 | 2.51 | 47.7 |
| 3. S Leg Dep - FreeFlow | * | 0.0 | 0.0 | 250.0 | -970.0 | * | 1002. | 166. | AG | 831. | 0.1 | 0.0 | 43.7 | | |
| 4. E Leg App - FreeFlow | * | 0.0 | 30.0 | 440.0 | 100.0 | * | 446. | 81. | AG | 1706. | 0.1 | 0.0 | 67.7 | | |
| 5. E Leg App - Queue | * | 25.5 | 34.1 | 94.5 | 45.1 | * | 70. | 81. | AG | 0. | 100.0 | 0.0 | 48.0 | 0.37 | 3.5 |
| 6. E Leg Dep - FreeFlow | * | 10.0 | -30.0 | 450.0 | 60.0 | * | 449. | 78. | AG | 1279. | 0.1 | 0.0 | 55.7 | | |
| 7. W Leg App - FreeFlow | * | 10.0 | -30.0 | -900.0 | -160.0 | * | 919. | 262. | AG | 1428. | 0.1 | 0.0 | 55.7 | | |
| 8. W Leg App - Queue | * | -7.7 | -32.5 | -162.2 | -54.6 | * | 156. | 262. | AG | 0. | 100.0 | 0.0 | 36.0 | 0.64 | 7.9 |
| 9. W Leg Dep - FreeFlow | * | 0.0 | 30.0 | -900.0 | -130.0 | * | 914. | 260. | AG | 1291. | 0.1 | 0.0 | 67.7 | | |
| 10. I93 NB N Leg - FF | * | 170.0 | 30.0 | 20.0 | 1010.0 | * | 991. | 351. | BR | 4380. | 0.0 | 22.0 | 62.0 | | |
| 11. I93 NB S Leg - FF | * | 170.0 | 30.0 | 380.0 | -940.0 | * | 992. | 168. | BR | 4380. | 0.0 | 22.0 | 62.0 | | |
| 12. I93 SB N Leg - FF | * | 90.0 | 20.0 | -70.0 | 1010.0 | * | 1003. | 351. | BR | 4000. | 0.0 | 22.0 | 62.0 | | |
| 13. I93 SB S Leg - FF | * | 90.0 | 20.0 | 310.0 | -970.0 | * | 1014. | 167. | BR | 4000. | 0.0 | 22.0 | 62.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 112 | 2.0 | 267 | 1600 | 0.05 | 2 3 |
| 5. E Leg App - Queue | * | 120 | 30 | 2.0 | 1706 | 1600 | 0.05 | 2 3 |
| 8. W Leg App - Queue | * | 120 | 60 | 2.0 | 1428 | 1600 | 0.05 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 20.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 0.0 | 160.0 | 5.9 |
| 3. N Leg, E Side - 50 m | -10.0 | 240.0 | 5.9 |
| 4. N Leg, E Side-Midblk | -40.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -40.0 | 50.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -50.0 | 150.0 | 5.9 |
| 7. N Leg, W Side - 50 m | -60.0 | 230.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -90.0 | 490.0 | 5.9 |
| 9. S Leg, E Side-Corner | 50.0 | -60.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 60.0 | -140.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 80.0 | -220.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 140.0 | -480.0 | 5.9 |
| 13. S Leg, W Side-Corner | -20.0 | -70.0 | 5.9 |
| 14. S Leg, W Side - 25 m | 10.0 | -150.0 | 5.9 |
| 15. S Leg, W Side - 50 m | 30.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | 90.0 | -500.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 130.0 | 90.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 230.0 | 100.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 339.7 | 115.6 | 5.9 |
| 20. W Leg, N Side - 25 m | -120.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -240.0 | 10.0 | 5.9 |
| 22. W Leg, N Side-Midblk | -460.0 | -30.0 | 5.9 |
| 23. E Leg, S Side - 25 m | 160.0 | -40.0 | 5.9 |
| 24. E Leg, S Side - 50 m | 260.0 | -20.0 | 5.9 |
| 25. E Leg, S Side-Midblk | 359.2 | 7.3 | 5.9 |
| 26. W Leg, S Side - 25 m | -120.0 | -100.0 | 5.9 |
| 27. W Leg, S Side - 50 m | -210.0 | -100.0 | 5.9 |
| 28. W Leg, S Side-Midblk | -440.0 | -120.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 5.300 | 5.300 | 5.300 | 5.400 | 5.300 | 5.100 | 5.000 | 4.400 | 10.100 | 8.100 | 7.300 | 7.200 | 12.500 | 9.900 | 8.900 |
| 20. | * 4.600 | 4.500 | 4.500 | 4.600 | 5.200 | 5.100 | 5.100 | 4.800 | 9.400 | 7.100 | 6.400 | 5.600 | 12.500 | 9.100 | 8.000 |
| 30. | * 4.300 | 3.800 | 3.800 | 3.900 | 4.800 | 4.700 | 4.600 | 4.700 | 9.000 | 6.600 | 5.800 | 4.600 | 12.100 | 8.500 | 7.500 |
| 40. | * 3.900 | 3.300 | 3.400 | 3.400 | 4.300 | 4.400 | 4.300 | 4.400 | 8.900 | 6.400 | 5.000 | 3.600 | 12.100 | 8.300 | 6.900 |
| 50. | * 3.900 | 2.900 | 2.900 | 3.100 | 4.500 | 4.000 | 4.000 | 4.100 | 9.000 | 5.700 | 4.200 | 3.100 | 11.800 | 7.700 | 6.000 |
| 60. | * 4.700 | 2.800 | 2.800 | 2.700 | 5.300 | 3.800 | 3.800 | 3.800 | 8.600 | 4.500 | 3.100 | 2.800 | 11.500 | 6.700 | 5.200 |
| 70. | * 6.700 | 2.600 | 2.600 | 2.600 | 7.200 | 3.800 | 3.800 | 3.800 | 7.400 | 3.500 | 2.700 | 2.700 | 10.500 | 5.700 | 4.800 |
| 80. | * 9.400 | 2.800 | 2.600 | 2.500 | 9.600 | 4.100 | 3.700 | 3.800 | 5.300 | 2.900 | 2.600 | 2.700 | 8.100 | 4.900 | 4.500 |
| 90. | * 11.000 | 3.500 | 2.700 | 2.500 | 11.100 | 4.800 | 4.100 | 3.800 | 3.600 | 2.600 | 2.600 | 2.800 | 5.800 | 4.600 | 4.500 |
| 100. | * 11.500 | 4.500 | 3.400 | 2.700 | 10.900 | 5.900 | 4.600 | 3.800 | 3.000 | 2.800 | 2.800 | 3.000 | 4.600 | 4.600 | 4.600 |
| 110. | * 11.100 | 5.600 | 4.200 | 3.000 | 10.300 | 6.800 | 5.400 | 4.100 | 3.000 | 3.100 | 3.200 | 3.400 | 4.600 | 5.000 | 4.900 |
| 120. | * 10.700 | 6.200 | 4.900 | 3.600 | 9.900 | 7.400 | 6.300 | 4.500 | 3.400 | 3.500 | 3.500 | 3.800 | 4.900 | 5.500 | 5.400 |
| 130. | * 10.200 | 6.600 | 5.700 | 4.400 | 10.000 | 7.600 | 6.800 | 5.500 | 3.800 | 3.900 | 3.900 | 4.300 | 5.400 | 5.900 | 5.700 |
| 140. | * 10.800 | 7.300 | 6.600 | 5.600 | 10.300 | 7.900 | 7.100 | 6.100 | 4.400 | 4.600 | 4.600 | 5.200 | 5.800 | 6.600 | 6.300 |
| 150. | * 11.300 | 8.200 | 7.500 | 6.900 | 10.600 | 8.400 | 7.900 | 6.900 | 5.100 | 5.600 | 5.600 | 6.000 | 5.800 | 6.800 | 6.200 |
| 160. | * 11.500 | 8.900 | 8.400 | 8.000 | 10.100 | 7.900 | 7.300 | 6.800 | 5.500 | 6.200 | 6.300 | 6.500 | 4.400 | 5.400 | 4.800 |
| 170. | * 10.600 | 8.300 | 7.800 | 8.000 | 8.100 | 5.800 | 5.400 | 4.800 | 4.900 | 6.000 | 5.800 | 6.200 | 2.200 | 2.900 | 2.400 |
| 180. | * 9.600 | 6.900 | 6.500 | 6.300 | 6.400 | 3.900 | 3.300 | 2.600 | 3.900 | 4.900 | 4.900 | 5.100 | 0.600 | 1.000 | 0.800 |
| 190. | * 8.800 | 6.000 | 5.600 | 4.900 | 5.700 | 3.100 | 2.300 | 1.500 | 3.100 | 3.900 | 3.900 | 4.200 | 0.100 | 0.300 | 0.200 |
| 200. | * 8.700 | 5.700 | 5.000 | 4.100 | 5.600 | 2.900 | 2.200 | 1.200 | 2.700 | 3.300 | 3.300 | 3.600 | 0.000 | 0.100 | 0.000 |
| 210. | * 8.700 | 5.300 | 4.800 | 3.800 | 5.900 | 3.000 | 2.200 | 1.200 | 2.500 | 2.900 | 2.900 | 2.900 | 0.100 | 0.100 | 0.000 |
| 220. | * 9.000 | 5.300 | 4.300 | 3.300 | 6.500 | 3.100 | 2.300 | 1.200 | 2.300 | 2.600 | 2.700 | 2.700 | 0.200 | 0.000 | 0.000 |
| 230. | * 9.200 | 5.100 | 4.300 | 2.900 | 7.000 | 3.200 | 2.200 | 0.800 | 2.200 | 2.400 | 2.400 | 2.500 | 0.300 | 0.000 | 0.000 |
| 240. | * 9.700 | 4.800 | 3.700 | 2.200 | 7.700 | 3.000 | 1.900 | 0.300 | 2.600 | 2.300 | 2.300 | 2.400 | 0.700 | 0.000 | 0.000 |
| 250. | * 9.600 | 4.000 | 2.800 | 1.800 | 7.700 | 2.100 | 1.000 | 0.000 | 4.400 | 2.700 | 2.500 | 2.400 | 2.500 | 0.200 | 0.000 |
| 260. | * 8.000 | 2.700 | 2.200 | 1.800 | 6.100 | 0.900 | 0.300 | 0.000 | 7.900 | 3.600 | 2.900 | 2.400 | 6.000 | 1.000 | 0.300 |
| 270. | * 5.200 | 2.000 | 1.800 | 1.800 | 3.300 | 0.200 | 0.000 | 0.000 | 10.700 | 5.000 | 3.600 | 2.500 | 9.200 | 2.600 | 1.000 |
| 280. | * 3.000 | 1.800 | 1.800 | 1.900 | 1.400 | 0.000 | 0.000 | 0.000 | 11.100 | 6.200 | 4.600 | 2.900 | 10.000 | 3.600 | 1.900 |
| 290. | * 2.000 | 1.800 | 1.900 | 1.900 | 0.700 | 0.000 | 0.000 | 0.000 | 9.800 | 6.600 | 5.200 | 3.700 | 8.900 | 3.800 | 2.500 |
| 300. | * 1.800 | 2.000 | 2.000 | 2.100 | 0.400 | 0.000 | 0.000 | 0.000 | 8.700 | 6.700 | 5.500 | 4.200 | 8.000 | 3.900 | 2.500 |
| 310. | * 1.800 | 2.200 | 2.200 | 2.300 | 0.400 | 0.000 | 0.000 | 0.000 | 7.900 | 6.800 | 5.800 | 4.900 | 7.400 | 3.700 | 2.400 |
| 320. | * 2.000 | 2.500 | 2.600 | 2.600 | 0.300 | 0.000 | 0.000 | 0.000 | 7.200 | 6.700 | 6.100 | 5.400 | 7.000 | 3.600 | 2.400 |
| 330. | * 2.600 | 3.000 | 3.100 | 3.100 | 0.300 | 0.100 | 0.100 | 0.000 | 7.200 | 6.900 | 6.400 | 6.500 | 6.600 | 3.800 | 2.700 |

```
 340.  *   3.400   3.900   4.100   4.000   0.700   0.600   0.400   0.400   7.800   7.500   7.300
7.900   7.400   5.000   3.900
 350.  *   4.600   5.100   5.100   4.900   2.000   2.000   1.800   1.500   9.000   8.300   8.100
9.100   9.300   7.300   6.500
 360.  *   5.400   5.700   5.700   5.500   4.000   3.900   3.600   2.900  10.200   8.600   8.000
9.000  11.500   9.600   8.300
 ------*-------------------------------------------------------------------------------------------
------------------------
 MAX   *  11.500   8.900   8.400   8.000  11.100   8.400   7.900   6.900  11.100   8.600   8.100
9.100  12.500   9.900   8.900
 DEGR. *    100     160     160     160      90     150     150     150     280     360     350     350
10      10      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * | CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * | 7.400 | 3.900 | 0.200 | 0.200 | 2.600 | 1.400 | 0.400 | 8.500 | 4.900 | 5.100 | 7.900 | 7.300 | 7.000 |
| 20. | * | 6.800 | 2.800 | 0.300 | 0.300 | 3.100 | 2.300 | 1.100 | 7.400 | 5.000 | 5.300 | 8.700 | 8.200 | 7.900 |
| 30. | * | 6.000 | 2.200 | 0.400 | 0.500 | 3.100 | 2.700 | 1.600 | 6.900 | 5.200 | 5.200 | 9.000 | 8.900 | 9.000 |
| 40. | * | 4.900 | 1.900 | 0.500 | 0.500 | 2.900 | 2.700 | 2.000 | 6.900 | 5.400 | 5.000 | 9.300 | 9.500 | 10.000 |
| 50. | * | 4.500 | 1.600 | 0.600 | 0.600 | 2.800 | 2.800 | 2.400 | 6.800 | 5.200 | 4.100 | 9.700 | 10.300 | 11.100 |
| 60. | * | 4.400 | 1.600 | 1.000 | 0.900 | 3.100 | 3.700 | 3.100 | 6.200 | 4.400 | 3.300 | 9.700 | 11.000 | 12.100 |
| 70. | * | 4.400 | 2.500 | 2.000 | 1.700 | 4.000 | 5.400 | 5.400 | 4.600 | 2.900 | 2.200 | 8.000 | 10.600 | 13.300 |
| 80. | * | 4.400 | 4.300 | 3.900 | 2.900 | 6.200 | 7.900 | 8.200 | 2.700 | 1.400 | 1.300 | 5.600 | 7.600 | 11.700 |
| 90. | * | 4.300 | 6.400 | 5.500 | 3.700 | 7.900 | 9.200 | 9.900 | 1.400 | 0.400 | 0.500 | 3.500 | 4.400 | 7.700 |
| 100. | * | 4.400 | 7.700 | 6.500 | 4.500 | 8.300 | 9.600 | 9.800 | 1.100 | 0.100 | 0.200 | 2.800 | 2.700 | 4.000 |
| 110. | * | 4.700 | 7.700 | 6.800 | 5.300 | 8.300 | 9.500 | 9.100 | 1.200 | 0.000 | 0.200 | 2.800 | 2.400 | 2.900 |
| 120. | * | 5.100 | 7.700 | 6.600 | 5.800 | 8.300 | 9.000 | 8.400 | 1.400 | 0.000 | 0.200 | 2.800 | 2.400 | 2.300 |
| 130. | * | 5.400 | 7.700 | 6.000 | 5.900 | 8.600 | 8.500 | 7.700 | 1.900 | 0.000 | 0.100 | 3.100 | 2.500 | 2.000 |
| 140. | * | 5.500 | 8.000 | 5.600 | 5.700 | 8.700 | 7.800 | 6.900 | 2.700 | 0.000 | 0.000 | 3.000 | 2.100 | 1.300 |
| 150. | * | 4.800 | 9.100 | 5.400 | 5.500 | 8.300 | 6.900 | 6.000 | 4.000 | 0.100 | 0.000 | 2.400 | 1.300 | 0.500 |
| 160. | * | 3.100 | 11.000 | 6.400 | 5.700 | 7.100 | 6.000 | 5.600 | 5.700 | 0.800 | 0.100 | 1.100 | 0.500 | 0.100 |
| 170. | * | 1.500 | 11.900 | 8.600 | 6.600 | 5.800 | 5.500 | 5.600 | 6.600 | 2.400 | 0.600 | 0.300 | 0.000 | 0.000 |
| 180. | * | 0.400 | 11.100 | 10.000 | 7.600 | 5.200 | 5.400 | 5.600 | 5.900 | 4.200 | 1.700 | 0.000 | 0.000 | 0.000 |
| 190. | * | 0.100 | 9.400 | 10.100 | 8.300 | 4.900 | 5.400 | 5.700 | 4.400 | 4.700 | 2.700 | 0.000 | 0.000 | 0.200 |
| 200. | * | 0.000 | 8.800 | 10.000 | 8.600 | 5.000 | 5.600 | 5.800 | 3.500 | 4.500 | 3.100 | 0.000 | 0.000 | 0.400 |
| 210. | * | 0.000 | 8.800 | 10.000 | 9.000 | 5.100 | 5.800 | 6.100 | 2.900 | 3.900 | 3.000 | 0.000 | 0.000 | 0.600 |
| 220. | * | 0.000 | 9.300 | 10.400 | 9.600 | 5.600 | 6.500 | 6.800 | 2.500 | 3.500 | 2.900 | 0.000 | 0.100 | 0.800 |
| 230. | * | 0.000 | 9.800 | 11.100 | 10.300 | 6.100 | 7.200 | 7.500 | 2.400 | 3.500 | 2.800 | 0.000 | 0.100 | 1.000 |
| 240. | * | 0.000 | 10.400 | 12.100 | 11.200 | 6.500 | 8.000 | 8.100 | 2.600 | 3.700 | 3.200 | 0.200 | 0.500 | 1.900 |
| 250. | * | 0.000 | 9.900 | 12.300 | 12.100 | 6.100 | 7.900 | 7.600 | 4.300 | 5.100 | 5.200 | 1.100 | 2.000 | 4.300 |
| 260. | * | 0.000 | 7.200 | 10.400 | 10.100 | 4.000 | 6.400 | 6.000 | 7.200 | 8.000 | 8.400 | 3.400 | 4.900 | 8.100 |
| 270. | * | 0.000 | 4.200 | 6.400 | 6.500 | 1.600 | 3.700 | 3.600 | 9.300 | 10.000 | 10.500 | 5.900 | 7.900 | 10.600 |
| 280. | * | 0.300 | 2.600 | 4.500 | 3.900 | 0.500 | 1.700 | 1.800 | 9.000 | 10.000 | 9.900 | 7.100 | 8.900 | 10.900 |
| 290. | * | 0.800 | 2.200 | 3.900 | 3.200 | 0.200 | 0.900 | 0.900 | 8.200 | 9.500 | 9.300 | 6.700 | 8.100 | 9.800 |
| 300. | * | 1.200 | 2.700 | 4.000 | 3.100 | 0.100 | 0.600 | 0.600 | 7.900 | 8.900 | 8.700 | 6.300 | 7.300 | 8.800 |
| 310. | * | 1.300 | 3.000 | 4.400 | 3.200 | 0.100 | 0.500 | 0.500 | 7.900 | 8.900 | 8.500 | 5.900 | 6.700 | 7.900 |
| 320. | * | 1.400 | 3.300 | 4.700 | 3.200 | 0.000 | 0.400 | 0.400 | 8.400 | 9.200 | 8.200 | 5.700 | 6.200 | 7.200 |
| 330. | * | 1.600 | 4.200 | 4.800 | 2.600 | 0.000 | 0.300 | 0.300 | 9.200 | 9.200 | 7.800 | 5.500 | 5.800 | 6.800 |

```
 340.  *   3.100   5.400   4.100   1.500   0.000   0.200   0.200  10.700   8.700   7.000   5.600
5.900   6.700
 350.  *   5.300   6.100   2.400   0.500   0.500   0.300   0.300  11.500   7.000   5.900   6.100
6.200   7.000
 360.  *   7.500   5.400   0.800   0.100   1.400   0.700   0.200  10.200   5.400   5.200   7.000
6.600   6.900
 ------*-------------------------------------------------------------------------------------------
---------
 MAX   *   7.500  11.900  12.300  12.100   8.700   9.600   9.900  11.500  10.000  10.500   9.700
11.000  13.300
 DEGR. *    360     170     250     250     140     100      90     350     270     270      60      60
70

 THE HIGHEST CONCENTRATION OF   13.300 UG/M**3 OCCURRED AT RECEPTOR    28.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 SB 2035 Build PM pm2.5

DATE : 3/ 1/18
TIME : 11:18:55

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH | BRG | TYPE | VPH | EF | H | W | V/C | QUEUE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | X1 | Y1 | X2 | Y2 | * | (FT) | (DEG) | | | (G/MI) | (FT) | (FT) | | (VEH) |
| 1. N Leg App - FreeFlow | * | 0.0 | 0.0 | -110.0 | 990.0 | * | 996. | 354. | AG | 267. | 0.7 | 0.0 | 43.7 | | |
| 2. N Leg App - Queue | * | -7.1 | 63.9 | -110.8 | 996.9 | * | 939. | 354. | AG | 6. | 100.0 | 0.0 | 24.0 | 2.51 | 47.7 |
| 3. S Leg Dep - FreeFlow | * | 0.0 | 0.0 | 250.0 | -970.0 | * | 1002. | 166. | AG | 831. | 0.8 | 0.0 | 43.7 | | |
| 4. E Leg App - FreeFlow | * | 0.0 | 30.0 | 440.0 | 100.0 | * | 446. | 81. | AG | 1706. | 1.1 | 0.0 | 67.7 | | |
| 5. E Leg App - Queue | * | 25.5 | 34.1 | 94.5 | 45.1 | * | 70. | 81. | AG | 5. | 100.0 | 0.0 | 48.0 | 0.37 | 3.5 |
| 6. E Leg Dep - FreeFlow | * | 10.0 | -30.0 | 450.0 | 60.0 | * | 449. | 78. | AG | 1279. | 1.1 | 0.0 | 55.7 | | |
| 7. W Leg App - FreeFlow | * | 10.0 | -30.0 | -900.0 | -160.0 | * | 919. | 262. | AG | 1428. | 0.7 | 0.0 | 55.7 | | |
| 8. W Leg App - Queue | * | -7.7 | -32.5 | -162.2 | -54.6 | * | 156. | 262. | AG | 7. | 100.0 | 0.0 | 36.0 | 0.64 | 7.9 |
| 9. W Leg Dep - FreeFlow | * | 0.0 | 30.0 | -900.0 | -130.0 | * | 914. | 260. | AG | 1291. | 1.6 | 0.0 | 67.7 | | |
| 10. I93 NB N Leg - FF | * | 170.0 | 30.0 | 20.0 | 1010.0 | * | 991. | 351. | BR | 4380. | 0.8 | 22.0 | 62.0 | | |
| 11. I93 NB S Leg - FF | * | 170.0 | 30.0 | 380.0 | -940.0 | * | 992. | 168. | BR | 4380. | 0.8 | 22.0 | 62.0 | | |
| 12. I93 SB N Leg - FF | * | 90.0 | 20.0 | -70.0 | 1010.0 | * | 1003. | 351. | BR | 4000. | 0.8 | 22.0 | 62.0 | | |
| 13. I93 SB S Leg - FF | * | 90.0 | 20.0 | 310.0 | -970.0 | * | 1014. | 167. | BR | 4000. | 0.8 | 22.0 | 62.0 | | |

DATE : 3/ 1/18
TIME : 11:18:55

ADDITIONAL QUEUE LINK PARAMETERS

| LINK DESCRIPTION | CYCLE LENGTH (SEC) | RED TIME (SEC) | CLEARANCE LOST TIME (SEC) | APPROACH VOL (VPH) | SATURATION FLOW RATE (VPH) | IDLE EM FAC (gm/hr) | SIGNAL TYPE ARRIVAL RATE |
|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | 120 | 112 | 2.0 | 267 | 1600 | 1.18 | 2 3 |
| 5. E Leg App - Queue | 120 | 30 | 2.0 | 1706 | 1600 | 1.75 | 2 3 |
| 8. W Leg App - Queue | 120 | 60 | 2.0 | 1428 | 1600 | 1.75 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 20.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 0.0 | 160.0 | 5.9 |
| 3. N Leg, E Side - 50 m | -10.0 | 240.0 | 5.9 |
| 4. N Leg, E Side-Midblk | -40.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -40.0 | 50.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -50.0 | 150.0 | 5.9 |
| 7. N Leg, W Side - 50 m | -60.0 | 230.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -90.0 | 490.0 | 5.9 |
| 9. S Leg, E Side-Corner | 50.0 | -60.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 60.0 | -140.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 80.0 | -220.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 140.0 | -480.0 | 5.9 |
| 13. S Leg, W Side-Corner | -20.0 | -70.0 | 5.9 |
| 14. S Leg, W Side - 25 m | 10.0 | -150.0 | 5.9 |
| 15. S Leg, W Side - 50 m | 30.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | 90.0 | -500.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 130.0 | 90.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 230.0 | 100.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 339.7 | 115.6 | 5.9 |
| 20. W Leg, N Side - 25 m | -120.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -240.0 | 10.0 | 5.9 |
| 22. W Leg, N Side-Midblk | -460.0 | -30.0 | 5.9 |
| 23. E Leg, S Side - 25 m | 160.0 | -40.0 | 5.9 |
| 24. E Leg, S Side - 50 m | 260.0 | -20.0 | 5.9 |
| 25. E Leg, S Side-Midblk | 359.2 | 7.3 | 5.9 |
| 26. W Leg, S Side - 25 m | -120.0 | -100.0 | 5.9 |
| 27. W Leg, S Side - 50 m | -210.0 | -100.0 | 5.9 |
| 28. W Leg, S Side-Midblk | -440.0 | -120.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 80. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 90. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | * 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | * 0.2000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | * 0.2000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | * 0.2000 | 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 280. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 290. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 300. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 310. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 330. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

```
 340.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000
0.1000  0.0000  0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------------
-------------------------
 MAX   *  0.2000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000
 DEGR. *    140      10      10      10      80      10      10      10      10     130      20      10
10      10      10      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 80. | * 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 90. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | * 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | * 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | * 0.0000 | 0.3000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.0000 | 0.2000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.2000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 0.1000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 0.1000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 280. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 290. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 300. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 310. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 330. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

```
 340.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.0000
0.0000  0.0000
 350.  *  0.0000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.0000
0.0000  0.0000
 360.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------------
---------
 MAX   *  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000  0.0000
0.0000  0.1000
 DEGR. *     10     170     170      90     100      70      70     170     180     270      10      10
70

 THE HIGHEST CONCENTRATION OF   0.3000 PPM OCCURRED AT RECEPTOR    17.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 SB 2035 Build PM pm2.5

DATE : 3/ 1/18
TIME : 11:11:26

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | X1 | Y1 | X2 | Y2 | * | | | | | | | | | |
| 1. N Leg App - FreeFlow | * | 0.0 | 0.0 | -110.0 | 990.0 | * | 996. | 354. | AG | 267. | 0.0 | 0.0 | 43.7 | | |
| 2. N Leg App - Queue | * | -7.1 | 63.9 | -110.8 | 996.9 | * | 939. | 354. | AG | 0. | 100.0 | 0.0 | 24.0 | 2.51 | 47.7 |
| 3. S Leg Dep - FreeFlow | * | 0.0 | 0.0 | 250.0 | -970.0 | * | 1002. | 166. | AG | 831. | 0.0 | 0.0 | 43.7 | | |
| 4. E Leg App - FreeFlow | * | 0.0 | 30.0 | 440.0 | 100.0 | * | 446. | 81. | AG | 1706. | 0.0 | 0.0 | 67.7 | | |
| 5. E Leg App - Queue | * | 25.5 | 34.1 | 94.5 | 45.1 | * | 70. | 81. | AG | 0. | 100.0 | 0.0 | 48.0 | 0.37 | 3.5 |
| 6. E Leg Dep - FreeFlow | * | 10.0 | -30.0 | 450.0 | 60.0 | * | 449. | 78. | AG | 1279. | 0.0 | 0.0 | 55.7 | | |
| 7. W Leg App - FreeFlow | * | 10.0 | -30.0 | -900.0 | -160.0 | * | 919. | 262. | AG | 1428. | 0.0 | 0.0 | 55.7 | | |
| 8. W Leg App - Queue | * | -7.7 | -32.5 | -162.2 | -54.6 | * | 156. | 262. | AG | 0. | 100.0 | 0.0 | 36.0 | 0.64 | 7.9 |
| 9. W Leg Dep - FreeFlow | * | 0.0 | 30.0 | -900.0 | -130.0 | * | 914. | 260. | AG | 1291. | 0.0 | 0.0 | 67.7 | | |
| 10. I93 NB N Leg - FF | * | 170.0 | 30.0 | 20.0 | 1010.0 | * | 991. | 351. | BR | 4380. | 0.0 | 22.0 | 62.0 | | |
| 11. I93 NB S Leg - FF | * | 170.0 | 30.0 | 380.0 | -940.0 | * | 992. | 168. | BR | 4380. | 0.0 | 22.0 | 62.0 | | |
| 12. I93 SB N Leg - FF | * | 90.0 | 20.0 | -70.0 | 1010.0 | * | 1003. | 351. | BR | 4000. | 0.0 | 22.0 | 62.0 | | |
| 13. I93 SB S Leg - FF | * | 90.0 | 20.0 | 310.0 | -970.0 | * | 1014. | 167. | BR | 4000. | 0.0 | 22.0 | 62.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 112 | 2.0 | 267 | 1600 | 0.04 | 2 3 |
| 5. E Leg App - Queue | * | 120 | 30 | 2.0 | 1706 | 1600 | 0.04 | 2 3 |
| 8. W Leg App - Queue | * | 120 | 60 | 2.0 | 1428 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | * | COORDINATES (FT) X | Y | Z | * |
|---|---|---|---|---|---|
| 1. N Leg, E Side-Corner | * | 20.0 | 60.0 | 5.9 | * |
| 2. N Leg, E Side - 25 m | * | 0.0 | 160.0 | 5.9 | * |
| 3. N Leg, E Side - 50 m | * | -10.0 | 240.0 | 5.9 | * |
| 4. N Leg, E Side-Midblk | * | -40.0 | 500.0 | 5.9 | * |
| 5. N Leg, W Side-Corner | * | -40.0 | 50.0 | 5.9 | * |
| 6. N Leg, W Side - 25 m | * | -50.0 | 150.0 | 5.9 | * |
| 7. N Leg, W Side - 50 m | * | -60.0 | 230.0 | 5.9 | * |
| 8. N Leg, W Side-Midblk | * | -90.0 | 490.0 | 5.9 | * |
| 9. S Leg, E Side-Corner | * | 50.0 | -60.0 | 5.9 | * |
| 10. S Leg, E Side - 25 m | * | 60.0 | -140.0 | 5.9 | * |
| 11. S Leg, E Side - 50 m | * | 80.0 | -220.0 | 5.9 | * |
| 12. S Leg, E Side-Midblk | * | 140.0 | -480.0 | 5.9 | * |
| 13. S Leg, W Side-Corner | * | -20.0 | -70.0 | 5.9 | * |
| 14. S Leg, W Side - 25 m | * | 10.0 | -150.0 | 5.9 | * |
| 15. S Leg, W Side - 50 m | * | 30.0 | -240.0 | 5.9 | * |
| 16. S Leg, W Side-Midblk | * | 90.0 | -500.0 | 5.9 | * |
| 17. E Leg, N Side - 25 m | * | 130.0 | 90.0 | 5.9 | * |
| 18. E Leg, N Side - 50 m | * | 230.0 | 100.0 | 5.9 | * |
| 19. E Leg, N Side-Midblk | * | 339.7 | 115.6 | 5.9 | * |
| 20. W Leg, N Side - 25 m | * | -120.0 | 50.0 | 5.9 | * |
| 21. W Leg, N Side - 50 m | * | -240.0 | 10.0 | 5.9 | * |
| 22. W Leg, N Side-Midblk | * | -460.0 | -30.0 | 5.9 | * |
| 23. E Leg, S Side - 25 m | * | 160.0 | -40.0 | 5.9 | * |
| 24. E Leg, S Side - 50 m | * | 260.0 | -20.0 | 5.9 | * |
| 25. E Leg, S Side-Midblk | * | 359.2 | 7.3 | 5.9 | * |
| 26. W Leg, S Side - 25 m | * | -120.0 | -100.0 | 5.9 | * |
| 27. W Leg, S Side - 50 m | * | -210.0 | -100.0 | 5.9 | * |
| 28. W Leg, S Side-Midblk | * | -440.0 | -120.0 | 5.9 | * |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * | CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * | 1.2000 | 1.3000 | 1.3000 | 1.3000 | 1.6000 | 1.6000 | 1.4000 | 1.4000 | 2.2000 | 1.6000 | 1.5000 | 1.5000 | 2.6000 | 2.0000 | 1.7000 |
| 20. | * | 1.0000 | 1.1000 | 1.1000 | 1.1000 | 1.5000 | 1.5000 | 1.5000 | 1.5000 | 2.0000 | 1.3000 | 1.3000 | 1.2000 | 2.6000 | 1.6000 | 1.5000 |
| 30. | * | 1.0000 | 0.8000 | 0.8000 | 0.9000 | 1.3000 | 1.5000 | 1.4000 | 1.3000 | 1.8000 | 1.3000 | 1.2000 | 0.9000 | 2.1000 | 1.6000 | 1.4000 |
| 40. | * | 0.8000 | 0.7000 | 0.7000 | 0.7000 | 1.3000 | 1.2000 | 1.2000 | 1.2000 | 1.8000 | 1.3000 | 1.1000 | 0.8000 | 2.3000 | 1.7000 | 1.4000 |
| 50. | * | 0.9000 | 0.6000 | 0.6000 | 0.6000 | 1.2000 | 1.2000 | 1.2000 | 1.2000 | 1.6000 | 1.0000 | 0.8000 | 0.6000 | 2.0000 | 1.5000 | 1.1000 |
| 60. | * | 0.9000 | 0.6000 | 0.6000 | 0.6000 | 1.4000 | 1.2000 | 1.2000 | 1.2000 | 1.7000 | 0.9000 | 0.7000 | 0.6000 | 2.1000 | 1.2000 | 0.9000 |
| 70. | * | 1.4000 | 0.6000 | 0.6000 | 0.6000 | 1.6000 | 1.1000 | 1.1000 | 1.2000 | 1.4000 | 0.8000 | 0.6000 | 0.6000 | 2.0000 | 1.1000 | 0.9000 |
| 80. | * | 1.9000 | 0.6000 | 0.6000 | 0.6000 | 1.9000 | 1.1000 | 1.2000 | 1.1000 | 1.1000 | 0.6000 | 0.6000 | 0.6000 | 1.4000 | 1.0000 | 0.9000 |
| 90. | * | 2.3000 | 0.7000 | 0.6000 | 0.6000 | 2.1000 | 1.2000 | 1.1000 | 1.2000 | 0.8000 | 0.6000 | 0.6000 | 0.6000 | 1.0000 | 0.9000 | 0.9000 |
| 100. | * | 2.5000 | 0.9000 | 0.7000 | 0.6000 | 2.3000 | 1.5000 | 1.2000 | 1.1000 | 0.6000 | 0.6000 | 0.6000 | 0.6000 | 1.0000 | 1.0000 | 0.9000 |
| 110. | * | 2.2000 | 1.0000 | 0.9000 | 0.6000 | 2.0000 | 1.7000 | 1.4000 | 1.2000 | 0.7000 | 0.7000 | 0.7000 | 0.8000 | 0.9000 | 1.0000 | 1.0000 |
| 120. | * | 2.2000 | 1.2000 | 1.0000 | 0.7000 | 2.1000 | 1.8000 | 1.5000 | 1.2000 | 0.7000 | 0.7000 | 0.7000 | 0.8000 | 1.0000 | 1.0000 | 1.0000 |
| 130. | * | 2.2000 | 1.4000 | 1.1000 | 0.9000 | 2.0000 | 2.0000 | 1.7000 | 1.4000 | 0.9000 | 0.9000 | 0.9000 | 1.0000 | 1.1000 | 1.2000 | 1.1000 |
| 140. | * | 2.3000 | 1.5000 | 1.2000 | 1.1000 | 1.9000 | 1.9000 | 1.8000 | 1.7000 | 1.0000 | 1.0000 | 1.0000 | 1.1000 | 1.1000 | 1.2000 | 1.2000 |
| 150. | * | 2.4000 | 1.7000 | 1.6000 | 1.5000 | 2.1000 | 1.8000 | 1.9000 | 1.9000 | 1.2000 | 1.2000 | 1.2000 | 1.3000 | 1.2000 | 1.3000 | 1.1000 |
| 160. | * | 2.3000 | 1.7000 | 1.7000 | 2.0000 | 1.9000 | 1.5000 | 1.7000 | 1.9000 | 1.1000 | 1.1000 | 1.1000 | 1.2000 | 0.8000 | 1.0000 | 0.9000 |
| 170. | * | 2.1000 | 1.7000 | 1.9000 | 2.1000 | 1.6000 | 1.3000 | 1.2000 | 1.3000 | 0.9000 | 1.1000 | 1.1000 | 1.0000 | 0.3000 | 0.4000 | 0.4000 |
| 180. | * | 1.6000 | 1.7000 | 1.6000 | 2.0000 | 1.2000 | 0.6000 | 0.7000 | 0.6000 | 0.6000 | 0.8000 | 0.8000 | 0.8000 | 0.1000 | 0.1000 | 0.1000 |
| 190. | * | 1.5000 | 1.7000 | 1.7000 | 1.7000 | 1.2000 | 0.6000 | 0.5000 | 0.3000 | 0.5000 | 0.6000 | 0.6000 | 0.6000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * | 1.6000 | 1.5000 | 1.6000 | 1.4000 | 1.2000 | 0.6000 | 0.5000 | 0.2000 | 0.4000 | 0.5000 | 0.5000 | 0.6000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * | 1.6000 | 1.6000 | 1.5000 | 1.3000 | 1.2000 | 0.7000 | 0.4000 | 0.2000 | 0.4000 | 0.5000 | 0.5000 | 0.5000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * | 1.5000 | 1.6000 | 1.4000 | 1.2000 | 1.4000 | 0.6000 | 0.4000 | 0.2000 | 0.4000 | 0.4000 | 0.4000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * | 1.7000 | 1.5000 | 1.3000 | 1.1000 | 1.4000 | 0.6000 | 0.4000 | 0.2000 | 0.3000 | 0.4000 | 0.4000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * | 1.7000 | 1.3000 | 1.2000 | 0.8000 | 1.6000 | 0.6000 | 0.4000 | 0.0000 | 0.4000 | 0.4000 | 0.4000 | 0.4000 | 0.1000 | 0.0000 | 0.0000 |
| 250. | * | 1.9000 | 1.1000 | 0.9000 | 0.8000 | 1.6000 | 0.4000 | 0.2000 | 0.0000 | 0.7000 | 0.4000 | 0.4000 | 0.4000 | 0.3000 | 0.0000 | 0.0000 |
| 260. | * | 1.6000 | 0.9000 | 0.8000 | 0.8000 | 1.3000 | 0.2000 | 0.0000 | 0.0000 | 1.4000 | 0.6000 | 0.4000 | 0.4000 | 1.0000 | 0.1000 | 0.0000 |
| 270. | * | 1.1000 | 0.7000 | 0.8000 | 0.8000 | 0.7000 | 0.0000 | 0.0000 | 0.0000 | 1.9000 | 0.8000 | 0.6000 | 0.4000 | 1.6000 | 0.4000 | 0.2000 |
| 280. | * | 0.7000 | 0.7000 | 0.7000 | 0.8000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 | 2.0000 | 1.1000 | 0.7000 | 0.4000 | 1.9000 | 0.6000 | 0.3000 |
| 290. | * | 0.6000 | 0.8000 | 0.8000 | 0.8000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 | 1.8000 | 1.1000 | 0.9000 | 0.6000 | 1.9000 | 0.7000 | 0.4000 |
| 300. | * | 0.6000 | 0.9000 | 0.9000 | 0.9000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.5000 | 1.2000 | 1.1000 | 0.6000 | 1.6000 | 0.7000 | 0.4000 |
| 310. | * | 0.8000 | 1.0000 | 1.0000 | 1.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.3000 | 1.2000 | 1.0000 | 0.8000 | 1.6000 | 0.8000 | 0.5000 |
| 320. | * | 0.8000 | 1.1000 | 1.1000 | 1.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.4000 | 1.1000 | 1.0000 | 0.8000 | 1.4000 | 0.7000 | 0.5000 |
| 330. | * | 0.9000 | 1.2000 | 1.2000 | 1.3000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 1.4000 | 1.2000 | 1.1000 | 0.9000 | 1.4000 | 0.8000 | 0.5000 |

```
 340.  *  1.1000  1.5000  1.5000  1.6000  0.1000  0.1000  0.1000  0.1000  1.7000  1.3000  1.4000
1.4000  1.5000  1.0000  0.8000
 350.  *  1.4000  1.7000  1.7000  1.6000  0.6000  0.6000  0.5000  0.5000  2.0000  2.0000  1.7000
1.8000  2.1000  1.6000  1.4000
 360.  *  1.4000  1.6000  1.6000  1.5000  1.3000  1.2000  1.2000  1.0000  2.3000  1.8000  1.6000
1.8000  2.5000  1.9000  1.6000
 ------*-------------------------------------------------------------------------------------------
------------------------
 MAX   *  2.5000  1.7000  1.9000  2.1000  2.3000  2.0000  1.9000  1.9000  2.3000  2.0000  1.7000
1.8000  2.6000  2.0000  1.7000
 DEGR. *    100     160     170     170     100     130     150     150     360     350     350     350
10      10      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 1.5000 | 0.9000 | 0.0000 | 0.0000 | 0.8000 | 0.4000 | 0.1000 | 1.7000 | 0.8000 | 0.9000 | 1.9000 | 1.2000 | 1.1000 |
| 20. | * 1.4000 | 0.6000 | 0.0000 | 0.1000 | 0.9000 | 0.6000 | 0.3000 | 1.5000 | 0.9000 | 0.9000 | 2.0000 | 1.6000 | 1.5000 |
| 30. | * 1.3000 | 0.5000 | 0.1000 | 0.1000 | 0.9000 | 0.7000 | 0.4000 | 1.3000 | 0.9000 | 0.9000 | 2.0000 | 1.7000 | 1.5000 |
| 40. | * 0.9000 | 0.4000 | 0.1000 | 0.1000 | 0.8000 | 0.6000 | 0.4000 | 1.3000 | 0.9000 | 0.9000 | 1.8000 | 1.8000 | 1.6000 |
| 50. | * 0.9000 | 0.4000 | 0.1000 | 0.1000 | 0.7000 | 0.7000 | 0.5000 | 1.2000 | 0.9000 | 0.7000 | 1.9000 | 2.0000 | 1.9000 |
| 60. | * 0.8000 | 0.3000 | 0.2000 | 0.2000 | 0.7000 | 0.9000 | 0.7000 | 1.1000 | 0.7000 | 0.6000 | 1.7000 | 1.9000 | 2.0000 |
| 70. | * 0.9000 | 0.5000 | 0.4000 | 0.3000 | 1.0000 | 1.2000 | 1.2000 | 0.9000 | 0.5000 | 0.4000 | 1.5000 | 2.1000 | 2.1000 |
| 80. | * 0.9000 | 0.9000 | 0.6000 | 0.5000 | 1.3000 | 1.5000 | 1.6000 | 0.6000 | 0.2000 | 0.2000 | 0.9000 | 1.4000 | 1.9000 |
| 90. | * 0.9000 | 1.1000 | 1.0000 | 0.6000 | 1.9000 | 2.0000 | 1.9000 | 0.3000 | 0.1000 | 0.1000 | 0.6000 | 0.9000 | 1.2000 |
| 100. | * 0.9000 | 1.3000 | 1.1000 | 0.8000 | 1.7000 | 1.9000 | 1.9000 | 0.2000 | 0.0000 | 0.0000 | 0.5000 | 0.6000 | 0.7000 |
| 110. | * 0.9000 | 1.4000 | 1.2000 | 0.9000 | 1.6000 | 2.0000 | 1.7000 | 0.3000 | 0.0000 | 0.0000 | 0.5000 | 0.5000 | 0.5000 |
| 120. | * 1.0000 | 1.5000 | 1.1000 | 1.0000 | 1.6000 | 1.9000 | 1.6000 | 0.3000 | 0.0000 | 0.0000 | 0.5000 | 0.5000 | 0.4000 |
| 130. | * 1.1000 | 1.5000 | 1.1000 | 1.0000 | 1.8000 | 1.7000 | 1.4000 | 0.4000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.4000 |
| 140. | * 1.0000 | 1.6000 | 1.0000 | 1.0000 | 1.8000 | 1.7000 | 1.3000 | 0.6000 | 0.0000 | 0.0000 | 0.7000 | 0.4000 | 0.2000 |
| 150. | * 0.8000 | 1.8000 | 0.9000 | 0.9000 | 1.8000 | 1.3000 | 1.0000 | 1.0000 | 0.0000 | 0.0000 | 0.4000 | 0.3000 | 0.0000 |
| 160. | * 0.6000 | 2.2000 | 1.1000 | 1.0000 | 1.5000 | 0.9000 | 1.0000 | 1.2000 | 0.2000 | 0.0000 | 0.2000 | 0.0000 | 0.0000 |
| 170. | * 0.3000 | 2.5000 | 1.6000 | 1.1000 | 1.2000 | 0.9000 | 1.0000 | 1.5000 | 0.5000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.1000 | 2.2000 | 2.0000 | 1.4000 | 1.1000 | 0.9000 | 1.0000 | 1.3000 | 1.0000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 1.9000 | 2.0000 | 1.5000 | 1.1000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.6000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 1.5000 | 2.0000 | 1.6000 | 1.0000 | 1.1000 | 1.1000 | 0.8000 | 0.9000 | 0.6000 | 0.0000 | 0.0000 | 0.1000 |
| 210. | * 0.0000 | 1.6000 | 1.8000 | 1.7000 | 1.1000 | 1.1000 | 1.1000 | 0.5000 | 0.9000 | 0.6000 | 0.0000 | 0.0000 | 0.1000 |
| 220. | * 0.0000 | 1.7000 | 1.9000 | 1.7000 | 1.0000 | 1.2000 | 1.2000 | 0.5000 | 0.8000 | 0.6000 | 0.0000 | 0.0000 | 0.1000 |
| 230. | * 0.0000 | 2.1000 | 2.1000 | 1.7000 | 1.1000 | 1.3000 | 1.4000 | 0.4000 | 0.8000 | 0.6000 | 0.0000 | 0.0000 | 0.1000 |
| 240. | * 0.0000 | 2.1000 | 2.4000 | 1.9000 | 1.3000 | 1.5000 | 1.6000 | 0.5000 | 0.7000 | 0.7000 | 0.0000 | 0.1000 | 0.3000 |
| 250. | * 0.0000 | 1.9000 | 2.3000 | 2.3000 | 1.2000 | 1.6000 | 1.5000 | 0.8000 | 1.1000 | 1.1000 | 0.1000 | 0.2000 | 0.7000 |
| 260. | * 0.0000 | 1.5000 | 1.9000 | 1.8000 | 0.8000 | 1.3000 | 1.3000 | 1.3000 | 1.5000 | 1.6000 | 0.5000 | 0.8000 | 1.2000 |
| 270. | * 0.0000 | 0.9000 | 1.4000 | 1.3000 | 0.4000 | 0.8000 | 0.8000 | 1.7000 | 1.8000 | 1.9000 | 1.0000 | 1.2000 | 1.6000 |
| 280. | * 0.0000 | 0.7000 | 1.0000 | 0.9000 | 0.1000 | 0.4000 | 0.4000 | 1.7000 | 2.0000 | 1.8000 | 1.1000 | 1.4000 | 1.7000 |
| 290. | * 0.2000 | 0.6000 | 0.9000 | 0.7000 | 0.0000 | 0.2000 | 0.2000 | 1.4000 | 1.9000 | 1.7000 | 1.0000 | 1.3000 | 1.6000 |
| 300. | * 0.2000 | 0.7000 | 0.9000 | 0.7000 | 0.0000 | 0.1000 | 0.1000 | 1.5000 | 1.7000 | 1.7000 | 1.1000 | 1.2000 | 1.4000 |
| 310. | * 0.2000 | 0.7000 | 1.0000 | 0.7000 | 0.0000 | 0.1000 | 0.1000 | 1.5000 | 1.7000 | 1.6000 | 1.0000 | 1.0000 | 1.3000 |
| 320. | * 0.2000 | 0.8000 | 1.1000 | 0.7000 | 0.0000 | 0.1000 | 0.1000 | 1.8000 | 1.8000 | 1.5000 | 1.1000 | 1.0000 | 1.2000 |
| 330. | * 0.3000 | 1.1000 | 1.0000 | 0.6000 | 0.0000 | 0.1000 | 0.1000 | 2.1000 | 1.8000 | 1.5000 | 1.2000 | 0.9000 | 1.1000 |

```
 340.  *  0.6000  1.3000  1.0000  0.3000  0.0000  0.0000  0.1000  2.2000  1.8000  1.2000  1.2000
0.9000  1.1000
 350.  *  1.0000  1.4000  0.5000  0.1000  0.1000  0.1000  0.1000  2.5000  1.4000  1.0000  1.3000
1.0000  1.2000
 360.  *  1.5000  1.2000  0.2000  0.0000  0.4000  0.1000  0.1000  2.0000  0.9000  0.9000  1.6000
1.2000  1.2000
 ------*-------------------------------------------------------------------------------------------------
---------
 MAX   *  1.5000  2.5000  2.4000  2.3000  1.9000  2.0000  1.9000  2.5000  2.0000  1.9000  2.0000
2.1000  2.1000
 DEGR. *     10     170     240     250      90      90      90     350     280     270      20      70
70

 THE HIGHEST CONCENTRATION OF   2.6000 UG/M**3 OCCURRED AT RECEPTOR    13.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 SB 2035 Build PM pm10

DATE : 3/ 1/18
TIME : 11:25:34

The MODE flag has been set for calculating concentrations for POLLUTANT: PM-10

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | X1 | Y1 | X2 | Y2 | * | | | | | | | | | |
| 1. N Leg App - FreeFlow | * | 0.0 | 0.0 | -110.0 | 990.0 | * | 996. | 354. | AG | 267. | 0.1 | 0.0 | 43.7 | | |
| 2. N Leg App - Queue | * | -7.1 | 63.9 | -110.8 | 996.9 | * | 939. | 354. | AG | 0. | 100.0 | 0.0 | 24.0 | 2.51 | 47.7 |
| 3. S Leg Dep - FreeFlow | * | 0.0 | 0.0 | 250.0 | -970.0 | * | 1002. | 166. | AG | 831. | 0.1 | 0.0 | 43.7 | | |
| 4. E Leg App - FreeFlow | * | 0.0 | 30.0 | 440.0 | 100.0 | * | 446. | 81. | AG | 1706. | 0.1 | 0.0 | 67.7 | | |
| 5. E Leg App - Queue | * | 25.5 | 34.1 | 94.5 | 45.1 | * | 70. | 81. | AG | 0. | 100.0 | 0.0 | 48.0 | 0.37 | 3.5 |
| 6. E Leg Dep - FreeFlow | * | 10.0 | -30.0 | 450.0 | 60.0 | * | 449. | 78. | AG | 1279. | 0.1 | 0.0 | 55.7 | | |
| 7. W Leg App - FreeFlow | * | 10.0 | -30.0 | -900.0 | -160.0 | * | 919. | 262. | AG | 1428. | 0.1 | 0.0 | 55.7 | | |
| 8. W Leg App - Queue | * | -7.7 | -32.5 | -162.2 | -54.6 | * | 156. | 262. | AG | 0. | 100.0 | 0.0 | 36.0 | 0.64 | 7.9 |
| 9. W Leg Dep - FreeFlow | * | 0.0 | 30.0 | -900.0 | -130.0 | * | 914. | 260. | AG | 1291. | 0.0 | 0.0 | 67.7 | | |
| 10. I93 NB N Leg - FF | * | 170.0 | 30.0 | 20.0 | 1010.0 | * | 991. | 351. | BR | 4380. | 0.0 | 22.0 | 62.0 | | |
| 11. I93 NB S Leg - FF | * | 170.0 | 30.0 | 380.0 | -940.0 | * | 992. | 168. | BR | 4380. | 0.0 | 22.0 | 62.0 | | |
| 12. I93 SB N Leg - FF | * | 90.0 | 20.0 | -70.0 | 1010.0 | * | 1003. | 351. | BR | 4000. | 0.0 | 22.0 | 62.0 | | |
| 13. I93 SB S Leg - FF | * | 90.0 | 20.0 | 310.0 | -970.0 | * | 1014. | 167. | BR | 4000. | 0.0 | 22.0 | 62.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 112 | 2.0 | 267 | 1600 | 0.04 | 2 3 |
| 5. E Leg App - Queue | * | 120 | 30 | 2.0 | 1706 | 1600 | 0.04 | 2 3 |
| 8. W Leg App - Queue | * | 120 | 60 | 2.0 | 1428 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 20.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 0.0 | 160.0 | 5.9 |
| 3. N Leg, E Side - 50 m | -10.0 | 240.0 | 5.9 |
| 4. N Leg, E Side-Midblk | -40.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -40.0 | 50.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -50.0 | 150.0 | 5.9 |
| 7. N Leg, W Side - 50 m | -60.0 | 230.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -90.0 | 490.0 | 5.9 |
| 9. S Leg, E Side-Corner | 50.0 | -60.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 60.0 | -140.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 80.0 | -220.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 140.0 | -480.0 | 5.9 |
| 13. S Leg, W Side-Corner | -20.0 | -70.0 | 5.9 |
| 14. S Leg, W Side - 25 m | 10.0 | -150.0 | 5.9 |
| 15. S Leg, W Side - 50 m | 30.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | 90.0 | -500.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 130.0 | 90.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 230.0 | 100.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 339.7 | 115.6 | 5.9 |
| 20. W Leg, N Side - 25 m | -120.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -240.0 | 10.0 | 5.9 |
| 22. W Leg, N Side-Midblk | -460.0 | -30.0 | 5.9 |
| 23. E Leg, S Side - 25 m | 160.0 | -40.0 | 5.9 |
| 24. E Leg, S Side - 50 m | 260.0 | -20.0 | 5.9 |
| 25. E Leg, S Side-Midblk | 359.2 | 7.3 | 5.9 |
| 26. W Leg, S Side - 25 m | -120.0 | -100.0 | 5.9 |
| 27. W Leg, S Side - 50 m | -210.0 | -100.0 | 5.9 |
| 28. W Leg, S Side-Midblk | -440.0 | -120.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * | CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * | 4.900 | 5.000 | 5.000 | 4.900 | 4.800 | 4.700 | 4.600 | 4.100 | 9.500 | 7.800 | 6.900 | 6.800 | 11.700 | 9.100 | 8.300 |
| 20. | * | 4.300 | 4.200 | 4.300 | 4.300 | 4.900 | 4.800 | 4.700 | 4.400 | 8.900 | 6.700 | 6.100 | 5.400 | 11.700 | 8.600 | 7.600 |
| 30. | * | 4.100 | 3.500 | 3.600 | 3.600 | 4.500 | 4.300 | 4.300 | 4.300 | 8.600 | 6.300 | 5.500 | 4.400 | 11.300 | 7.900 | 7.100 |
| 40. | * | 3.700 | 3.100 | 3.200 | 3.200 | 4.000 | 4.100 | 4.100 | 4.100 | 8.400 | 5.800 | 4.900 | 3.500 | 11.300 | 7.600 | 6.400 |
| 50. | * | 3.700 | 2.800 | 2.800 | 2.800 | 4.200 | 3.600 | 3.700 | 3.700 | 8.500 | 5.300 | 3.800 | 3.000 | 11.100 | 7.200 | 5.700 |
| 60. | * | 4.300 | 2.600 | 2.600 | 2.500 | 4.900 | 3.600 | 3.600 | 3.700 | 8.200 | 4.200 | 3.000 | 2.700 | 11.000 | 6.400 | 4.900 |
| 70. | * | 6.100 | 2.400 | 2.400 | 2.400 | 6.900 | 3.500 | 3.500 | 3.500 | 7.100 | 3.200 | 2.500 | 2.500 | 9.900 | 5.400 | 4.500 |
| 80. | * | 8.800 | 2.600 | 2.400 | 2.300 | 9.000 | 3.900 | 3.500 | 3.600 | 5.000 | 2.700 | 2.400 | 2.500 | 7.500 | 4.700 | 4.300 |
| 90. | * | 10.400 | 3.300 | 2.500 | 2.300 | 10.300 | 4.500 | 3.700 | 3.600 | 3.300 | 2.400 | 2.400 | 2.500 | 5.300 | 4.300 | 4.200 |
| 100. | * | 10.800 | 4.300 | 3.100 | 2.500 | 10.400 | 5.700 | 4.200 | 3.500 | 2.900 | 2.600 | 2.600 | 2.800 | 4.400 | 4.400 | 4.300 |
| 110. | * | 10.400 | 5.300 | 4.000 | 2.800 | 9.500 | 6.400 | 5.100 | 3.800 | 2.900 | 2.900 | 3.000 | 3.200 | 4.400 | 4.700 | 4.600 |
| 120. | * | 10.100 | 5.700 | 4.700 | 3.400 | 9.300 | 6.800 | 5.800 | 4.200 | 3.200 | 3.200 | 3.300 | 3.600 | 4.700 | 5.100 | 5.000 |
| 130. | * | 9.700 | 6.200 | 5.400 | 4.100 | 9.200 | 7.100 | 6.300 | 5.200 | 3.500 | 3.700 | 3.700 | 4.000 | 5.100 | 5.700 | 5.400 |
| 140. | * | 9.900 | 6.800 | 6.000 | 5.200 | 9.600 | 7.500 | 6.800 | 5.800 | 4.200 | 4.400 | 4.400 | 4.800 | 5.400 | 6.200 | 6.000 |
| 150. | * | 10.700 | 7.600 | 7.200 | 6.400 | 10.200 | 7.800 | 7.200 | 6.500 | 4.900 | 5.300 | 5.300 | 5.700 | 5.400 | 6.400 | 5.900 |
| 160. | * | 10.700 | 8.200 | 7.700 | 7.700 | 9.300 | 7.300 | 6.600 | 6.300 | 5.200 | 5.800 | 5.800 | 6.200 | 4.100 | 5.100 | 4.500 |
| 170. | * | 9.900 | 7.600 | 7.200 | 7.300 | 7.700 | 5.500 | 5.100 | 4.700 | 4.600 | 5.600 | 5.600 | 5.800 | 2.100 | 2.800 | 2.300 |
| 180. | * | 9.000 | 6.500 | 6.100 | 5.800 | 5.900 | 3.700 | 3.200 | 2.400 | 3.700 | 4.600 | 4.600 | 4.800 | 0.600 | 1.000 | 0.800 |
| 190. | * | 8.300 | 5.600 | 5.100 | 4.500 | 5.400 | 2.900 | 2.200 | 1.400 | 3.000 | 3.600 | 3.700 | 4.000 | 0.100 | 0.300 | 0.200 |
| 200. | * | 8.400 | 5.100 | 4.500 | 3.800 | 5.400 | 2.700 | 2.100 | 1.200 | 2.500 | 3.100 | 3.100 | 3.400 | 0.000 | 0.100 | 0.000 |
| 210. | * | 8.200 | 4.900 | 4.400 | 3.500 | 5.600 | 2.900 | 2.000 | 1.200 | 2.300 | 2.700 | 2.800 | 2.700 | 0.100 | 0.100 | 0.000 |
| 220. | * | 8.200 | 4.800 | 4.200 | 3.100 | 6.000 | 2.900 | 2.200 | 1.100 | 2.100 | 2.500 | 2.500 | 2.600 | 0.200 | 0.000 | 0.000 |
| 230. | * | 8.600 | 4.800 | 4.000 | 2.600 | 6.600 | 3.000 | 2.200 | 0.800 | 2.100 | 2.200 | 2.300 | 2.400 | 0.200 | 0.000 | 0.000 |
| 240. | * | 9.100 | 4.500 | 3.400 | 1.900 | 7.300 | 2.900 | 1.800 | 0.300 | 2.400 | 2.200 | 2.200 | 2.300 | 0.700 | 0.000 | 0.000 |
| 250. | * | 9.100 | 3.700 | 2.600 | 1.600 | 7.300 | 2.100 | 1.000 | 0.000 | 4.200 | 2.500 | 2.300 | 2.200 | 2.300 | 0.200 | 0.000 |
| 260. | * | 7.700 | 2.500 | 1.900 | 1.700 | 5.800 | 0.900 | 0.300 | 0.000 | 7.400 | 3.500 | 2.800 | 2.300 | 5.700 | 1.000 | 0.300 |
| 270. | * | 4.900 | 1.800 | 1.600 | 1.700 | 3.100 | 0.200 | 0.000 | 0.000 | 10.000 | 4.800 | 3.400 | 2.400 | 8.700 | 2.300 | 0.900 |
| 280. | * | 2.700 | 1.600 | 1.600 | 1.600 | 1.300 | 0.000 | 0.000 | 0.000 | 10.300 | 5.800 | 4.200 | 2.800 | 9.300 | 3.400 | 1.900 |
| 290. | * | 1.900 | 1.600 | 1.700 | 1.700 | 0.600 | 0.000 | 0.000 | 0.000 | 9.100 | 6.100 | 5.000 | 3.300 | 8.400 | 3.600 | 2.300 |
| 300. | * | 1.500 | 1.800 | 1.800 | 1.800 | 0.400 | 0.000 | 0.000 | 0.000 | 8.400 | 6.300 | 5.200 | 3.900 | 7.600 | 3.600 | 2.200 |
| 310. | * | 1.600 | 2.000 | 2.000 | 2.000 | 0.300 | 0.000 | 0.000 | 0.000 | 7.500 | 6.400 | 5.400 | 4.600 | 7.000 | 3.500 | 2.300 |
| 320. | * | 1.900 | 2.300 | 2.300 | 2.400 | 0.300 | 0.000 | 0.000 | 0.000 | 6.800 | 6.300 | 5.700 | 5.000 | 6.500 | 3.400 | 2.300 |
| 330. | * | 2.300 | 2.700 | 2.700 | 2.800 | 0.300 | 0.100 | 0.100 | 0.000 | 6.700 | 6.400 | 6.200 | 6.000 | 6.300 | 3.500 | 2.500 |

```
 340.  *   3.200   3.600   3.700   3.600   0.500   0.400   0.400   0.400   7.200   7.000   6.700
7.400   6.900   4.800   3.700
 350.  *   4.200   4.700   4.700   4.500   1.800   1.900   1.700   1.200   8.400   7.800   7.400
8.600   8.500   6.800   6.100
 360.  *   4.900   5.300   5.300   5.000   3.700   3.700   3.300   2.700   9.400   8.100   7.600
8.100  10.500   8.900   7.800
 ------*-------------------------------------------------------------------------------------------
------------------------
 MAX   *  10.800   8.200   7.700   7.700  10.400   7.800   7.200   6.500  10.300   8.100   7.600
8.600  11.700   9.100   8.300
 DEGR. *    100     160     160     160     100     150     150     150     280     360     360     350
10      10      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 7.000 | 3.700 | 0.200 | 0.200 | 2.400 | 1.400 | 0.400 | 8.000 | 4.600 | 4.800 | 7.600 | 6.900 | 6.600 |
| 20. | * 6.400 | 2.700 | 0.300 | 0.300 | 2.800 | 2.200 | 1.100 | 7.000 | 4.800 | 4.900 | 8.100 | 7.800 | 7.500 |
| 30. | * 5.600 | 2.100 | 0.400 | 0.400 | 2.900 | 2.400 | 1.600 | 6.500 | 4.900 | 5.000 | 8.500 | 8.300 | 8.400 |
| 40. | * 4.700 | 1.700 | 0.400 | 0.500 | 2.700 | 2.400 | 1.800 | 6.400 | 5.100 | 4.700 | 8.800 | 8.800 | 9.300 |
| 50. | * 4.300 | 1.500 | 0.600 | 0.600 | 2.600 | 2.600 | 2.100 | 6.300 | 4.900 | 4.000 | 9.000 | 9.700 | 10.200 |
| 60. | * 4.000 | 1.600 | 0.900 | 0.900 | 3.000 | 3.300 | 3.000 | 5.900 | 4.100 | 3.000 | 9.100 | 10.400 | 11.300 |
| 70. | * 4.100 | 2.300 | 1.900 | 1.600 | 3.700 | 5.100 | 5.000 | 4.400 | 2.700 | 2.100 | 7.400 | 9.900 | 12.500 |
| 80. | * 4.200 | 4.100 | 3.700 | 2.700 | 5.700 | 7.600 | 7.500 | 2.500 | 1.300 | 1.200 | 5.200 | 7.200 | 11.000 |
| 90. | * 4.000 | 6.000 | 5.200 | 3.500 | 7.500 | 8.700 | 9.400 | 1.400 | 0.400 | 0.500 | 3.400 | 4.200 | 7.300 |
| 100. | * 4.200 | 7.200 | 6.200 | 4.200 | 7.900 | 9.000 | 9.300 | 1.000 | 0.100 | 0.200 | 2.600 | 2.500 | 3.900 |
| 110. | * 4.400 | 7.400 | 6.400 | 5.000 | 7.700 | 8.900 | 8.700 | 1.100 | 0.000 | 0.200 | 2.500 | 2.300 | 2.600 |
| 120. | * 4.700 | 7.300 | 6.200 | 5.500 | 7.700 | 8.300 | 7.800 | 1.300 | 0.000 | 0.100 | 2.800 | 2.200 | 2.200 |
| 130. | * 5.000 | 7.300 | 5.700 | 5.500 | 8.000 | 8.000 | 7.200 | 1.800 | 0.000 | 0.100 | 2.800 | 2.300 | 1.900 |
| 140. | * 5.100 | 7.500 | 5.300 | 5.400 | 8.200 | 7.400 | 6.300 | 2.500 | 0.000 | 0.000 | 2.800 | 2.000 | 1.200 |
| 150. | * 4.600 | 8.800 | 5.100 | 5.200 | 7.700 | 6.500 | 5.600 | 3.800 | 0.100 | 0.000 | 2.200 | 1.300 | 0.500 |
| 160. | * 3.000 | 10.300 | 6.000 | 5.400 | 6.600 | 5.600 | 5.200 | 5.400 | 0.700 | 0.100 | 1.100 | 0.500 | 0.100 |
| 170. | * 1.400 | 11.400 | 8.000 | 6.200 | 5.500 | 5.200 | 5.200 | 6.200 | 2.200 | 0.600 | 0.300 | 0.000 | 0.000 |
| 180. | * 0.400 | 10.300 | 9.400 | 7.000 | 4.800 | 5.100 | 5.200 | 5.500 | 3.900 | 1.700 | 0.000 | 0.000 | 0.000 |
| 190. | * 0.100 | 8.800 | 9.600 | 7.900 | 4.600 | 5.100 | 5.400 | 4.200 | 4.400 | 2.400 | 0.000 | 0.000 | 0.200 |
| 200. | * 0.000 | 8.400 | 9.400 | 8.300 | 4.600 | 5.200 | 5.500 | 3.200 | 4.100 | 2.900 | 0.000 | 0.000 | 0.400 |
| 210. | * 0.000 | 8.400 | 9.500 | 8.600 | 4.900 | 5.500 | 5.700 | 2.800 | 3.800 | 2.800 | 0.000 | 0.000 | 0.600 |
| 220. | * 0.000 | 8.700 | 9.800 | 8.900 | 5.200 | 6.100 | 6.400 | 2.300 | 3.400 | 2.700 | 0.000 | 0.100 | 0.700 |
| 230. | * 0.000 | 9.200 | 10.400 | 9.800 | 5.700 | 6.900 | 7.100 | 2.300 | 3.300 | 2.500 | 0.000 | 0.100 | 1.000 |
| 240. | * 0.000 | 9.600 | 11.400 | 10.600 | 6.200 | 7.500 | 7.600 | 2.500 | 3.400 | 3.000 | 0.200 | 0.500 | 1.800 |
| 250. | * 0.000 | 9.300 | 11.500 | 11.200 | 5.800 | 7.500 | 7.200 | 4.100 | 5.000 | 4.900 | 1.000 | 1.800 | 4.100 |
| 260. | * 0.000 | 6.800 | 9.800 | 9.800 | 3.800 | 6.100 | 5.700 | 6.800 | 7.500 | 8.000 | 3.200 | 4.600 | 7.600 |
| 270. | * 0.000 | 3.900 | 6.300 | 6.200 | 1.600 | 3.500 | 3.400 | 8.800 | 9.500 | 9.700 | 5.500 | 7.500 | 9.900 |
| 280. | * 0.300 | 2.500 | 4.200 | 3.800 | 0.500 | 1.600 | 1.700 | 8.600 | 9.300 | 9.400 | 6.600 | 8.400 | 10.200 |
| 290. | * 0.700 | 2.200 | 3.500 | 3.000 | 0.200 | 0.800 | 0.900 | 7.700 | 9.100 | 8.700 | 6.300 | 7.600 | 9.300 |
| 300. | * 1.100 | 2.300 | 3.800 | 2.900 | 0.100 | 0.500 | 0.600 | 7.400 | 8.400 | 8.100 | 6.000 | 6.900 | 8.300 |
| 310. | * 1.300 | 2.700 | 4.000 | 3.000 | 0.100 | 0.400 | 0.500 | 7.500 | 8.500 | 7.900 | 5.600 | 6.300 | 7.400 |
| 320. | * 1.300 | 3.100 | 4.300 | 3.000 | 0.000 | 0.400 | 0.400 | 7.700 | 8.600 | 7.800 | 5.300 | 5.900 | 6.800 |
| 330. | * 1.400 | 3.900 | 4.600 | 2.500 | 0.000 | 0.300 | 0.300 | 8.700 | 8.700 | 7.300 | 5.200 | 5.600 | 6.400 |

```
 340.  *   2.900   5.000   3.900   1.400   0.000   0.200   0.200  10.000   8.200   6.600   5.100
5.500   6.400
 350.  *   5.100   5.700   2.300   0.500   0.500   0.300   0.300  10.700   6.700   5.600   5.800
5.800   6.700
 360.  *   7.300   5.000   0.800   0.100   1.400   0.700   0.200   9.600   5.200   5.000   6.600
6.200   6.500
 ------*-------------------------------------------------------------------------------------------
---------
 MAX   *   7.300  11.400  11.500  11.200   8.200   9.000   9.400  10.700   9.500   9.700   9.100
10.400  12.500
 DEGR. *    360     170     250     250     140     100      90     350     270     270      60      60
70

 THE HIGHEST CONCENTRATION OF   12.500 UG/M**3 OCCURRED AT RECEPTOR    28.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 13 SPUI 2035 Build AM pm2.5

DATE : 3/ 7/18
TIME : 8:53:11

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) X1 | Y1 | X2 | Y2 | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. N Leg App - FreeFlow | * | -81.0 | -29.0 | -423.0 | 910.0 | * | 999. | 340. | AG | 385. | 0.0 | 0.0 | 41.7 | | |
| 2. N Leg App - Queue | * | -127.2 | 98.0 | -394.2 | 830.9 | * | 780. | 340. | AG | 0. | 100.0 | 0.0 | 22.0 | 1.50 | 39.6 |
| 3. N Leg Dep - FreeFlow | * | 81.0 | 29.0 | -261.0 | 969.0 | * | 1000. | 340. | AG | 87. | 0.0 | 0.0 | 41.7 | | |
| 4. S Leg App - FreeFlow | * | 81.0 | 29.0 | 423.0 | -910.0 | * | 999. | 160. | AG | 359. | 0.0 | 0.0 | 41.7 | | |
| 5. S Leg App - Queue | * | 127.2 | -98.0 | 346.9 | -701.1 | * | 642. | 160. | AG | 0. | 100.0 | 0.0 | 22.0 | 1.40 | 32.6 |
| 6. S Leg Dep - FreeFlow | * | -81.0 | -29.0 | 261.0 | -969.0 | * | 1000. | 160. | AG | 319. | 0.0 | 0.0 | 41.7 | | |
| 7. E Leg App - FreeFlow | * | 0.0 | 20.0 | 982.0 | -189.0 | * | 1004. | 102. | AG | 907. | 0.0 | 0.0 | 52.7 | | |
| 8. E Leg App - Queue | * | 196.8 | -21.8 | 258.2 | -34.9 | * | 63. | 102. | AG | 0. | 100.0 | 0.0 | 33.0 | 0.34 | 3.2 |
| 9. E Leg Dep - FreeFlow | * | 0.0 | -20.0 | 974.0 | -227.0 | * | 996. | 102. | AG | 947. | 0.0 | 0.0 | 52.7 | | |
| 10. W Leg App - FreeFlow | * | 0.0 | -20.0 | -612.0 | 110.0 | * | 626. | 282. | AG | 509. | 0.0 | 0.0 | 52.7 | | |
| 11. W Leg App - Queue | * | -196.8 | 21.8 | -231.2 | 29.1 | * | 35. | 282. | AG | 0. | 100.0 | 0.0 | 33.0 | 0.19 | 1.8 |
| 12. W Leg Dep - FreeFlow | * | 0.0 | 20.0 | -604.0 | 148.0 | * | 617. | 282. | AG | 1522. | 0.0 | 0.0 | 52.7 | | |
| 13. N Leg SLIP- FreeFlow | * | 121.0 | 29.0 | -221.0 | 969.0 | * | 1000. | 340. | AG | 280. | 0.0 | 0.0 | 36.0 | | |
| 14. SELeg SLIP-FreeFlow | * | 210.0 | -300.0 | 400.0 | -110.0 | * | 269. | 45. | AG | 715. | 0.0 | 0.0 | 32.0 | | |
| 15. SWLeg SLIP-FreeFlow | * | -140.0 | -29.0 | 240.0 | -969.0 | * | 1014. | 158. | AG | 165. | 0.0 | 0.0 | 32.0 | | |
| 16. i93 NB | * | -306.8 | 951.8 | 377.2 | -926.1 | * | 1999. | 160. | BR | 3863. | 0.0 | 22.0 | 56.0 | | |
| 17. I 93 SB | * | -377.2 | 926.1 | 306.8 | -951.8 | * | 1999. | 160. | BR | 3304. | 0.0 | 22.0 | 56.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 100 | 82 | 8.0 | 385 | 1600 | 0.04 | 2 3 |
| 5. S Leg App - Queue | * | 100 | 82 | 8.0 | 359 | 1600 | 0.04 | 2 3 |
| 8. E Leg App - Queue | * | 100 | 38 | 4.0 | 907 | 1600 | 0.04 | 2 3 |
| 11. W Leg App - Queue | * | 100 | 38 | 4.0 | 509 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 104.9 | 24.7 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.2 | 92.4 | 5.9 |
| 3. N Leg, E Side - 50 m | 52.2 | 169.5 | 5.9 |
| 4. N Leg, E Side-Midblk | -62.7 | 485.2 | 5.9 |
| 5. N Leg, W Side-Corner | -142.0 | 77.2 | 5.9 |
| 6. N Leg, W Side - 25 m | -166.6 | 144.9 | 5.9 |
| 7. N Leg, W Side - 50 m | -194.7 | 222.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -309.6 | 537.7 | 5.9 |
| 9. S Leg, E Side-Corner | 142.0 | -77.2 | 5.9 |
| 10. S Leg, E Side - 25 m | 166.6 | -144.9 | 5.9 |
| 11. S Leg, E Side - 50 m | 194.7 | -222.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 309.6 | -537.7 | 5.9 |
| 13. S Leg, W Side-Corner | -104.9 | -24.7 | 5.9 |
| 14. S Leg, W Side - 25 m | -80.2 | -92.4 | 5.9 |
| 15. S Leg, W Side - 50 m | -52.2 | -169.5 | 5.9 |
| 16. S Leg, W Side-Midblk | 62.7 | -485.2 | 5.9 |
| 17. E Leg, N Side - 25 m | 175.3 | 9.8 | 5.9 |
| 18. E Leg, N Side - 50 m | 255.5 | -7.3 | 5.9 |
| 19. E Leg, N Side-Midblk | 491.7 | -57.5 | 5.9 |
| 20. W Leg, N Side - 25 m | -212.4 | 92.2 | 5.9 |
| 21. W Leg, N Side - 50 m | -292.6 | 109.2 | 5.9 |
| 22. W Leg, N Side-Midblk | -528.8 | 159.4 | 5.9 |
| 23. E Leg, S Side - 25 m | 212.4 | -92.2 | 5.9 |
| 24. E Leg, S Side - 50 m | 292.6 | -109.2 | 5.9 |
| 25. E Leg, S Side-Midblk | 528.8 | -159.4 | 5.9 |
| 26. W Leg, S Side - 25 m | -175.3 | -9.8 | 5.9 |
| 27. W Leg, S Side - 50 m | -255.5 | 7.3 | 5.9 |
| 28. W Leg, S Side-Midblk | -491.7 | 57.5 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * | CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * | 0.2000 | 0.2000 | 0.2000 | 0.2000 | 1.7000 | 1.8000 | 1.8000 | 1.8000 | 0.8000 | 0.5000 | 0.4000 | 0.3000 | 1.7000 | 1.4000 | 1.1000 |
| 20. | * | 0.2000 | 0.2000 | 0.2000 | 0.2000 | 1.4000 | 1.6000 | 1.6000 | 1.6000 | 0.7000 | 0.5000 | 0.3000 | 0.2000 | 1.5000 | 1.2000 | 1.2000 |
| 30. | * | 0.1000 | 0.2000 | 0.2000 | 0.2000 | 1.2000 | 1.5000 | 1.5000 | 1.5000 | 0.7000 | 0.5000 | 0.2000 | 0.2000 | 1.4000 | 1.2000 | 1.0000 |
| 40. | * | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 1.1000 | 1.4000 | 1.4000 | 1.4000 | 0.8000 | 0.5000 | 0.3000 | 0.2000 | 1.4000 | 1.2000 | 1.0000 |
| 50. | * | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 1.0000 | 1.3000 | 1.3000 | 1.3000 | 0.9000 | 0.4000 | 0.4000 | 0.2000 | 1.3000 | 1.1000 | 0.9000 |
| 60. | * | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 1.0000 | 1.4000 | 1.4000 | 1.4000 | 1.0000 | 0.5000 | 0.4000 | 0.1000 | 1.6000 | 1.2000 | 1.1000 |
| 70. | * | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.8000 | 1.3000 | 1.3000 | 1.3000 | 1.0000 | 0.5000 | 0.5000 | 0.0000 | 1.5000 | 1.1000 | 1.2000 |
| 80. | * | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 1.0000 | 1.4000 | 1.4000 | 1.4000 | 1.2000 | 0.6000 | 0.5000 | 0.0000 | 1.7000 | 1.3000 | 1.2000 |
| 90. | * | 0.4000 | 0.1000 | 0.1000 | 0.1000 | 1.3000 | 1.4000 | 1.4000 | 1.4000 | 1.1000 | 0.5000 | 0.4000 | 0.0000 | 1.6000 | 1.3000 | 1.1000 |
| 100. | * | 0.9000 | 0.3000 | 0.1000 | 0.1000 | 1.9000 | 1.6000 | 1.5000 | 1.4000 | 1.0000 | 0.3000 | 0.2000 | 0.0000 | 1.6000 | 1.2000 | 1.2000 |
| 110. | * | 1.2000 | 0.5000 | 0.4000 | 0.2000 | 2.2000 | 1.9000 | 1.7000 | 1.5000 | 0.6000 | 0.1000 | 0.2000 | 0.0000 | 1.3000 | 1.2000 | 1.1000 |
| 120. | * | 1.3000 | 0.8000 | 0.5000 | 0.2000 | 2.4000 | 2.1000 | 1.9000 | 1.7000 | 0.3000 | 0.1000 | 0.2000 | 0.0000 | 1.3000 | 1.2000 | 1.2000 |
| 130. | * | 1.1000 | 0.8000 | 0.6000 | 0.4000 | 2.3000 | 2.2000 | 2.2000 | 2.0000 | 0.2000 | 0.1000 | 0.2000 | 0.0000 | 1.3000 | 1.2000 | 1.2000 |
| 140. | * | 1.2000 | 0.9000 | 0.5000 | 0.4000 | 2.5000 | 2.5000 | 2.4000 | 2.3000 | 0.4000 | 0.3000 | 0.4000 | 0.1000 | 1.3000 | 1.2000 | 1.2000 |
| 150. | * | 1.4000 | 0.9000 | 0.8000 | 0.7000 | 2.2000 | 2.1000 | 2.1000 | 2.1000 | 0.7000 | 0.7000 | 0.8000 | 0.3000 | 1.2000 | 1.2000 | 1.0000 |
| 160. | * | 1.8000 | 1.5000 | 1.3000 | 1.1000 | 1.6000 | 1.3000 | 1.4000 | 1.6000 | 1.5000 | 1.4000 | 1.4000 | 0.8000 | 0.7000 | 0.8000 | 0.7000 |
| 170. | * | 2.0000 | 1.6000 | 1.6000 | 1.3000 | 1.2000 | 0.7000 | 0.7000 | 0.7000 | 1.9000 | 1.9000 | 1.9000 | 1.3000 | 0.3000 | 0.3000 | 0.3000 |
| 180. | * | 2.1000 | 1.5000 | 1.5000 | 1.2000 | 0.8000 | 0.6000 | 0.4000 | 0.3000 | 1.9000 | 2.0000 | 2.1000 | 1.8000 | 0.1000 | 0.2000 | 0.2000 |
| 190. | * | 1.9000 | 1.3000 | 1.2000 | 1.1000 | 0.8000 | 0.5000 | 0.3000 | 0.1000 | 1.7000 | 1.8000 | 1.8000 | 1.7000 | 0.1000 | 0.1000 | 0.1000 |
| 200. | * | 1.6000 | 1.1000 | 1.0000 | 1.1000 | 0.8000 | 0.6000 | 0.3000 | 0.1000 | 1.4000 | 1.6000 | 1.6000 | 1.6000 | 0.1000 | 0.1000 | 0.1000 |
| 210. | * | 1.5000 | 0.9000 | 0.9000 | 1.0000 | 0.8000 | 0.6000 | 0.3000 | 0.1000 | 1.2000 | 1.5000 | 1.5000 | 1.5000 | 0.1000 | 0.1000 | 0.1000 |
| 220. | * | 1.4000 | 1.0000 | 0.8000 | 0.9000 | 0.9000 | 0.5000 | 0.3000 | 0.0000 | 1.0000 | 1.3000 | 1.3000 | 1.3000 | 0.1000 | 0.1000 | 0.1000 |
| 230. | * | 1.5000 | 0.9000 | 0.9000 | 0.8000 | 1.1000 | 0.5000 | 0.4000 | 0.0000 | 0.9000 | 1.3000 | 1.3000 | 1.3000 | 0.1000 | 0.1000 | 0.1000 |
| 240. | * | 1.5000 | 1.0000 | 0.9000 | 0.8000 | 1.2000 | 0.5000 | 0.4000 | 0.0000 | 0.8000 | 1.3000 | 1.3000 | 1.3000 | 0.1000 | 0.1000 | 0.1000 |
| 250. | * | 1.6000 | 1.0000 | 1.0000 | 0.7000 | 1.3000 | 0.5000 | 0.3000 | 0.0000 | 0.8000 | 1.3000 | 1.3000 | 1.3000 | 0.0000 | 0.1000 | 0.1000 |
| 260. | * | 1.6000 | 1.0000 | 0.9000 | 0.7000 | 1.3000 | 0.5000 | 0.2000 | 0.0000 | 0.8000 | 1.3000 | 1.3000 | 1.3000 | 0.1000 | 0.1000 | 0.1000 |
| 270. | * | 1.8000 | 1.2000 | 0.9000 | 0.8000 | 1.3000 | 0.3000 | 0.1000 | 0.0000 | 1.1000 | 1.3000 | 1.3000 | 1.3000 | 0.3000 | 0.1000 | 0.1000 |
| 280. | * | 1.6000 | 0.9000 | 0.9000 | 0.8000 | 1.1000 | 0.1000 | 0.0000 | 0.0000 | 1.4000 | 1.5000 | 1.3000 | 1.3000 | 0.5000 | 0.1000 | 0.1000 |
| 290. | * | 1.4000 | 1.0000 | 0.9000 | 0.9000 | 0.6000 | 0.0000 | 0.0000 | 0.0000 | 1.9000 | 1.7000 | 1.6000 | 1.5000 | 0.9000 | 0.4000 | 0.2000 |
| 300. | * | 1.2000 | 1.1000 | 1.1000 | 1.1000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 | 2.3000 | 2.0000 | 1.9000 | 1.6000 | 1.0000 | 0.5000 | 0.3000 |
| 310. | * | 1.3000 | 1.2000 | 1.2000 | 1.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 2.2000 | 2.4000 | 2.3000 | 1.9000 | 0.8000 | 0.5000 | 0.4000 |
| 320. | * | 1.4000 | 1.4000 | 1.3000 | 1.0000 | 0.3000 | 0.2000 | 0.2000 | 0.2000 | 2.3000 | 2.3000 | 2.4000 | 2.3000 | 1.0000 | 0.4000 | 0.4000 |
| 330. | * | 1.1000 | 1.0000 | 1.0000 | 0.7000 | 0.7000 | 0.6000 | 0.6000 | 0.4000 | 2.0000 | 1.9000 | 2.2000 | 2.2000 | 1.3000 | 0.9000 | 0.8000 |

```
 340.  *  0.7000  0.7000  0.7000  0.5000  1.4000  1.4000  1.2000  0.9000  1.5000  1.3000  1.5000
1.6000  1.8000  1.4000  1.2000
 350.  *  0.4000  0.4000  0.4000  0.4000  1.8000  1.8000  1.8000  1.5000  1.0000  0.7000  0.7000
1.0000  2.1000  1.7000  1.6000
 360.  *  0.2000  0.2000  0.2000  0.2000  1.9000  2.0000  2.0000  1.7000  0.7000  0.5000  0.3000
0.5000  1.9000  1.6000  1.6000
 ------*-------------------------------------------------------------------------------------------
-------------------------
 MAX   *  2.1000  1.6000  1.6000  1.3000  2.5000  2.5000  2.4000  2.3000  2.3000  2.4000  2.4000
2.3000  2.1000  1.7000  1.6000
 DEGR. *    180     170     170     170     140     140     140     140     300     310     320     320
350     350     350
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) * 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 1.2000 | 0.0000 | 0.0000 | 0.0000 | 1.0000 | 0.7000 | 0.2000 | 1.0000 | 0.8000 | 0.8000 | 1.6000 | 1.3000 | 0.9000 |
| 20. | * 1.2000 | 0.0000 | 0.0000 | 0.0000 | 1.0000 | 0.7000 | 0.3000 | 0.9000 | 0.7000 | 0.7000 | 1.5000 | 1.3000 | 0.9000 |
| 30. | * 1.3000 | 0.0000 | 0.0000 | 0.0000 | 0.9000 | 0.7000 | 0.3000 | 0.9000 | 0.7000 | 0.7000 | 1.3000 | 1.4000 | 0.9000 |
| 40. | * 1.3000 | 0.0000 | 0.0000 | 0.0000 | 0.8000 | 0.7000 | 0.3000 | 0.8000 | 0.7000 | 0.7000 | 1.2000 | 1.5000 | 1.0000 |
| 50. | * 1.1000 | 0.0000 | 0.0000 | 0.0000 | 0.9000 | 0.8000 | 0.4000 | 0.9000 | 0.8000 | 0.8000 | 1.3000 | 1.6000 | 1.1000 |
| 60. | * 1.2000 | 0.0000 | 0.0000 | 0.0000 | 0.9000 | 0.8000 | 0.4000 | 0.8000 | 0.8000 | 0.8000 | 1.3000 | 1.7000 | 1.1000 |
| 70. | * 1.0000 | 0.1000 | 0.1000 | 0.1000 | 0.8000 | 0.8000 | 0.4000 | 0.9000 | 0.9000 | 0.9000 | 1.3000 | 1.6000 | 1.1000 |
| 80. | * 1.0000 | 0.1000 | 0.1000 | 0.1000 | 0.9000 | 0.8000 | 0.5000 | 1.1000 | 1.2000 | 1.0000 | 1.4000 | 1.6000 | 1.2000 |
| 90. | * 0.9000 | 0.3000 | 0.3000 | 0.3000 | 1.2000 | 1.1000 | 0.8000 | 1.1000 | 1.2000 | 1.0000 | 1.4000 | 1.4000 | 1.3000 |
| 100. | * 1.0000 | 0.9000 | 0.8000 | 0.7000 | 1.5000 | 1.7000 | 1.4000 | 1.0000 | 1.0000 | 0.8000 | 1.3000 | 1.3000 | 1.0000 |
| 110. | * 1.0000 | 1.3000 | 1.1000 | 0.9000 | 2.1000 | 2.1000 | 1.7000 | 0.6000 | 0.7000 | 0.5000 | 1.1000 | 0.9000 | 0.8000 |
| 120. | * 1.1000 | 1.5000 | 1.2000 | 1.0000 | 2.1000 | 1.9000 | 1.7000 | 0.3000 | 0.4000 | 0.2000 | 1.0000 | 0.7000 | 0.4000 |
| 130. | * 1.0000 | 1.3000 | 1.0000 | 0.9000 | 2.1000 | 1.8000 | 1.5000 | 0.2000 | 0.3000 | 0.1000 | 0.9000 | 0.6000 | 0.3000 |
| 140. | * 0.9000 | 1.2000 | 1.0000 | 0.9000 | 1.9000 | 1.8000 | 1.3000 | 0.2000 | 0.3000 | 0.1000 | 0.9000 | 0.6000 | 0.2000 |
| 150. | * 0.9000 | 1.1000 | 1.0000 | 0.8000 | 1.7000 | 1.4000 | 1.0000 | 0.1000 | 0.2000 | 0.0000 | 0.7000 | 0.3000 | 0.0000 |
| 160. | * 0.5000 | 1.3000 | 1.0000 | 0.8000 | 1.2000 | 0.9000 | 0.8000 | 0.3000 | 0.2000 | 0.0000 | 0.4000 | 0.1000 | 0.0000 |
| 170. | * 0.3000 | 1.6000 | 1.3000 | 0.7000 | 0.9000 | 0.8000 | 0.8000 | 0.9000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.2000 | 1.7000 | 1.7000 | 0.7000 | 1.0000 | 0.8000 | 0.8000 | 1.1000 | 0.8000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.1000 | 1.8000 | 2.0000 | 1.1000 | 0.9000 | 0.8000 | 0.8000 | 1.0000 | 1.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.1000 | 1.5000 | 1.9000 | 1.0000 | 0.9000 | 0.8000 | 0.8000 | 0.9000 | 0.9000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.1000 | 1.4000 | 1.8000 | 1.1000 | 0.8000 | 0.8000 | 0.8000 | 0.9000 | 0.8000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.1000 | 1.3000 | 1.8000 | 1.1000 | 0.8000 | 0.8000 | 0.8000 | 0.9000 | 0.7000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.1000 | 1.4000 | 1.8000 | 1.3000 | 1.0000 | 1.0000 | 0.8000 | 0.9000 | 0.7000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.1000 | 1.4000 | 1.8000 | 1.3000 | 1.1000 | 1.1000 | 0.9000 | 0.9000 | 0.7000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.1000 | 1.5000 | 1.8000 | 1.3000 | 1.2000 | 1.2000 | 0.9000 | 0.9000 | 0.8000 | 0.5000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.1000 | 1.7000 | 1.8000 | 1.3000 | 1.3000 | 1.3000 | 0.7000 | 0.9000 | 0.7000 | 0.5000 | 0.1000 | 0.1000 | 0.1000 |
| 270. | * 0.1000 | 1.7000 | 1.8000 | 1.3000 | 1.2000 | 1.2000 | 0.6000 | 1.0000 | 1.0000 | 0.7000 | 0.1000 | 0.1000 | 0.1000 |
| 280. | * 0.1000 | 1.5000 | 1.5000 | 1.1000 | 1.1000 | 1.0000 | 0.5000 | 1.3000 | 1.5000 | 1.1000 | 0.6000 | 0.4000 | 0.2000 |
| 290. | * 0.1000 | 1.1000 | 1.0000 | 1.0000 | 0.6000 | 0.5000 | 0.3000 | 1.7000 | 1.6000 | 1.5000 | 0.9000 | 0.7000 | 0.4000 |
| 300. | * 0.1000 | 0.9000 | 0.9000 | 0.6000 | 0.3000 | 0.2000 | 0.1000 | 1.8000 | 1.8000 | 1.5000 | 1.1000 | 0.9000 | 0.5000 |
| 310. | * 0.2000 | 0.9000 | 0.8000 | 0.5000 | 0.1000 | 0.1000 | 0.1000 | 1.8000 | 1.7000 | 1.3000 | 1.0000 | 0.8000 | 0.6000 |
| 320. | * 0.3000 | 0.9000 | 0.8000 | 0.3000 | 0.1000 | 0.1000 | 0.1000 | 1.6000 | 1.6000 | 1.1000 | 1.0000 | 0.8000 | 0.7000 |
| 330. | * 0.5000 | 0.6000 | 0.4000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 1.5000 | 1.2000 | 0.9000 | 1.0000 | 0.8000 | 0.8000 |

```
 340.  *  1.0000  0.2000  0.1000  0.0000  0.4000  0.0000  0.0000  1.2000  0.9000  0.7000  1.2000
0.8000  0.7000
 350.  *  1.4000  0.0000  0.0000  0.0000  0.7000  0.3000  0.0000  0.8000  0.7000  0.7000  1.3000
0.9000  0.6000
 360.  *  1.4000  0.0000  0.0000  0.0000  0.9000  0.6000  0.0000  0.9000  0.7000  0.7000  1.5000
1.3000  0.6000
 ------*-------------------------------------------------------------------------------------------
---------
 MAX   *  1.4000  1.8000  2.0000  1.3000  2.1000  2.1000  1.7000  1.8000  1.8000  1.5000  1.6000
1.7000  1.3000
 DEGR. *    350     190     190     230     110     110     110     300     300     290      10      60
90

 THE HIGHEST CONCENTRATION OF   2.5000 UG/M**3 OCCURRED AT RECEPTOR     5.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 13 SPUI 2035 Build AM pm10

DATE : 3/ 7/18
TIME : 9: 5:33

The MODE flag has been set for calculating concentrations for POLLUTANT: PM-10

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | X1 | Y1 | X2 | Y2 | * | | | | | | | | | |
| 1. N Leg App - FreeFlow | * | -81.0 | -29.0 | -423.0 | 910.0 | * | 999. | 340. | AG | 385. | 0.1 | 0.0 | 41.7 | | |
| 2. N Leg App - Queue | * | -127.2 | 98.0 | -394.2 | 830.9 | * | 780. | 340. | AG | 0. | 100.0 | 0.0 | 22.0 | 1.50 | 39.6 |
| 3. N Leg Dep - FreeFlow | * | 81.0 | 29.0 | -261.0 | 969.0 | * | 1000. | 340. | AG | 87. | 0.1 | 0.0 | 41.7 | | |
| 4. S Leg App - FreeFlow | * | 81.0 | 29.0 | 423.0 | -910.0 | * | 999. | 160. | AG | 359. | 0.1 | 0.0 | 41.7 | | |
| 5. S Leg App - Queue | * | 127.2 | -98.0 | 346.9 | -701.1 | * | 642. | 160. | AG | 0. | 100.0 | 0.0 | 22.0 | 1.40 | 32.6 |
| 6. S Leg Dep - FreeFlow | * | -81.0 | -29.0 | 261.0 | -969.0 | * | 1000. | 160. | AG | 319. | 0.1 | 0.0 | 41.7 | | |
| 7. E Leg App - FreeFlow | * | 0.0 | 20.0 | 982.0 | -189.0 | * | 1004. | 102. | AG | 907. | 0.1 | 0.0 | 52.7 | | |
| 8. E Leg App - Queue | * | 196.8 | -21.8 | 258.2 | -34.9 | * | 63. | 102. | AG | 0. | 100.0 | 0.0 | 33.0 | 0.34 | 3.2 |
| 9. E Leg Dep - FreeFlow | * | 0.0 | -20.0 | 974.0 | -227.0 | * | 996. | 102. | AG | 947. | 0.1 | 0.0 | 52.7 | | |
| 10. W Leg App - FreeFlow | * | 0.0 | -20.0 | -612.0 | 110.0 | * | 626. | 282. | AG | 509. | 0.1 | 0.0 | 52.7 | | |
| 11. W Leg App - Queue | * | -196.8 | 21.8 | -231.2 | 29.1 | * | 35. | 282. | AG | 0. | 100.0 | 0.0 | 33.0 | 0.19 | 1.8 |
| 12. W Leg Dep - FreeFlow | * | 0.0 | 20.0 | -604.0 | 148.0 | * | 617. | 282. | AG | 1522. | 0.1 | 0.0 | 52.7 | | |
| 13. N Leg SLIP- FreeFlow | * | 121.0 | 29.0 | -221.0 | 969.0 | * | 1000. | 340. | AG | 280. | 0.1 | 0.0 | 36.0 | | |
| 14. SELeg SLIP-FreeFlow | * | 210.0 | -300.0 | 400.0 | -110.0 | * | 269. | 45. | AG | 715. | 0.1 | 0.0 | 32.0 | | |
| 15. SWLeg SLIP-FreeFlow | * | -140.0 | -29.0 | 240.0 | -969.0 | * | 1014. | 158. | AG | 165. | 0.1 | 0.0 | 32.0 | | |
| 16. i93 NB | * | -306.8 | 951.8 | 377.2 | -926.1 | * | 1999. | 160. | BR | 3863. | 0.0 | 22.0 | 56.0 | | |
| 17. I 93 SB | * | -377.2 | 926.1 | 306.8 | -951.8 | * | 1999. | 160. | BR | 3304. | 0.0 | 22.0 | 56.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 100 | 82 | 8.0 | 385 | 1600 | 0.05 | 2 3 |
| 5. S Leg App - Queue | * | 100 | 82 | 8.0 | 359 | 1600 | 0.05 | 2 3 |
| 8. E Leg App - Queue | * | 100 | 38 | 4.0 | 907 | 1600 | 0.05 | 2 3 |
| 11. W Leg App - Queue | * | 100 | 38 | 4.0 | 509 | 1600 | 0.05 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 104.9 | 24.7 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.2 | 92.4 | 5.9 |
| 3. N Leg, E Side - 50 m | 52.2 | 169.5 | 5.9 |
| 4. N Leg, E Side-Midblk | -62.7 | 485.2 | 5.9 |
| 5. N Leg, W Side-Corner | -142.0 | 77.2 | 5.9 |
| 6. N Leg, W Side - 25 m | -166.6 | 144.9 | 5.9 |
| 7. N Leg, W Side - 50 m | -194.7 | 222.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -309.6 | 537.7 | 5.9 |
| 9. S Leg, E Side-Corner | 142.0 | -77.2 | 5.9 |
| 10. S Leg, E Side - 25 m | 166.6 | -144.9 | 5.9 |
| 11. S Leg, E Side - 50 m | 194.7 | -222.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 309.6 | -537.7 | 5.9 |
| 13. S Leg, W Side-Corner | -104.9 | -24.7 | 5.9 |
| 14. S Leg, W Side - 25 m | -80.2 | -92.4 | 5.9 |
| 15. S Leg, W Side - 50 m | -52.2 | -169.5 | 5.9 |
| 16. S Leg, W Side-Midblk | 62.7 | -485.2 | 5.9 |
| 17. E Leg, N Side - 25 m | 175.3 | 9.8 | 5.9 |
| 18. E Leg, N Side - 50 m | 255.5 | -7.3 | 5.9 |
| 19. E Leg, N Side-Midblk | 491.7 | -57.5 | 5.9 |
| 20. W Leg, N Side - 25 m | -212.4 | 92.2 | 5.9 |
| 21. W Leg, N Side - 50 m | -292.6 | 109.2 | 5.9 |
| 22. W Leg, N Side-Midblk | -528.8 | 159.4 | 5.9 |
| 23. E Leg, S Side - 25 m | 212.4 | -92.2 | 5.9 |
| 24. E Leg, S Side - 50 m | 292.6 | -109.2 | 5.9 |
| 25. E Leg, S Side-Midblk | 528.8 | -159.4 | 5.9 |
| 26. W Leg, S Side - 25 m | -175.3 | -9.8 | 5.9 |
| 27. W Leg, S Side - 50 m | -255.5 | 7.3 | 5.9 |
| 28. W Leg, S Side-Midblk | -491.7 | 57.5 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * | CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * | 1.000 | 1.000 | 1.000 | 1.000 | 5.100 | 5.300 | 5.100 | 4.700 | 3.900 | 2.300 | 1.800 | 1.100 | 8.100 | 6.300 | 5.600 |
| 20. | * | 0.900 | 0.900 | 0.900 | 0.900 | 4.500 | 4.700 | 4.700 | 4.400 | 3.700 | 2.400 | 1.700 | 0.900 | 7.400 | 5.800 | 5.000 |
| 30. | * | 0.700 | 0.800 | 0.800 | 0.800 | 4.000 | 4.200 | 4.200 | 4.200 | 3.700 | 2.300 | 1.500 | 0.800 | 7.000 | 5.100 | 4.500 |
| 40. | * | 0.800 | 0.700 | 0.700 | 0.700 | 3.700 | 3.900 | 3.900 | 3.900 | 3.900 | 2.400 | 1.700 | 0.800 | 6.900 | 4.700 | 4.400 |
| 50. | * | 0.800 | 0.700 | 0.700 | 0.700 | 3.500 | 3.700 | 3.700 | 3.700 | 4.000 | 2.200 | 1.700 | 0.700 | 7.000 | 4.700 | 4.100 |
| 60. | * | 0.800 | 0.700 | 0.700 | 0.700 | 3.500 | 3.700 | 3.700 | 3.700 | 4.600 | 2.400 | 2.200 | 0.600 | 7.000 | 5.100 | 4.400 |
| 70. | * | 0.800 | 0.700 | 0.700 | 0.700 | 3.600 | 3.800 | 3.800 | 3.800 | 4.900 | 2.500 | 2.400 | 0.200 | 7.300 | 5.100 | 4.500 |
| 80. | * | 1.100 | 0.700 | 0.700 | 0.700 | 4.000 | 3.600 | 3.700 | 3.700 | 5.400 | 2.700 | 2.400 | 0.000 | 7.600 | 5.300 | 4.600 |
| 90. | * | 2.300 | 1.000 | 0.700 | 0.700 | 5.600 | 3.900 | 3.800 | 3.700 | 5.700 | 2.500 | 1.800 | 0.000 | 7.900 | 5.200 | 4.400 |
| 100. | * | 4.800 | 1.700 | 1.000 | 0.700 | 8.900 | 4.900 | 4.400 | 3.900 | 4.800 | 1.700 | 1.200 | 0.100 | 7.300 | 4.600 | 3.900 |
| 110. | * | 6.500 | 2.900 | 1.900 | 0.900 | 11.200 | 6.400 | 5.300 | 4.400 | 2.900 | 0.800 | 0.800 | 0.100 | 5.900 | 4.100 | 3.700 |
| 120. | * | 6.700 | 3.800 | 2.500 | 1.200 | 11.700 | 7.700 | 6.500 | 5.200 | 1.300 | 0.500 | 0.800 | 0.100 | 4.900 | 4.000 | 3.900 |
| 130. | * | 6.000 | 3.900 | 2.900 | 1.700 | 11.200 | 8.200 | 7.200 | 6.000 | 0.900 | 0.600 | 0.900 | 0.200 | 4.700 | 4.300 | 4.200 |
| 140. | * | 5.600 | 4.000 | 3.300 | 2.300 | 10.800 | 8.500 | 8.000 | 7.000 | 1.000 | 0.900 | 1.100 | 0.400 | 4.800 | 4.500 | 4.400 |
| 150. | * | 6.100 | 4.700 | 3.900 | 3.200 | 10.000 | 7.900 | 7.300 | 6.800 | 2.200 | 2.000 | 2.000 | 1.100 | 4.400 | 4.300 | 4.000 |
| 160. | * | 7.600 | 5.900 | 5.300 | 4.600 | 8.100 | 6.000 | 5.500 | 5.300 | 3.800 | 3.800 | 3.800 | 2.400 | 3.000 | 2.900 | 2.800 |
| 170. | * | 8.800 | 6.900 | 5.900 | 5.600 | 5.900 | 4.100 | 3.300 | 2.900 | 5.400 | 5.500 | 5.400 | 3.600 | 1.500 | 1.400 | 1.500 |
| 180. | * | 8.700 | 6.600 | 5.700 | 5.100 | 5.100 | 3.100 | 2.100 | 1.400 | 5.600 | 5.800 | 5.800 | 4.600 | 0.700 | 0.800 | 0.900 |
| 190. | * | 8.400 | 5.800 | 5.000 | 4.400 | 4.900 | 2.800 | 1.800 | 1.000 | 5.000 | 5.200 | 5.300 | 4.800 | 0.500 | 0.500 | 0.500 |
| 200. | * | 7.700 | 5.500 | 4.600 | 4.100 | 4.600 | 2.700 | 1.700 | 0.900 | 4.400 | 4.600 | 4.600 | 4.500 | 0.300 | 0.500 | 0.500 |
| 210. | * | 7.200 | 5.100 | 4.400 | 4.000 | 4.400 | 2.700 | 1.700 | 0.700 | 3.900 | 4.200 | 4.200 | 4.100 | 0.300 | 0.400 | 0.500 |
| 220. | * | 7.100 | 4.800 | 4.400 | 3.600 | 4.800 | 2.600 | 1.900 | 0.500 | 3.600 | 3.900 | 3.900 | 3.900 | 0.400 | 0.300 | 0.300 |
| 230. | * | 7.100 | 4.600 | 4.000 | 3.100 | 5.100 | 2.600 | 1.800 | 0.100 | 3.400 | 3.700 | 3.700 | 3.700 | 0.400 | 0.300 | 0.300 |
| 240. | * | 7.600 | 4.900 | 4.200 | 2.900 | 5.600 | 2.700 | 1.700 | 0.000 | 3.300 | 3.700 | 3.700 | 3.700 | 0.400 | 0.300 | 0.300 |
| 250. | * | 8.100 | 4.900 | 4.300 | 2.600 | 6.300 | 2.800 | 1.600 | 0.000 | 3.400 | 3.800 | 3.800 | 3.800 | 0.400 | 0.300 | 0.300 |
| 260. | * | 8.800 | 5.200 | 4.100 | 2.500 | 6.900 | 2.600 | 1.100 | 0.000 | 3.700 | 3.600 | 3.700 | 3.700 | 0.500 | 0.300 | 0.300 |
| 270. | * | 9.300 | 4.900 | 3.700 | 2.600 | 7.200 | 1.800 | 0.400 | 0.000 | 4.700 | 4.000 | 3.800 | 3.800 | 1.200 | 0.300 | 0.300 |
| 280. | * | 8.500 | 4.100 | 3.100 | 2.800 | 6.100 | 0.900 | 0.200 | 0.100 | 6.700 | 4.700 | 4.200 | 3.900 | 2.900 | 0.800 | 0.400 |
| 290. | * | 6.600 | 3.500 | 3.200 | 3.100 | 3.600 | 0.300 | 0.100 | 0.100 | 8.900 | 5.900 | 5.100 | 4.200 | 4.300 | 1.700 | 1.000 |
| 300. | * | 4.900 | 3.400 | 3.300 | 3.300 | 1.600 | 0.100 | 0.100 | 0.100 | 9.700 | 7.200 | 6.000 | 4.900 | 5.000 | 2.600 | 1.600 |
| 310. | * | 4.400 | 3.700 | 3.700 | 3.500 | 0.900 | 0.200 | 0.200 | 0.200 | 9.600 | 7.800 | 7.000 | 5.800 | 4.900 | 2.900 | 2.100 |
| 320. | * | 4.600 | 4.200 | 4.200 | 3.500 | 1.000 | 0.500 | 0.500 | 0.400 | 9.600 | 8.100 | 7.500 | 7.000 | 4.900 | 3.100 | 2.600 |
| 330. | * | 4.700 | 4.100 | 3.900 | 3.100 | 2.100 | 1.700 | 1.600 | 1.200 | 8.600 | 7.400 | 7.200 | 7.000 | 5.600 | 4.100 | 3.300 |

```
 340.  *   3.500   3.200   3.100   2.300   4.100   3.400   3.400   2.600   7.200   5.600   5.500
5.200   7.100   5.400   4.800
 350.  *   2.200   2.100   2.100   1.700   5.400   5.200   5.100   3.700   5.200   3.800   3.300
2.800   8.400   6.700   6.100
 360.  *   1.400   1.400   1.400   1.300   5.500   5.500   5.500   4.600   4.100   2.700   2.100
1.500   8.500   6.900   6.200
 ------*-------------------------------------------------------------------------------------------
------------------------
 MAX   *   9.300   6.900   5.900   5.600  11.700   8.500   8.000   7.000   9.700   8.100   7.500
7.000   8.500   6.900   6.200
 DEGR. *    270     170     170     170     120     140     140     140     300     320     320     330
360     360     360
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 4.900 | 0.000 | 0.000 | 0.000 | 3.200 | 2.200 | 0.600 | 3.900 | 3.700 | 3.700 | 6.700 | 5.800 | 4.300 |
| 20. | * 4.600 | 0.000 | 0.000 | 0.000 | 2.900 | 2.100 | 1.000 | 3.800 | 3.600 | 3.600 | 6.300 | 5.700 | 4.700 |
| 30. | * 4.300 | 0.000 | 0.000 | 0.000 | 2.800 | 2.100 | 1.300 | 3.800 | 3.600 | 3.600 | 6.000 | 5.700 | 5.000 |
| 40. | * 4.000 | 0.100 | 0.100 | 0.100 | 2.800 | 2.200 | 1.500 | 3.800 | 3.700 | 3.700 | 5.900 | 5.900 | 5.000 |
| 50. | * 3.800 | 0.200 | 0.200 | 0.200 | 2.700 | 2.100 | 1.600 | 4.000 | 3.900 | 3.900 | 5.900 | 5.700 | 5.200 |
| 60. | * 3.700 | 0.300 | 0.300 | 0.300 | 2.800 | 2.200 | 1.600 | 4.400 | 4.400 | 4.400 | 6.200 | 6.100 | 5.400 |
| 70. | * 3.500 | 0.400 | 0.400 | 0.400 | 2.900 | 2.400 | 1.800 | 4.800 | 4.900 | 4.800 | 6.500 | 6.500 | 5.700 |
| 80. | * 3.100 | 0.800 | 0.800 | 0.700 | 3.300 | 2.900 | 2.400 | 5.400 | 5.500 | 5.000 | 7.000 | 6.800 | 6.200 |
| 90. | * 2.900 | 2.100 | 2.000 | 1.900 | 5.100 | 4.700 | 4.300 | 5.800 | 5.800 | 5.000 | 7.400 | 7.000 | 6.400 |
| 100. | * 3.000 | 4.500 | 4.300 | 3.900 | 8.300 | 8.000 | 7.500 | 4.800 | 4.900 | 3.800 | 6.700 | 6.300 | 5.600 |
| 110. | * 3.400 | 6.300 | 5.900 | 5.400 | 10.200 | 9.800 | 9.400 | 2.800 | 3.000 | 2.100 | 4.800 | 4.400 | 3.600 |
| 120. | * 3.600 | 6.600 | 6.200 | 5.800 | 10.500 | 9.800 | 9.300 | 1.300 | 1.500 | 0.900 | 3.700 | 2.900 | 2.300 |
| 130. | * 3.900 | 5.900 | 5.600 | 5.300 | 9.500 | 9.100 | 7.900 | 0.800 | 1.000 | 0.400 | 3.400 | 2.600 | 1.500 |
| 140. | * 3.900 | 5.400 | 5.200 | 4.800 | 8.800 | 8.000 | 6.700 | 0.600 | 0.900 | 0.200 | 3.200 | 2.200 | 1.000 |
| 150. | * 3.500 | 5.100 | 4.900 | 4.400 | 7.500 | 6.800 | 5.600 | 0.800 | 0.800 | 0.200 | 2.700 | 1.400 | 0.300 |
| 160. | * 2.400 | 5.500 | 4.800 | 4.000 | 6.000 | 5.300 | 4.800 | 1.400 | 1.000 | 0.100 | 1.200 | 0.600 | 0.100 |
| 170. | * 1.500 | 6.400 | 5.400 | 3.800 | 4.700 | 4.300 | 4.300 | 2.700 | 1.700 | 0.100 | 0.400 | 0.000 | 0.000 |
| 180. | * 0.800 | 7.100 | 6.300 | 4.200 | 4.600 | 4.400 | 4.400 | 3.200 | 2.500 | 0.100 | 0.000 | 0.000 | 0.000 |
| 190. | * 0.700 | 7.200 | 6.800 | 4.800 | 4.900 | 4.700 | 4.700 | 3.300 | 2.900 | 0.500 | 0.000 | 0.000 | 0.000 |
| 200. | * 0.600 | 6.800 | 6.600 | 5.100 | 4.600 | 4.500 | 4.500 | 3.000 | 2.700 | 1.200 | 0.000 | 0.000 | 0.000 |
| 210. | * 0.500 | 6.400 | 6.300 | 5.300 | 4.400 | 4.300 | 4.300 | 2.800 | 2.400 | 1.300 | 0.000 | 0.000 | 0.000 |
| 220. | * 0.400 | 6.300 | 6.500 | 5.700 | 4.600 | 4.600 | 4.400 | 2.800 | 2.300 | 1.400 | 0.100 | 0.100 | 0.100 |
| 230. | * 0.400 | 6.400 | 6.500 | 6.200 | 5.000 | 5.000 | 4.600 | 2.700 | 2.100 | 1.600 | 0.100 | 0.100 | 0.100 |
| 240. | * 0.400 | 6.600 | 6.900 | 6.600 | 5.500 | 5.500 | 4.600 | 2.700 | 2.100 | 1.700 | 0.100 | 0.100 | 0.100 |
| 250. | * 0.400 | 7.200 | 7.300 | 6.800 | 6.200 | 6.000 | 4.500 | 2.800 | 2.300 | 2.000 | 0.200 | 0.200 | 0.200 |
| 260. | * 0.400 | 7.800 | 7.700 | 7.400 | 6.700 | 6.600 | 3.900 | 3.000 | 2.400 | 2.400 | 0.300 | 0.300 | 0.300 |
| 270. | * 0.400 | 8.500 | 8.200 | 7.600 | 7.000 | 6.600 | 3.300 | 4.100 | 3.800 | 3.700 | 1.100 | 0.900 | 0.500 |
| 280. | * 0.400 | 7.800 | 7.500 | 6.700 | 5.800 | 5.400 | 2.600 | 6.100 | 5.900 | 5.900 | 2.500 | 2.200 | 1.000 |
| 290. | * 0.600 | 5.700 | 5.200 | 4.400 | 3.300 | 3.100 | 1.500 | 8.000 | 7.300 | 7.100 | 4.000 | 3.600 | 1.700 |
| 300. | * 0.700 | 4.000 | 3.300 | 2.400 | 1.400 | 1.400 | 0.800 | 8.500 | 8.000 | 7.200 | 4.900 | 4.500 | 2.500 |
| 310. | * 1.100 | 3.600 | 2.800 | 1.700 | 0.700 | 0.700 | 0.500 | 8.100 | 7.600 | 6.300 | 4.800 | 4.600 | 3.200 |
| 320. | * 1.800 | 3.400 | 2.400 | 1.100 | 0.500 | 0.400 | 0.400 | 7.400 | 7.000 | 5.400 | 4.500 | 4.300 | 3.600 |
| 330. | * 2.800 | 2.800 | 1.700 | 0.700 | 0.600 | 0.400 | 0.400 | 6.500 | 5.800 | 4.500 | 4.500 | 4.000 | 3.800 |

```
 340.  *   4.500   1.400   0.600   0.200   1.300   0.500   0.300   5.100   4.400   3.800   4.900
4.100   3.700
 350.  *   5.700   0.400   0.100   0.100   2.100   1.000   0.100   4.100   3.600   3.600   5.800
4.700   3.600
 360.  *   5.400   0.000   0.000   0.000   3.000   1.700   0.200   3.700   3.500   3.600   6.500
5.500   3.800
 ------*-------------------------------------------------------------------------------------------
---------
 MAX   *   5.700   8.500   8.200   7.600  10.500   9.800   9.400   8.500   8.000   7.200   7.400
7.000   6.400
 DEGR. *    350     270     270     270     120     110     110     300     300     300      90      90
90

 THE HIGHEST CONCENTRATION OF   11.700 UG/M**3 OCCURRED AT RECEPTOR     5.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 13 SPUI 2035 Build PM CO

DATE : 3/ 7/18
TIME : 9:41:34

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | X1 | Y1 | X2 | Y2 | | | | | | | | | | |
| 1. N Leg App - FreeFlow | * | -81.0 | -29.0 | -423.0 | 910.0 | * | 999. | 340. | AG | 391. | 1.0 | 0.0 | 41.7 | | |
| 2. N Leg App - Queue | * | -127.2 | 98.0 | -162.5 | 194.7 | * | 103. | 340. | AG | 7. | 100.0 | 0.0 | 22.0 | 0.81 | 5.2 |
| 3. N Leg Dep - FreeFlow | * | 81.0 | 29.0 | -261.0 | 969.0 | * | 1000. | 340. | AG | 375. | 1.0 | 0.0 | 41.7 | | |
| 4. S Leg App - FreeFlow | * | 81.0 | 29.0 | 423.0 | -910.0 | * | 999. | 160. | AG | 199. | 1.0 | 0.0 | 41.7 | | |
| 5. S Leg App - Queue | * | 127.2 | -98.0 | 144.3 | -144.8 | * | 50. | 160. | AG | 7. | 100.0 | 0.0 | 22.0 | 0.41 | 2.5 |
| 6. S Leg Dep - FreeFlow | * | -81.0 | -29.0 | 261.0 | -969.0 | * | 1000. | 160. | AG | 894. | 1.3 | 0.0 | 41.7 | | |
| 7. E Leg App - FreeFlow | * | 0.0 | 20.0 | 982.0 | -189.0 | * | 1004. | 102. | AG | 1525. | 0.8 | 0.0 | 52.7 | | |
| 8. E Leg App - Queue | * | 196.8 | -21.8 | 354.4 | -55.4 | * | 161. | 102. | AG | 7. | 100.0 | 0.0 | 33.0 | 0.68 | 8.2 |
| 9. E Leg Dep - FreeFlow | * | 0.0 | -20.0 | 974.0 | -227.0 | * | 996. | 102. | AG | 1527. | 1.2 | 0.0 | 52.7 | | |
| 10. W Leg App - FreeFlow | * | 0.0 | -20.0 | -612.0 | 110.0 | * | 626. | 282. | AG | 971. | 1.1 | 0.0 | 52.7 | | |
| 11. W Leg App - Queue | * | -196.8 | 21.8 | -297.0 | 43.1 | * | 102. | 282. | AG | 7. | 100.0 | 0.0 | 33.0 | 0.43 | 5.2 |
| 12. W Leg Dep - FreeFlow | * | 0.0 | 20.0 | -604.0 | 148.0 | * | 617. | 282. | AG | 830. | 1.0 | 0.0 | 52.7 | | |
| 13. N Leg SLIP- FreeFlow | * | 121.0 | 29.0 | -221.0 | 969.0 | * | 1000. | 340. | AG | 383. | 1.0 | 0.0 | 36.0 | | |
| 14. SELeg SLIP-FreeFlow | * | 210.0 | -300.0 | 400.0 | -110.0 | * | 269. | 45. | AG | 541. | 1.9 | 0.0 | 32.0 | | |
| 15. SWLeg SLIP-FreeFlow | * | -140.0 | -29.0 | 240.0 | -969.0 | * | 1014. | 158. | AG | 311. | 1.1 | 0.0 | 32.0 | | |
| 16. i93 NB | * | -306.8 | 951.8 | 377.2 | -926.1 | * | 1999. | 160. | BR | 4380. | 0.8 | 22.0 | 56.0 | | |
| 17. I 93 SB | * | -377.2 | 926.1 | 306.8 | -951.8 | * | 1999. | 160. | BR | 4000. | 0.8 | 22.0 | 56.0 | | |

DATE : 3/ 7/18
TIME : 9:41:34

ADDITIONAL QUEUE LINK PARAMETERS

| LINK DESCRIPTION | CYCLE LENGTH (SEC) | RED TIME (SEC) | CLEARANCE LOST TIME (SEC) | APPROACH VOL (VPH) | SATURATION FLOW RATE (VPH) | IDLE EM FAC (gm/hr) | SIGNAL TYPE | ARRIVAL RATE |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | 120 | 92 | 8.0 | 391 | 1600 | 1.75 | 2 | 3 |
| 5. S Leg App - Queue | 120 | 92 | 8.0 | 199 | 1600 | 1.75 | 2 | 3 |
| 8. E Leg App - Queue | 120 | 58 | 4.0 | 1525 | 1600 | 1.75 | 2 | 3 |
| 11. W Leg App - Queue | 120 | 58 | 4.0 | 971 | 1600 | 1.75 | 2 | 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 104.9 | 24.7 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.2 | 92.4 | 5.9 |
| 3. N Leg, E Side - 50 m | 52.2 | 169.5 | 5.9 |
| 4. N Leg, E Side-Midblk | -62.7 | 485.2 | 5.9 |
| 5. N Leg, W Side-Corner | -142.0 | 77.2 | 5.9 |
| 6. N Leg, W Side - 25 m | -166.6 | 144.9 | 5.9 |
| 7. N Leg, W Side - 50 m | -194.7 | 222.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -309.6 | 537.7 | 5.9 |
| 9. S Leg, E Side-Corner | 142.0 | -77.2 | 5.9 |
| 10. S Leg, E Side - 25 m | 166.6 | -144.9 | 5.9 |
| 11. S Leg, E Side - 50 m | 194.7 | -222.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 309.6 | -537.7 | 5.9 |
| 13. S Leg, W Side-Corner | -104.9 | -24.7 | 5.9 |
| 14. S Leg, W Side - 25 m | -80.2 | -92.4 | 5.9 |
| 15. S Leg, W Side - 50 m | -52.2 | -169.5 | 5.9 |
| 16. S Leg, W Side-Midblk | 62.7 | -485.2 | 5.9 |
| 17. E Leg, N Side - 25 m | 175.3 | 9.8 | 5.9 |
| 18. E Leg, N Side - 50 m | 255.5 | -7.3 | 5.9 |
| 19. E Leg, N Side-Midblk | 491.7 | -57.5 | 5.9 |
| 20. W Leg, N Side - 25 m | -212.4 | 92.2 | 5.9 |
| 21. W Leg, N Side - 50 m | -292.6 | 109.2 | 5.9 |
| 22. W Leg, N Side-Midblk | -528.8 | 159.4 | 5.9 |
| 23. E Leg, S Side - 25 m | 212.4 | -92.2 | 5.9 |
| 24. E Leg, S Side - 50 m | 292.6 | -109.2 | 5.9 |
| 25. E Leg, S Side-Midblk | 528.8 | -159.4 | 5.9 |
| 26. W Leg, S Side - 25 m | -175.3 | -9.8 | 5.9 |
| 27. W Leg, S Side - 50 m | -255.5 | 7.3 | 5.9 |
| 28. W Leg, S Side-Midblk | -491.7 | 57.5 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.2000 |
| 20. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 |
| 30. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 80. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 90. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 |
| 130. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.2000 | 0.2000 |
| 140. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.2000 | 0.2000 |
| 150. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.2000 | 0.2000 |
| 160. | * 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 |
| 170. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 280. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 290. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 |
| 300. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 |
| 310. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 330. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |

```
 340.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.1000
0.1000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000  0.1000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.1000  0.1000  0.2000
 ------*-------------------------------------------------------------------------------------------
------------------------
 MAX   *  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000
0.1000  0.2000  0.2000  0.2000
 DEGR. *    100     170     170     160      10      10      10      10     300     170     170     180
140     130      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.2000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 80. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 90. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 100. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | * 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | * 0.2000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | * 0.2000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 280. | * 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 290. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 |
| 300. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 |
| 310. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 330. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |

```
 340.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000
 350.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000
 360.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------
---------
 MAX   *  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.2000  0.1000  0.1000  0.1000
0.1000  0.1000
 DEGR. *     10     100     100     110      10      10      10     320      10      10     290     290
80

 THE HIGHEST CONCENTRATION OF   0.2000 PPM OCCURRED AT RECEPTOR    15.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 13 SPUI 2035 Build PM pm2.5

DATE : 3/ 7/18
TIME : 9:36: 5

The MODE flag has been set for calculating concentrations for POLLUTANT: PM2.5

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | X1 | Y1 | X2 | Y2 | | | | | | | | | | |
| 1. N Leg App - FreeFlow | * | -81.0 | -29.0 | -423.0 | 910.0 | * | 999. | 340. | AG | 391. | 0.0 | 0.0 | 41.7 | | |
| 2. N Leg App - Queue | * | -127.2 | 98.0 | -162.5 | 194.7 | * | 103. | 340. | AG | 0. | 100.0 | 0.0 | 22.0 | 0.81 | 5.2 |
| 3. N Leg Dep - FreeFlow | * | 81.0 | 29.0 | -261.0 | 969.0 | * | 1000. | 340. | AG | 375. | 0.0 | 0.0 | 41.7 | | |
| 4. S Leg App - FreeFlow | * | 81.0 | 29.0 | 423.0 | -910.0 | * | 999. | 160. | AG | 199. | 0.0 | 0.0 | 41.7 | | |
| 5. S Leg App - Queue | * | 127.2 | -98.0 | 144.3 | -144.8 | * | 50. | 160. | AG | 0. | 100.0 | 0.0 | 22.0 | 0.41 | 2.5 |
| 6. S Leg Dep - FreeFlow | * | -81.0 | -29.0 | 261.0 | -969.0 | * | 1000. | 160. | AG | 894. | 0.0 | 0.0 | 41.7 | | |
| 7. E Leg App - FreeFlow | * | 0.0 | 20.0 | 982.0 | -189.0 | * | 1004. | 102. | AG | 1525. | 0.0 | 0.0 | 52.7 | | |
| 8. E Leg App - Queue | * | 196.8 | -21.8 | 354.4 | -55.4 | * | 161. | 102. | AG | 0. | 100.0 | 0.0 | 33.0 | 0.68 | 8.2 |
| 9. E Leg Dep - FreeFlow | * | 0.0 | -20.0 | 974.0 | -227.0 | * | 996. | 102. | AG | 1527. | 0.0 | 0.0 | 52.7 | | |
| 10. W Leg App - FreeFlow | * | 0.0 | -20.0 | -612.0 | 110.0 | * | 626. | 282. | AG | 971. | 0.0 | 0.0 | 52.7 | | |
| 11. W Leg App - Queue | * | -196.8 | 21.8 | -297.0 | 43.1 | * | 102. | 282. | AG | 0. | 100.0 | 0.0 | 33.0 | 0.43 | 5.2 |
| 12. W Leg Dep - FreeFlow | * | 0.0 | 20.0 | -604.0 | 148.0 | * | 617. | 282. | AG | 830. | 0.0 | 0.0 | 52.7 | | |
| 13. N Leg SLIP- FreeFlow | * | 121.0 | 29.0 | -221.0 | 969.0 | * | 1000. | 340. | AG | 383. | 0.0 | 0.0 | 36.0 | | |
| 14. SELeg SLIP-FreeFlow | * | 210.0 | -300.0 | 400.0 | -110.0 | * | 269. | 45. | AG | 541. | 0.0 | 0.0 | 32.0 | | |
| 15. SWLeg SLIP-FreeFlow | * | -140.0 | -29.0 | 240.0 | -969.0 | * | 1014. | 158. | AG | 311. | 0.0 | 0.0 | 32.0 | | |
| 16. i93 NB | * | -306.8 | 951.8 | 377.2 | -926.1 | * | 1999. | 160. | BR | 4380. | 0.0 | 22.0 | 56.0 | | |
| 17. I 93 SB | * | -377.2 | 926.1 | 306.8 | -951.8 | * | 1999. | 160. | BR | 4000. | 0.0 | 22.0 | 56.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 92 | 8.0 | 391 | 1600 | 0.04 | 2 3 |
| 5. S Leg App - Queue | * | 120 | 92 | 8.0 | 199 | 1600 | 0.04 | 2 3 |
| 8. E Leg App - Queue | * | 120 | 58 | 4.0 | 1525 | 1600 | 0.04 | 2 3 |
| 11. W Leg App - Queue | * | 120 | 58 | 4.0 | 971 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 104.9 | 24.7 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.2 | 92.4 | 5.9 |
| 3. N Leg, E Side - 50 m | 52.2 | 169.5 | 5.9 |
| 4. N Leg, E Side-Midblk | -62.7 | 485.2 | 5.9 |
| 5. N Leg, W Side-Corner | -142.0 | 77.2 | 5.9 |
| 6. N Leg, W Side - 25 m | -166.6 | 144.9 | 5.9 |
| 7. N Leg, W Side - 50 m | -194.7 | 222.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -309.6 | 537.7 | 5.9 |
| 9. S Leg, E Side-Corner | 142.0 | -77.2 | 5.9 |
| 10. S Leg, E Side - 25 m | 166.6 | -144.9 | 5.9 |
| 11. S Leg, E Side - 50 m | 194.7 | -222.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 309.6 | -537.7 | 5.9 |
| 13. S Leg, W Side-Corner | -104.9 | -24.7 | 5.9 |
| 14. S Leg, W Side - 25 m | -80.2 | -92.4 | 5.9 |
| 15. S Leg, W Side - 50 m | -52.2 | -169.5 | 5.9 |
| 16. S Leg, W Side-Midblk | 62.7 | -485.2 | 5.9 |
| 17. E Leg, N Side - 25 m | 175.3 | 9.8 | 5.9 |
| 18. E Leg, N Side - 50 m | 255.5 | -7.3 | 5.9 |
| 19. E Leg, N Side-Midblk | 491.7 | -57.5 | 5.9 |
| 20. W Leg, N Side - 25 m | -212.4 | 92.2 | 5.9 |
| 21. W Leg, N Side - 50 m | -292.6 | 109.2 | 5.9 |
| 22. W Leg, N Side-Midblk | -528.8 | 159.4 | 5.9 |
| 23. E Leg, S Side - 25 m | 212.4 | -92.2 | 5.9 |
| 24. E Leg, S Side - 50 m | 292.6 | -109.2 | 5.9 |
| 25. E Leg, S Side-Midblk | 528.8 | -159.4 | 5.9 |
| 26. W Leg, S Side - 25 m | -175.3 | -9.8 | 5.9 |
| 27. W Leg, S Side - 50 m | -255.5 | 7.3 | 5.9 |
| 28. W Leg, S Side-Midblk | -491.7 | 57.5 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.2000 | 0.3000 | 0.3000 | 0.3000 | 1.5000 | 1.4000 | 0.9000 | 0.9000 | 1.1000 | 0.7000 | 0.5000 | 0.2000 | 1.6000 | 1.6000 | 1.7000 |
| 20. | * 0.2000 | 0.2000 | 0.2000 | 0.2000 | 1.4000 | 1.4000 | 0.9000 | 0.9000 | 1.0000 | 0.7000 | 0.5000 | 0.2000 | 1.6000 | 1.6000 | 1.5000 |
| 30. | * 0.2000 | 0.2000 | 0.2000 | 0.2000 | 1.1000 | 1.3000 | 0.8000 | 0.8000 | 1.0000 | 0.7000 | 0.5000 | 0.2000 | 1.4000 | 1.4000 | 1.4000 |
| 40. | * 0.2000 | 0.2000 | 0.2000 | 0.2000 | 1.0000 | 1.3000 | 0.8000 | 0.8000 | 1.1000 | 0.8000 | 0.5000 | 0.2000 | 1.4000 | 1.6000 | 1.4000 |
| 50. | * 0.2000 | 0.2000 | 0.2000 | 0.2000 | 0.8000 | 1.2000 | 0.7000 | 0.7000 | 1.4000 | 0.8000 | 0.4000 | 0.2000 | 1.4000 | 1.4000 | 1.3000 |
| 60. | * 0.2000 | 0.2000 | 0.2000 | 0.2000 | 0.8000 | 1.2000 | 0.7000 | 0.7000 | 1.5000 | 0.8000 | 0.5000 | 0.2000 | 1.6000 | 1.6000 | 1.4000 |
| 70. | * 0.2000 | 0.2000 | 0.2000 | 0.2000 | 0.7000 | 1.2000 | 0.7000 | 0.7000 | 1.7000 | 0.8000 | 0.6000 | 0.0000 | 1.7000 | 1.6000 | 1.5000 |
| 80. | * 0.3000 | 0.2000 | 0.2000 | 0.2000 | 0.9000 | 1.2000 | 0.7000 | 0.7000 | 1.8000 | 0.7000 | 0.5000 | 0.0000 | 2.0000 | 1.7000 | 1.4000 |
| 90. | * 0.7000 | 0.2000 | 0.2000 | 0.2000 | 1.3000 | 1.4000 | 0.8000 | 0.8000 | 1.8000 | 0.8000 | 0.4000 | 0.0000 | 2.3000 | 1.8000 | 1.4000 |
| 100. | * 1.5000 | 0.5000 | 0.3000 | 0.2000 | 1.7000 | 1.6000 | 0.9000 | 0.8000 | 1.4000 | 0.4000 | 0.2000 | 0.0000 | 2.2000 | 1.5000 | 1.2000 |
| 110. | * 1.8000 | 0.9000 | 0.5000 | 0.2000 | 2.2000 | 1.8000 | 1.2000 | 0.8000 | 0.8000 | 0.2000 | 0.1000 | 0.0000 | 1.7000 | 1.1000 | 1.0000 |
| 120. | * 1.9000 | 1.0000 | 0.8000 | 0.3000 | 2.1000 | 2.1000 | 1.6000 | 1.1000 | 0.4000 | 0.1000 | 0.1000 | 0.0000 | 1.4000 | 1.2000 | 1.2000 |
| 130. | * 1.6000 | 1.0000 | 0.8000 | 0.5000 | 2.0000 | 2.0000 | 1.6000 | 1.1000 | 0.2000 | 0.1000 | 0.1000 | 0.0000 | 1.3000 | 1.3000 | 1.3000 |
| 140. | * 1.4000 | 1.0000 | 0.9000 | 0.6000 | 1.9000 | 2.2000 | 2.1000 | 1.4000 | 0.2000 | 0.1000 | 0.1000 | 0.0000 | 1.4000 | 1.5000 | 1.5000 |
| 150. | * 1.4000 | 1.1000 | 1.0000 | 0.7000 | 2.0000 | 1.9000 | 1.8000 | 1.4000 | 0.4000 | 0.3000 | 0.3000 | 0.1000 | 1.6000 | 1.5000 | 1.5000 |
| 160. | * 1.7000 | 1.5000 | 1.4000 | 1.2000 | 1.7000 | 1.4000 | 1.3000 | 1.2000 | 0.6000 | 0.6000 | 0.6000 | 0.3000 | 1.1000 | 1.1000 | 1.1000 |
| 170. | * 2.1000 | 1.8000 | 1.6000 | 1.7000 | 1.1000 | 0.8000 | 0.6000 | 0.5000 | 1.3000 | 1.0000 | 1.1000 | 0.5000 | 0.6000 | 0.7000 | 0.7000 |
| 180. | * 2.2000 | 2.1000 | 1.7000 | 1.4000 | 0.7000 | 0.5000 | 0.4000 | 0.3000 | 1.4000 | 1.0000 | 1.0000 | 0.8000 | 0.2000 | 0.4000 | 0.4000 |
| 190. | * 2.1000 | 1.8000 | 1.4000 | 1.2000 | 0.7000 | 0.5000 | 0.3000 | 0.2000 | 1.4000 | 1.0000 | 1.0000 | 0.9000 | 0.1000 | 0.2000 | 0.3000 |
| 200. | * 2.0000 | 1.5000 | 1.4000 | 1.1000 | 0.6000 | 0.5000 | 0.3000 | 0.2000 | 1.3000 | 0.9000 | 0.9000 | 0.9000 | 0.1000 | 0.1000 | 0.1000 |
| 210. | * 1.9000 | 1.6000 | 1.3000 | 1.1000 | 0.6000 | 0.5000 | 0.3000 | 0.0000 | 1.2000 | 0.9000 | 0.9000 | 0.9000 | 0.1000 | 0.1000 | 0.1000 |
| 220. | * 1.8000 | 1.4000 | 0.9000 | 0.9000 | 0.7000 | 0.5000 | 0.2000 | 0.0000 | 0.9000 | 0.7000 | 0.7000 | 0.7000 | 0.1000 | 0.1000 | 0.1000 |
| 230. | * 1.8000 | 1.2000 | 0.9000 | 0.7000 | 0.9000 | 0.5000 | 0.2000 | 0.0000 | 0.9000 | 0.7000 | 0.7000 | 0.7000 | 0.1000 | 0.1000 | 0.1000 |
| 240. | * 1.9000 | 1.2000 | 0.9000 | 0.7000 | 0.9000 | 0.5000 | 0.2000 | 0.0000 | 0.8000 | 0.7000 | 0.7000 | 0.7000 | 0.1000 | 0.1000 | 0.1000 |
| 250. | * 2.0000 | 1.1000 | 1.0000 | 0.7000 | 1.0000 | 0.4000 | 0.2000 | 0.0000 | 0.8000 | 0.8000 | 0.7000 | 0.7000 | 0.2000 | 0.1000 | 0.1000 |
| 260. | * 1.9000 | 1.1000 | 1.0000 | 0.7000 | 1.0000 | 0.3000 | 0.2000 | 0.0000 | 0.8000 | 0.8000 | 0.7000 | 0.7000 | 0.2000 | 0.1000 | 0.1000 |
| 270. | * 2.0000 | 1.1000 | 1.0000 | 0.7000 | 1.0000 | 0.2000 | 0.0000 | 0.0000 | 1.1000 | 0.9000 | 0.7000 | 0.7000 | 0.4000 | 0.1000 | 0.1000 |
| 280. | * 1.7000 | 1.0000 | 0.8000 | 0.7000 | 0.6000 | 0.1000 | 0.0000 | 0.0000 | 1.6000 | 1.1000 | 0.7000 | 0.7000 | 0.7000 | 0.2000 | 0.1000 |
| 290. | * 1.5000 | 1.0000 | 0.9000 | 0.9000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 | 2.1000 | 1.7000 | 1.1000 | 0.9000 | 1.1000 | 0.4000 | 0.2000 |
| 300. | * 1.3000 | 1.0000 | 1.0000 | 1.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 2.3000 | 1.6000 | 1.1000 | 0.9000 | 1.1000 | 0.5000 | 0.3000 |
| 310. | * 1.2000 | 1.1000 | 1.1000 | 1.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 2.4000 | 1.9000 | 1.3000 | 1.1000 | 1.0000 | 0.7000 | 0.6000 |
| 320. | * 1.4000 | 1.3000 | 1.2000 | 1.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 2.4000 | 2.1000 | 1.6000 | 1.2000 | 0.9000 | 0.7000 | 0.6000 |
| 330. | * 1.3000 | 1.2000 | 1.2000 | 1.0000 | 0.4000 | 0.3000 | 0.3000 | 0.1000 | 2.2000 | 2.0000 | 1.6000 | 1.3000 | 1.1000 | 0.8000 | 0.8000 |

```
 340.  *  0.9000  1.0000  1.0000  0.7000  1.0000  0.8000  0.7000  0.4000  1.9000  1.5000  1.3000
0.9000  1.4000  1.3000  1.2000
 350.  *  0.5000  0.6000  0.6000  0.5000  1.4000  1.2000  0.9000  0.7000  1.3000  0.9000  0.7000
0.4000  1.8000  1.7000  1.6000
 360.  *  0.3000  0.4000  0.4000  0.4000  1.6000  1.4000  1.1000  0.9000  1.1000  0.6000  0.5000
0.2000  1.8000  1.6000  1.8000
 ------*-------------------------------------------------------------------------------------------
-------------------------
 MAX   *  2.2000  2.1000  1.7000  1.7000  2.2000  2.2000  2.1000  1.4000  2.4000  2.1000  1.6000
1.3000  2.3000  1.8000  1.8000
 DEGR. *    180     180     180     170     110     140     140     150     310     320     320     330
90      90     360
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * | 1.5000 | 0.0000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.1000 | 1.3000 | 1.4000 | 1.1000 | 1.4000 | 1.6000 | 0.8000 |
| 20. | * | 1.4000 | 0.0000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.2000 | 1.3000 | 1.3000 | 1.0000 | 1.3000 | 1.6000 | 0.8000 |
| 30. | * | 1.2000 | 0.0000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.2000 | 1.3000 | 1.2000 | 1.0000 | 1.3000 | 1.6000 | 0.8000 |
| 40. | * | 1.3000 | 0.0000 | 0.0000 | 0.0000 | 0.7000 | 0.5000 | 0.2000 | 1.3000 | 1.2000 | 1.0000 | 1.1000 | 1.7000 | 0.8000 |
| 50. | * | 1.1000 | 0.1000 | 0.1000 | 0.1000 | 0.7000 | 0.5000 | 0.2000 | 1.5000 | 1.3000 | 1.2000 | 1.1000 | 1.7000 | 0.8000 |
| 60. | * | 1.1000 | 0.1000 | 0.1000 | 0.1000 | 0.7000 | 0.6000 | 0.2000 | 1.6000 | 1.4000 | 1.3000 | 1.2000 | 1.7000 | 1.0000 |
| 70. | * | 1.1000 | 0.1000 | 0.1000 | 0.1000 | 0.7000 | 0.7000 | 0.3000 | 1.6000 | 1.4000 | 1.4000 | 1.3000 | 1.7000 | 1.1000 |
| 80. | * | 0.9000 | 0.2000 | 0.2000 | 0.2000 | 0.7000 | 0.7000 | 0.3000 | 1.6000 | 1.5000 | 1.5000 | 1.7000 | 1.9000 | 1.2000 |
| 90. | * | 1.0000 | 0.7000 | 0.7000 | 0.4000 | 1.1000 | 1.0000 | 0.5000 | 1.7000 | 1.7000 | 1.5000 | 1.8000 | 1.8000 | 1.4000 |
| 100. | * | 1.0000 | 1.3000 | 1.3000 | 1.1000 | 1.4000 | 1.4000 | 0.9000 | 1.4000 | 1.4000 | 1.1000 | 1.6000 | 1.8000 | 1.4000 |
| 110. | * | 1.0000 | 2.0000 | 1.9000 | 1.5000 | 1.8000 | 1.5000 | 1.3000 | 0.8000 | 0.8000 | 0.7000 | 1.2000 | 1.1000 | 0.9000 |
| 120. | * | 1.2000 | 2.2000 | 2.2000 | 1.6000 | 1.7000 | 1.7000 | 1.5000 | 0.4000 | 0.4000 | 0.2000 | 1.0000 | 0.8000 | 0.5000 |
| 130. | * | 1.3000 | 1.9000 | 2.0000 | 1.5000 | 1.8000 | 1.6000 | 1.1000 | 0.2000 | 0.2000 | 0.1000 | 1.0000 | 0.8000 | 0.4000 |
| 140. | * | 1.5000 | 1.8000 | 2.0000 | 1.4000 | 1.5000 | 1.5000 | 1.0000 | 0.2000 | 0.2000 | 0.1000 | 0.9000 | 0.7000 | 0.3000 |
| 150. | * | 1.3000 | 1.5000 | 1.8000 | 1.2000 | 1.5000 | 1.5000 | 0.7000 | 0.2000 | 0.2000 | 0.1000 | 0.9000 | 0.5000 | 0.0000 |
| 160. | * | 1.0000 | 1.3000 | 1.7000 | 1.1000 | 1.2000 | 1.1000 | 0.7000 | 0.2000 | 0.1000 | 0.0000 | 0.4000 | 0.2000 | 0.0000 |
| 170. | * | 0.7000 | 1.5000 | 1.7000 | 1.0000 | 0.8000 | 0.8000 | 0.6000 | 0.5000 | 0.2000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 |
| 180. | * | 0.3000 | 1.9000 | 2.0000 | 1.1000 | 0.8000 | 0.8000 | 0.6000 | 0.7000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * | 0.3000 | 2.0000 | 2.2000 | 1.3000 | 0.9000 | 0.8000 | 0.7000 | 0.7000 | 0.7000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * | 0.2000 | 1.8000 | 2.1000 | 1.3000 | 0.9000 | 0.6000 | 0.5000 | 0.6000 | 0.7000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * | 0.2000 | 1.7000 | 1.9000 | 1.3000 | 0.9000 | 0.6000 | 0.5000 | 0.6000 | 0.6000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * | 0.1000 | 1.7000 | 2.2000 | 1.5000 | 0.9000 | 0.6000 | 0.5000 | 0.6000 | 0.5000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * | 0.1000 | 1.7000 | 2.2000 | 1.5000 | 0.9000 | 0.7000 | 0.6000 | 0.8000 | 0.6000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * | 0.1000 | 1.8000 | 2.2000 | 1.7000 | 0.9000 | 0.7000 | 0.6000 | 0.8000 | 0.6000 | 0.4000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * | 0.1000 | 2.0000 | 2.2000 | 1.8000 | 0.9000 | 0.8000 | 0.5000 | 0.9000 | 0.6000 | 0.5000 | 0.1000 | 0.1000 | 0.1000 |
| 260. | * | 0.1000 | 1.9000 | 2.3000 | 1.9000 | 0.8000 | 0.8000 | 0.3000 | 0.9000 | 0.8000 | 0.6000 | 0.1000 | 0.1000 | 0.1000 |
| 270. | * | 0.1000 | 2.0000 | 2.1000 | 2.1000 | 0.8000 | 0.8000 | 0.3000 | 1.1000 | 1.1000 | 0.8000 | 0.4000 | 0.2000 | 0.2000 |
| 280. | * | 0.1000 | 1.7000 | 1.7000 | 1.7000 | 0.6000 | 0.6000 | 0.2000 | 1.6000 | 1.4000 | 1.6000 | 0.8000 | 0.6000 | 0.3000 |
| 290. | * | 0.2000 | 1.3000 | 1.1000 | 1.1000 | 0.3000 | 0.3000 | 0.1000 | 1.9000 | 1.9000 | 2.1000 | 1.2000 | 0.9000 | 0.4000 |
| 300. | * | 0.2000 | 0.9000 | 0.9000 | 0.6000 | 0.1000 | 0.1000 | 0.1000 | 2.0000 | 2.2000 | 2.0000 | 1.4000 | 1.0000 | 0.6000 |
| 310. | * | 0.3000 | 0.9000 | 0.8000 | 0.4000 | 0.1000 | 0.1000 | 0.0000 | 2.0000 | 2.1000 | 1.8000 | 1.3000 | 1.2000 | 0.7000 |
| 320. | * | 0.4000 | 0.9000 | 0.8000 | 0.3000 | 0.0000 | 0.0000 | 0.0000 | 2.1000 | 2.2000 | 1.5000 | 1.1000 | 1.2000 | 0.7000 |
| 330. | * | 0.9000 | 0.7000 | 0.5000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 1.9000 | 1.9000 | 1.3000 | 0.9000 | 1.2000 | 0.7000 |

```
 340.  *  1.5000  0.4000  0.1000  0.0000  0.1000  0.0000  0.0000  1.7000  1.5000  1.1000  0.9000
1.1000  0.6000
 350.  *  1.6000  0.0000  0.0000  0.0000  0.4000  0.2000  0.0000  1.2000  1.3000  1.0000  1.2000
1.2000  0.6000
 360.  *  1.8000  0.0000  0.0000  0.0000  0.6000  0.4000  0.0000  1.2000  1.3000  1.0000  1.3000
1.5000  0.6000
 ------*-------------------------------------------------------------------------------------------
---------
 MAX   *  1.8000  2.2000  2.3000  2.1000  1.8000  1.7000  1.5000  2.1000  2.2000  2.1000  1.8000
1.9000  1.4000
 DEGR. *    360     120     260     270     110     120     120     320     300     290      90      80
90

 THE HIGHEST CONCENTRATION OF   2.4000 UG/M**3 OCCURRED AT RECEPTOR     9.
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 13 SPUI 2035 Build PM pm10

DATE : 3/ 7/18
TIME : 9:46: 8

The MODE flag has been set for calculating concentrations for POLLUTANT: PM-10

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 UG/M**3

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) X1 | Y1 | X2 | Y2 | * | LENGTH (FT) | BRG (DEG) | TYPE | VPH | EF (G/MI) | H (FT) | W (FT) | V/C | QUEUE (VEH) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. N Leg App - FreeFlow | * | -81.0 | -29.0 | -423.0 | 910.0 | * | 999. | 340. | AG | 391. | 0.1 | 0.0 | 41.7 | | |
| 2. N Leg App - Queue | * | -127.2 | 98.0 | -162.5 | 194.7 | * | 103. | 340. | AG | 0. | 100.0 | 0.0 | 22.0 | 0.81 | 5.2 |
| 3. N Leg Dep - FreeFlow | * | 81.0 | 29.0 | -261.0 | 969.0 | * | 1000. | 340. | AG | 375. | 0.1 | 0.0 | 41.7 | | |
| 4. S Leg App - FreeFlow | * | 81.0 | 29.0 | 423.0 | -910.0 | * | 999. | 160. | AG | 199. | 0.1 | 0.0 | 41.7 | | |
| 5. S Leg App - Queue | * | 127.2 | -98.0 | 144.3 | -144.8 | * | 50. | 160. | AG | 0. | 100.0 | 0.0 | 22.0 | 0.41 | 2.5 |
| 6. S Leg Dep - FreeFlow | * | -81.0 | -29.0 | 261.0 | -969.0 | * | 1000. | 160. | AG | 894. | 0.1 | 0.0 | 41.7 | | |
| 7. E Leg App - FreeFlow | * | 0.0 | 20.0 | 982.0 | -189.0 | * | 1004. | 102. | AG | 1525. | 0.1 | 0.0 | 52.7 | | |
| 8. E Leg App - Queue | * | 196.8 | -21.8 | 354.4 | -55.4 | * | 161. | 102. | AG | 0. | 100.0 | 0.0 | 33.0 | 0.68 | 8.2 |
| 9. E Leg Dep - FreeFlow | * | 0.0 | -20.0 | 974.0 | -227.0 | * | 996. | 102. | AG | 1527. | 0.1 | 0.0 | 52.7 | | |
| 10. W Leg App - FreeFlow | * | 0.0 | -20.0 | -612.0 | 110.0 | * | 626. | 282. | AG | 971. | 0.1 | 0.0 | 52.7 | | |
| 11. W Leg App - Queue | * | -196.8 | 21.8 | -297.0 | 43.1 | * | 102. | 282. | AG | 0. | 100.0 | 0.0 | 33.0 | 0.43 | 5.2 |
| 12. W Leg Dep - FreeFlow | * | 0.0 | 20.0 | -604.0 | 148.0 | * | 617. | 282. | AG | 830. | 0.1 | 0.0 | 52.7 | | |
| 13. N Leg SLIP- FreeFlow | * | 121.0 | 29.0 | -221.0 | 969.0 | * | 1000. | 340. | AG | 383. | 0.1 | 0.0 | 36.0 | | |
| 14. SELeg SLIP-FreeFlow | * | 210.0 | -300.0 | 400.0 | -110.0 | * | 269. | 45. | AG | 541. | 0.1 | 0.0 | 32.0 | | |
| 15. SWLeg SLIP-FreeFlow | * | -140.0 | -29.0 | 240.0 | -969.0 | * | 1014. | 158. | AG | 311. | 0.1 | 0.0 | 32.0 | | |
| 16. i93 NB | * | -306.8 | 951.8 | 377.2 | -926.1 | * | 1999. | 160. | BR | 4380. | 0.0 | 22.0 | 56.0 | | |
| 17. I 93 SB | * | -377.2 | 926.1 | 306.8 | -951.8 | * | 1999. | 160. | BR | 4000. | 0.0 | 22.0 | 56.0 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | * | 120 | 92 | 8.0 | 391 | 1600 | 0.04 | 2 3 |
| 5. S Leg App - Queue | * | 120 | 92 | 8.0 | 199 | 1600 | 0.04 | 2 3 |
| 8. E Leg App - Queue | * | 120 | 58 | 4.0 | 1525 | 1600 | 0.04 | 2 3 |
| 11. W Leg App - Queue | * | 120 | 58 | 4.0 | 971 | 1600 | 0.04 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 104.9 | 24.7 | 5.9 |
| 2. N Leg, E Side - 25 m | 80.2 | 92.4 | 5.9 |
| 3. N Leg, E Side - 50 m | 52.2 | 169.5 | 5.9 |
| 4. N Leg, E Side-Midblk | -62.7 | 485.2 | 5.9 |
| 5. N Leg, W Side-Corner | -142.0 | 77.2 | 5.9 |
| 6. N Leg, W Side - 25 m | -166.6 | 144.9 | 5.9 |
| 7. N Leg, W Side - 50 m | -194.7 | 222.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -309.6 | 537.7 | 5.9 |
| 9. S Leg, E Side-Corner | 142.0 | -77.2 | 5.9 |
| 10. S Leg, E Side - 25 m | 166.6 | -144.9 | 5.9 |
| 11. S Leg, E Side - 50 m | 194.7 | -222.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 309.6 | -537.7 | 5.9 |
| 13. S Leg, W Side-Corner | -104.9 | -24.7 | 5.9 |
| 14. S Leg, W Side - 25 m | -80.2 | -92.4 | 5.9 |
| 15. S Leg, W Side - 50 m | -52.2 | -169.5 | 5.9 |
| 16. S Leg, W Side-Midblk | 62.7 | -485.2 | 5.9 |
| 17. E Leg, N Side - 25 m | 175.3 | 9.8 | 5.9 |
| 18. E Leg, N Side - 50 m | 255.5 | -7.3 | 5.9 |
| 19. E Leg, N Side-Midblk | 491.7 | -57.5 | 5.9 |
| 20. W Leg, N Side - 25 m | -212.4 | 92.2 | 5.9 |
| 21. W Leg, N Side - 50 m | -292.6 | 109.2 | 5.9 |
| 22. W Leg, N Side-Midblk | -528.8 | 159.4 | 5.9 |
| 23. E Leg, S Side - 25 m | 212.4 | -92.2 | 5.9 |
| 24. E Leg, S Side - 50 m | 292.6 | -109.2 | 5.9 |
| 25. E Leg, S Side-Midblk | 528.8 | -159.4 | 5.9 |
| 26. W Leg, S Side - 25 m | -175.3 | -9.8 | 5.9 |
| 27. W Leg, S Side - 50 m | -255.5 | 7.3 | 5.9 |
| 28. W Leg, S Side-Midblk | -491.7 | 57.5 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (UG/M**3) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 1.400 | 1.500 | 1.500 | 1.500 | 5.100 | 5.100 | 4.600 | 4.100 | 6.000 | 3.500 | 2.500 | 1.400 | 8.000 | 7.600 | 7.500 |
| 20. | * 1.100 | 1.300 | 1.300 | 1.300 | 4.600 | 4.700 | 4.200 | 4.100 | 5.700 | 3.500 | 2.500 | 1.400 | 7.500 | 7.400 | 7.100 |
| 30. | * 1.100 | 1.100 | 1.100 | 1.100 | 4.100 | 4.400 | 3.700 | 3.800 | 5.600 | 3.400 | 2.300 | 1.200 | 7.100 | 7.000 | 6.900 |
| 40. | * 1.000 | 1.000 | 1.000 | 1.000 | 3.700 | 3.900 | 3.400 | 3.400 | 5.800 | 3.500 | 2.500 | 1.200 | 6.900 | 6.900 | 6.400 |
| 50. | * 1.200 | 0.900 | 0.900 | 0.900 | 3.600 | 3.800 | 3.300 | 3.300 | 6.300 | 3.700 | 2.600 | 1.100 | 7.200 | 7.100 | 6.200 |
| 60. | * 1.200 | 0.900 | 0.900 | 0.900 | 3.500 | 3.700 | 3.200 | 3.200 | 7.100 | 3.800 | 2.900 | 0.800 | 7.900 | 7.400 | 6.500 |
| 70. | * 1.100 | 0.900 | 0.900 | 0.900 | 3.600 | 3.800 | 3.300 | 3.300 | 7.700 | 4.100 | 3.100 | 0.400 | 8.700 | 7.800 | 6.800 |
| 80. | * 1.700 | 0.900 | 0.900 | 0.900 | 4.000 | 3.700 | 3.200 | 3.200 | 8.400 | 4.100 | 3.000 | 0.100 | 10.200 | 7.900 | 6.800 |
| 90. | * 3.700 | 1.300 | 1.000 | 0.900 | 5.700 | 4.100 | 3.300 | 3.200 | 8.900 | 3.500 | 2.100 | 0.000 | 11.100 | 7.600 | 5.900 |
| 100. | * 7.400 | 2.500 | 1.600 | 1.000 | 8.900 | 5.600 | 4.100 | 3.400 | 7.400 | 2.100 | 1.100 | 0.000 | 10.600 | 6.300 | 5.100 |
| 110. | * 9.900 | 4.300 | 2.600 | 1.300 | 10.900 | 7.600 | 5.700 | 4.100 | 4.000 | 0.800 | 0.600 | 0.000 | 7.700 | 5.200 | 4.700 |
| 120. | * 10.100 | 5.600 | 3.900 | 1.900 | 10.400 | 8.500 | 7.000 | 5.000 | 1.800 | 0.500 | 0.600 | 0.100 | 5.900 | 5.100 | 5.000 |
| 130. | * 8.900 | 5.600 | 4.400 | 2.500 | 9.500 | 8.200 | 7.300 | 5.900 | 0.900 | 0.400 | 0.600 | 0.100 | 5.800 | 5.600 | 5.500 |
| 140. | * 8.200 | 5.600 | 4.700 | 3.200 | 9.700 | 8.200 | 7.400 | 6.700 | 0.900 | 0.600 | 0.800 | 0.200 | 6.500 | 6.300 | 6.300 |
| 150. | * 7.900 | 6.000 | 5.400 | 4.400 | 9.300 | 8.000 | 7.200 | 6.500 | 1.500 | 1.200 | 1.300 | 0.600 | 6.600 | 6.500 | 6.400 |
| 160. | * 9.000 | 7.300 | 6.800 | 6.400 | 7.600 | 5.900 | 5.800 | 4.600 | 2.800 | 2.500 | 2.600 | 1.400 | 5.000 | 5.000 | 5.000 |
| 170. | * 10.300 | 8.600 | 7.900 | 7.400 | 5.400 | 3.700 | 3.300 | 2.400 | 4.500 | 4.000 | 4.000 | 2.500 | 2.800 | 3.000 | 3.000 |
| 180. | * 10.500 | 8.900 | 8.100 | 6.400 | 4.100 | 2.600 | 2.000 | 1.100 | 4.900 | 4.500 | 4.400 | 3.300 | 1.300 | 1.600 | 1.600 |
| 190. | * 10.600 | 8.400 | 7.200 | 5.400 | 3.600 | 2.200 | 1.600 | 0.800 | 4.800 | 4.400 | 4.400 | 3.800 | 0.800 | 1.000 | 1.000 |
| 200. | * 9.900 | 7.800 | 6.200 | 4.600 | 3.500 | 2.000 | 1.500 | 0.700 | 4.300 | 3.900 | 3.800 | 3.700 | 0.600 | 0.800 | 0.900 |
| 210. | * 9.300 | 7.100 | 5.300 | 4.300 | 3.400 | 2.100 | 1.500 | 0.500 | 3.900 | 3.500 | 3.500 | 3.400 | 0.600 | 0.800 | 0.800 |
| 220. | * 9.300 | 6.500 | 5.000 | 4.000 | 3.600 | 2.200 | 1.400 | 0.300 | 3.600 | 3.200 | 3.300 | 3.300 | 0.600 | 0.700 | 0.700 |
| 230. | * 9.700 | 5.900 | 4.400 | 3.600 | 3.800 | 2.100 | 1.300 | 0.000 | 3.500 | 3.100 | 3.100 | 3.200 | 0.700 | 0.500 | 0.600 |
| 240. | * 10.000 | 5.700 | 4.600 | 3.300 | 4.100 | 2.100 | 1.300 | 0.000 | 3.400 | 3.000 | 3.000 | 3.000 | 0.700 | 0.500 | 0.600 |
| 250. | * 10.400 | 5.300 | 4.800 | 3.200 | 4.500 | 2.100 | 1.200 | 0.000 | 3.400 | 3.100 | 3.000 | 3.100 | 0.700 | 0.500 | 0.600 |
| 260. | * 10.600 | 5.200 | 4.300 | 3.000 | 4.900 | 1.900 | 0.700 | 0.000 | 3.800 | 3.200 | 3.000 | 3.100 | 0.900 | 0.500 | 0.600 |
| 270. | * 10.400 | 5.100 | 4.000 | 3.200 | 4.700 | 1.200 | 0.300 | 0.000 | 5.000 | 3.400 | 3.000 | 3.100 | 1.900 | 0.600 | 0.600 |
| 280. | * 9.400 | 4.400 | 3.800 | 3.400 | 3.800 | 0.700 | 0.100 | 0.100 | 7.700 | 4.400 | 3.500 | 3.300 | 3.600 | 1.200 | 0.800 |
| 290. | * 7.100 | 4.200 | 3.800 | 3.800 | 2.100 | 0.200 | 0.100 | 0.100 | 9.900 | 5.700 | 4.300 | 3.600 | 4.900 | 2.100 | 1.300 |
| 300. | * 5.400 | 4.000 | 4.000 | 4.000 | 0.900 | 0.100 | 0.100 | 0.100 | 10.600 | 6.600 | 5.100 | 4.000 | 5.300 | 2.900 | 1.900 |
| 310. | * 5.300 | 4.700 | 4.700 | 4.400 | 0.600 | 0.200 | 0.200 | 0.200 | 11.000 | 7.600 | 5.900 | 4.800 | 4.800 | 3.000 | 2.500 |
| 320. | * 5.900 | 5.400 | 5.300 | 4.800 | 0.700 | 0.500 | 0.400 | 0.300 | 11.300 | 8.400 | 6.900 | 5.700 | 4.600 | 3.300 | 3.000 |
| 330. | * 6.100 | 5.600 | 5.600 | 4.600 | 1.700 | 1.400 | 1.200 | 1.000 | 11.000 | 8.500 | 7.000 | 5.900 | 5.300 | 4.000 | 3.800 |

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 340.  *   5.100   4.700   4.500   3.700   3.400   2.900   2.800   2.000   9.400   6.600   5.600
4.600   6.700   6.000   6.000
 350.  *   3.100   3.100   3.000   2.800   5.100   4.600   4.200   3.100   7.400   4.800   3.800
2.600   8.100   7.700   7.500
 360.  *   2.000   2.000   2.000   1.900   5.600   5.200   4.800   3.800   6.100   3.800   2.900
1.600   8.600   8.100   8.000
 ------*-------------------------------------------------------------------------------------------
------------------------
 MAX   *  10.600   8.900   8.100   7.400  10.900   8.500   7.400   6.700  11.300   8.500   7.000
5.900  11.100   8.100   8.000
 DEGR. *    190     180     180     170     110     120     140     140     320     330     330     330
90     360     360
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * | CONCENTRATION (UG/M**3) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * | 7.000 | 0.000 | 0.000 | 0.000 | 3.100 | 2.200 | 0.600 | 6.100 | 6.100 | 5.800 | 6.600 | 6.300 | 4.300 |
| 20. | * | 6.200 | 0.000 | 0.000 | 0.000 | 3.000 | 2.400 | 1.200 | 5.900 | 5.900 | 5.600 | 6.300 | 6.300 | 4.600 |
| 30. | * | 5.800 | 0.100 | 0.100 | 0.100 | 3.000 | 2.200 | 1.400 | 5.800 | 5.800 | 5.500 | 6.200 | 6.100 | 4.700 |
| 40. | * | 5.400 | 0.200 | 0.200 | 0.200 | 2.900 | 2.200 | 1.500 | 6.000 | 5.900 | 5.700 | 6.000 | 6.100 | 4.800 |
| 50. | * | 5.200 | 0.400 | 0.400 | 0.400 | 2.900 | 2.300 | 1.600 | 6.400 | 6.300 | 6.100 | 6.200 | 6.200 | 5.000 |
| 60. | * | 5.000 | 0.500 | 0.500 | 0.500 | 3.000 | 2.300 | 1.600 | 7.100 | 6.900 | 6.800 | 6.600 | 6.700 | 5.400 |
| 70. | * | 4.800 | 0.600 | 0.600 | 0.600 | 3.000 | 2.400 | 1.700 | 7.600 | 7.500 | 7.300 | 7.300 | 7.100 | 5.900 |
| 80. | * | 4.200 | 1.300 | 1.300 | 1.200 | 3.500 | 2.800 | 2.100 | 8.400 | 8.300 | 7.900 | 8.500 | 7.900 | 6.600 |
| 90. | * | 3.700 | 3.400 | 3.300 | 2.900 | 4.800 | 4.200 | 3.500 | 8.800 | 8.700 | 7.800 | 9.700 | 8.900 | 7.700 |
| 100. | * | 4.000 | 7.200 | 6.900 | 6.000 | 7.400 | 7.100 | 5.900 | 7.100 | 7.100 | 6.000 | 9.000 | 8.400 | 7.000 |
| 110. | * | 4.500 | 9.900 | 9.600 | 8.500 | 9.400 | 8.400 | 7.300 | 4.100 | 4.000 | 3.200 | 6.500 | 5.800 | 4.800 |
| 120. | * | 5.000 | 10.200 | 10.100 | 9.100 | 8.900 | 8.400 | 7.200 | 1.700 | 1.900 | 1.300 | 4.800 | 4.000 | 2.500 |
| 130. | * | 5.500 | 9.000 | 9.200 | 8.400 | 8.100 | 7.600 | 6.200 | 0.900 | 1.100 | 0.600 | 4.300 | 3.200 | 2.000 |
| 140. | * | 6.000 | 8.100 | 8.400 | 7.500 | 7.800 | 6.800 | 5.100 | 0.700 | 0.900 | 0.400 | 4.400 | 3.100 | 1.400 |
| 150. | * | 5.800 | 7.300 | 7.700 | 6.800 | 6.900 | 5.800 | 4.200 | 0.700 | 0.800 | 0.300 | 3.700 | 2.000 | 0.600 |
| 160. | * | 4.800 | 7.300 | 7.400 | 6.200 | 5.200 | 4.600 | 3.400 | 1.100 | 0.800 | 0.200 | 2.000 | 0.700 | 0.100 |
| 170. | * | 3.000 | 8.200 | 7.600 | 5.900 | 3.900 | 3.500 | 3.200 | 2.200 | 1.500 | 0.100 | 0.700 | 0.100 | 0.100 |
| 180. | * | 1.800 | 8.900 | 8.400 | 6.100 | 3.400 | 3.400 | 3.200 | 3.000 | 2.300 | 0.100 | 0.100 | 0.000 | 0.000 |
| 190. | * | 1.300 | 9.400 | 9.100 | 7.000 | 3.700 | 3.500 | 3.400 | 3.100 | 2.700 | 0.700 | 0.000 | 0.000 | 0.000 |
| 200. | * | 1.100 | 9.000 | 8.900 | 7.300 | 3.600 | 3.300 | 3.200 | 2.900 | 2.700 | 1.100 | 0.000 | 0.000 | 0.000 |
| 210. | * | 1.000 | 8.500 | 8.700 | 7.400 | 3.500 | 3.200 | 3.100 | 2.700 | 2.600 | 1.500 | 0.000 | 0.000 | 0.000 |
| 220. | * | 0.800 | 8.600 | 8.800 | 7.700 | 3.700 | 3.400 | 3.100 | 2.800 | 2.400 | 1.500 | 0.100 | 0.100 | 0.100 |
| 230. | * | 0.700 | 8.900 | 9.000 | 8.300 | 3.800 | 3.600 | 3.200 | 2.800 | 2.200 | 1.600 | 0.200 | 0.200 | 0.200 |
| 240. | * | 0.700 | 9.500 | 9.600 | 9.000 | 4.100 | 3.900 | 3.000 | 2.900 | 2.200 | 1.700 | 0.200 | 0.200 | 0.200 |
| 250. | * | 0.700 | 10.100 | 10.400 | 9.600 | 4.400 | 4.200 | 2.600 | 3.000 | 2.400 | 2.100 | 0.300 | 0.300 | 0.300 |
| 260. | * | 0.700 | 10.600 | 10.800 | 10.400 | 4.500 | 4.400 | 2.100 | 3.400 | 2.900 | 2.600 | 0.600 | 0.600 | 0.500 |
| 270. | * | 0.700 | 10.700 | 10.900 | 11.000 | 4.400 | 4.100 | 1.800 | 4.700 | 4.600 | 4.300 | 1.600 | 1.400 | 0.900 |
| 280. | * | 0.800 | 9.000 | 9.100 | 9.600 | 3.500 | 3.100 | 1.300 | 7.200 | 7.200 | 7.400 | 3.300 | 3.000 | 1.800 |
| 290. | * | 1.000 | 6.600 | 6.200 | 6.000 | 1.800 | 1.700 | 0.800 | 9.400 | 9.500 | 10.100 | 4.700 | 4.300 | 2.500 |
| 300. | * | 1.200 | 4.800 | 4.100 | 3.400 | 0.700 | 0.700 | 0.400 | 10.400 | 10.300 | 10.300 | 5.300 | 5.000 | 3.200 |
| 310. | * | 1.600 | 4.200 | 3.300 | 2.300 | 0.400 | 0.300 | 0.300 | 10.300 | 10.200 | 9.300 | 4.900 | 4.900 | 3.600 |
| 320. | * | 2.600 | 4.200 | 2.900 | 1.600 | 0.200 | 0.200 | 0.200 | 10.200 | 9.600 | 8.000 | 4.400 | 4.600 | 3.700 |
| 330. | * | 4.100 | 3.400 | 2.000 | 0.900 | 0.400 | 0.200 | 0.200 | 9.100 | 8.400 | 6.900 | 4.200 | 4.300 | 3.700 |

```
 340.  *   6.700   1.800   0.900   0.300   0.900   0.300   0.100   7.500   6.900   5.900   4.600
4.400   3.400
 350.  *   8.300   0.500   0.100   0.100   2.100   0.900   0.100   6.100   5.800   5.500   5.700
4.800   3.300
 360.  *   8.100   0.000   0.000   0.000   2.900   1.700   0.100   5.700   5.900   5.600   6.400
5.700   3.600
 ------*-------------------------------------------------------------------------------------------
---------
 MAX   *   8.300  10.700  10.900  11.000   9.400   8.400   7.300  10.400  10.300  10.300   9.700
8.900   7.700
 DEGR. *    350     270     270     270     110     110     110     300     300     300      90      90
90

 THE HIGHEST CONCENTRATION OF   11.300 UG/M**3 OCCURRED AT RECEPTOR     9.
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*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

JOB: Bow Concord RUN: Exit 14 SB 2035 Build AM co

DATE : 3/ 1/18
TIME : 11:32:45

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 175. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

| LINK DESCRIPTION | * | LINK COORDINATES (FT) | | | | * | LENGTH | BRG | TYPE | VPH | EF | H | W | V/C | QUEUE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | X1 | Y1 | X2 | Y2 | * | (FT) | (DEG) | | | (G/MI) | (FT) | (FT) | | (VEH) |
| 1. N Leg App - FreeFlow | * | 0.0 | 0.0 | -110.0 | 990.0 | * | 996. | 354. | AG | 267. | 0.7 | 0.0 | 43.7 | | |
| 2. N Leg App - Queue | * | -7.1 | 63.9 | -110.8 | 996.9 | * | 939. | 354. | AG | 9. | 100.0 | 0.0 | 24.0 | 2.51 | 47.7 |
| 3. S Leg Dep - FreeFlow | * | 0.0 | 0.0 | 250.0 | -970.0 | * | 1002. | 166. | AG | 831. | 0.8 | 0.0 | 43.7 | | |
| 4. E Leg App - FreeFlow | * | 0.0 | 30.0 | 440.0 | 100.0 | * | 446. | 81. | AG | 1706. | 1.1 | 0.0 | 67.7 | | |
| 5. E Leg App - Queue | * | 25.5 | 34.1 | 94.5 | 45.1 | * | 70. | 81. | AG | 5. | 100.0 | 0.0 | 48.0 | 0.37 | 3.5 |
| 6. E Leg Dep - FreeFlow | * | 10.0 | -30.0 | 450.0 | 60.0 | * | 449. | 78. | AG | 1279. | 1.1 | 0.0 | 55.7 | | |
| 7. W Leg App - FreeFlow | * | 10.0 | -30.0 | -900.0 | -160.0 | * | 919. | 262. | AG | 1428. | 0.7 | 0.0 | 55.7 | | |
| 8. W Leg App - Queue | * | -7.7 | -32.5 | -162.2 | -54.6 | * | 156. | 262. | AG | 7. | 100.0 | 0.0 | 36.0 | 0.64 | 7.9 |
| 9. W Leg Dep - FreeFlow | * | 0.0 | 30.0 | -900.0 | -130.0 | * | 914. | 260. | AG | 1291. | 1.5 | 0.0 | 67.7 | | |
| 10. I93 NB N Leg - FF | * | 170.0 | 30.0 | 20.0 | 1010.0 | * | 991. | 351. | BR | 4380. | 0.8 | 22.0 | 62.0 | | |
| 11. I93 NB S Leg - FF | * | 170.0 | 30.0 | 380.0 | -940.0 | * | 992. | 168. | BR | 4380. | 0.8 | 22.0 | 62.0 | | |
| 12. I93 SB N Leg - FF | * | 90.0 | 20.0 | -70.0 | 1010.0 | * | 1003. | 351. | BR | 4000. | 0.8 | 22.0 | 62.0 | | |
| 13. I93 SB S Leg - FF | * | 90.0 | 20.0 | 310.0 | -970.0 | * | 1014. | 167. | BR | 4000. | 0.8 | 22.0 | 62.0 | | |

DATE : 3/ 1/18
TIME : 11:32:45

ADDITIONAL QUEUE LINK PARAMETERS

| LINK DESCRIPTION | CYCLE LENGTH (SEC) | RED TIME (SEC) | CLEARANCE LOST TIME (SEC) | APPROACH VOL (VPH) | SATURATION FLOW RATE (VPH) | IDLE EM FAC (gm/hr) | SIGNAL TYPE ARRIVAL RATE |
|---|---|---|---|---|---|---|---|
| 2. N Leg App - Queue | 120 | 112 | 2.0 | 267 | 1600 | 1.74 | 2 3 |
| 5. E Leg App - Queue | 120 | 30 | 2.0 | 1706 | 1600 | 1.74 | 2 3 |
| 8. W Leg App - Queue | 120 | 60 | 2.0 | 1428 | 1600 | 1.74 | 2 3 |

RECEPTOR LOCATIONS

| RECEPTOR | COORDINATES (FT) X | Y | Z |
|---|---|---|---|
| 1. N Leg, E Side-Corner | 20.0 | 60.0 | 5.9 |
| 2. N Leg, E Side - 25 m | 0.0 | 160.0 | 5.9 |
| 3. N Leg, E Side - 50 m | -10.0 | 240.0 | 5.9 |
| 4. N Leg, E Side-Midblk | -40.0 | 500.0 | 5.9 |
| 5. N Leg, W Side-Corner | -40.0 | 50.0 | 5.9 |
| 6. N Leg, W Side - 25 m | -50.0 | 150.0 | 5.9 |
| 7. N Leg, W Side - 50 m | -60.0 | 230.0 | 5.9 |
| 8. N Leg, W Side-Midblk | -90.0 | 490.0 | 5.9 |
| 9. S Leg, E Side-Corner | 50.0 | -60.0 | 5.9 |
| 10. S Leg, E Side - 25 m | 60.0 | -140.0 | 5.9 |
| 11. S Leg, E Side - 50 m | 80.0 | -220.0 | 5.9 |
| 12. S Leg, E Side-Midblk | 140.0 | -480.0 | 5.9 |
| 13. S Leg, W Side-Corner | -20.0 | -70.0 | 5.9 |
| 14. S Leg, W Side - 25 m | 10.0 | -150.0 | 5.9 |
| 15. S Leg, W Side - 50 m | 30.0 | -240.0 | 5.9 |
| 16. S Leg, W Side-Midblk | 90.0 | -500.0 | 5.9 |
| 17. E Leg, N Side - 25 m | 130.0 | 90.0 | 5.9 |
| 18. E Leg, N Side - 50 m | 230.0 | 100.0 | 5.9 |
| 19. E Leg, N Side-Midblk | 339.7 | 115.6 | 5.9 |
| 20. W Leg, N Side - 25 m | -120.0 | 50.0 | 5.9 |
| 21. W Leg, N Side - 50 m | -240.0 | 10.0 | 5.9 |
| 22. W Leg, N Side-Midblk | -460.0 | -30.0 | 5.9 |
| 23. E Leg, S Side - 25 m | 160.0 | -40.0 | 5.9 |
| 24. E Leg, S Side - 50 m | 260.0 | -20.0 | 5.9 |
| 25. E Leg, S Side-Midblk | 359.2 | 7.3 | 5.9 |
| 26. W Leg, S Side - 25 m | -120.0 | -100.0 | 5.9 |
| 27. W Leg, S Side - 50 m | -210.0 | -100.0 | 5.9 |
| 28. W Leg, S Side-Midblk | -440.0 | -120.0 | 5.9 |

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | * 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | * 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 80. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 90. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | * 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | * 0.2000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | * 0.2000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | * 0.2000 | 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | * 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 280. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 290. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 300. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 310. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 330. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

```
 340.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000
0.1000  0.0000  0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------------
-------------------------
 MAX   *  0.2000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000
 DEGR. *    140      10      10      10      80      10      10      10      10     130      20      10
10      10      10      10
```

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

| WIND ANGLE (DEGR) | * CONCENTRATION (PPM) 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 20. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30. | * 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 40. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 |
| 80. | * 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 90. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160. | * 0.0000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170. | * 0.0000 | 0.3000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180. | * 0.0000 | 0.2000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.2000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190. | * 0.0000 | 0.1000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200. | * 0.0000 | 0.1000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 210. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 220. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 230. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 240. | * 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 250. | * 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 260. | * 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 270. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 280. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.1000 |
| 290. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 |
| 300. | * 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 310. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 320. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 330. | * 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

```
 340.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.0000
0.0000  0.0000
 350.  *  0.0000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.0000
0.0000  0.0000
 360.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000
 ------*-------------------------------------------------------------------------------------------------
---------
 MAX   *  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000  0.0000
0.0000  0.1000
 DEGR. *     10     170     180      90     100      70      70     170     180     270      10      10
70

 THE HIGHEST CONCENTRATION OF   0.3000 PPM OCCURRED AT RECEPTOR    17.
```

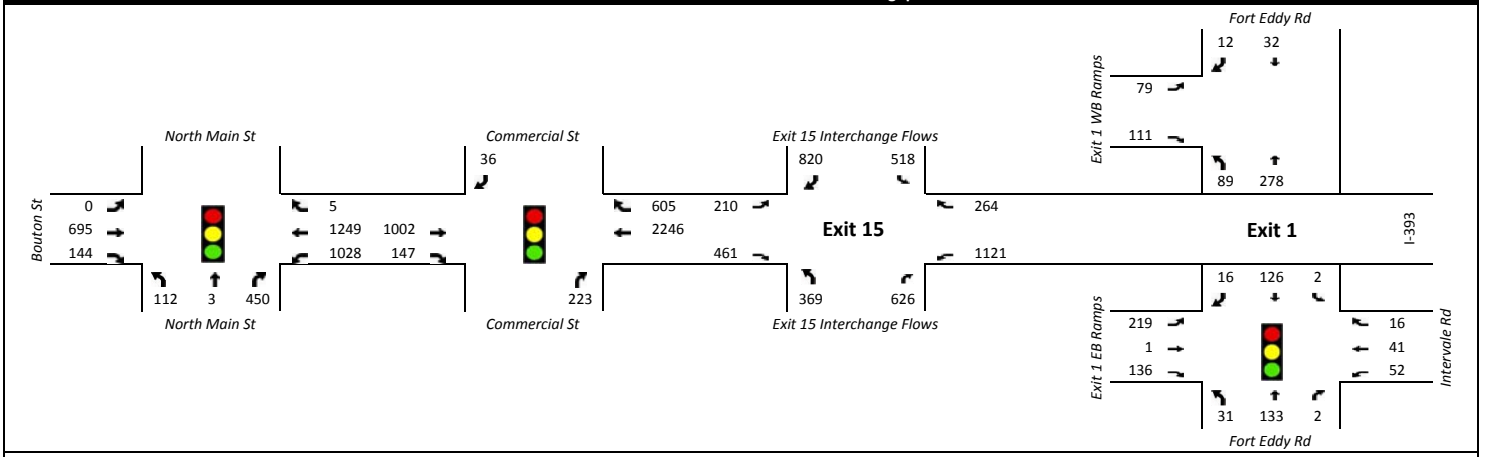
# APPENDIX B

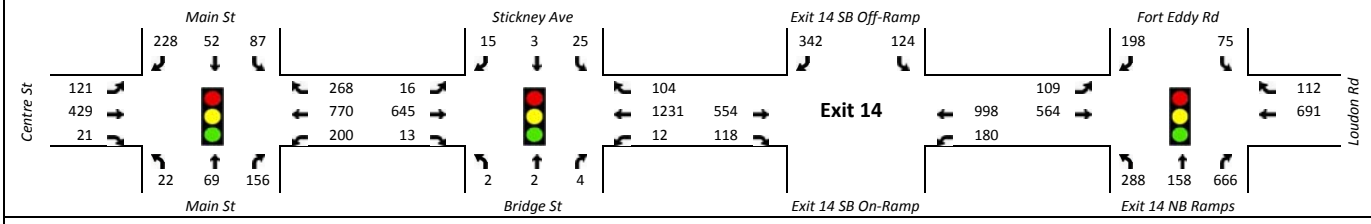
# TRAFFIC DATA

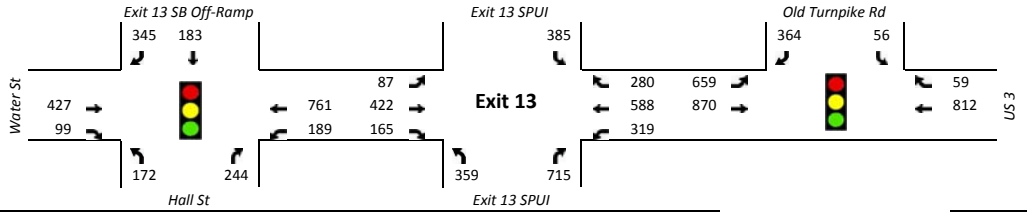
# APPENDIX B

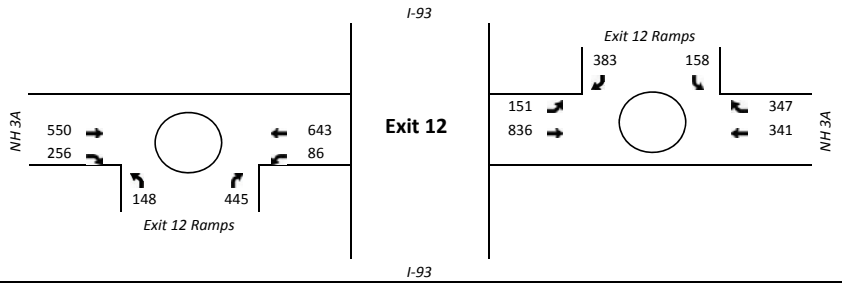
# TRAFFIC DATA

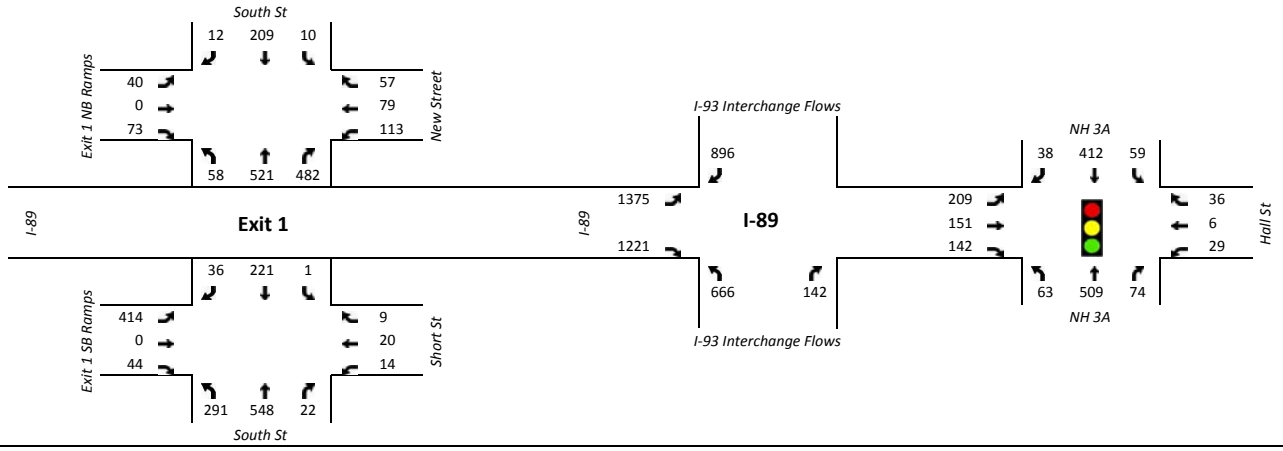
**Scenario D - 2035 AM Peak Hour Model Throughput**



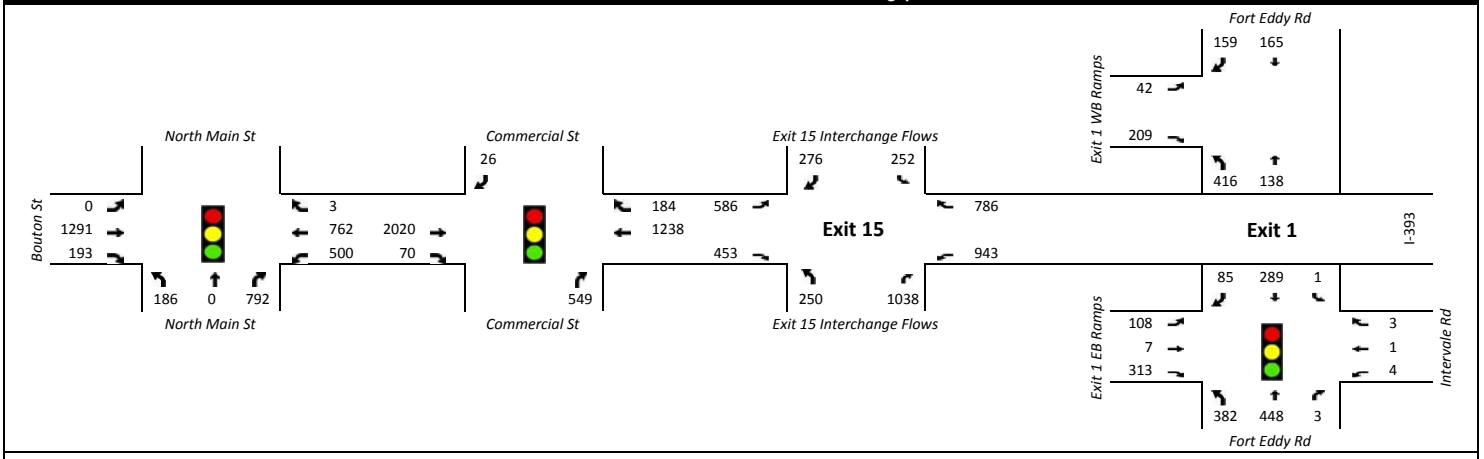



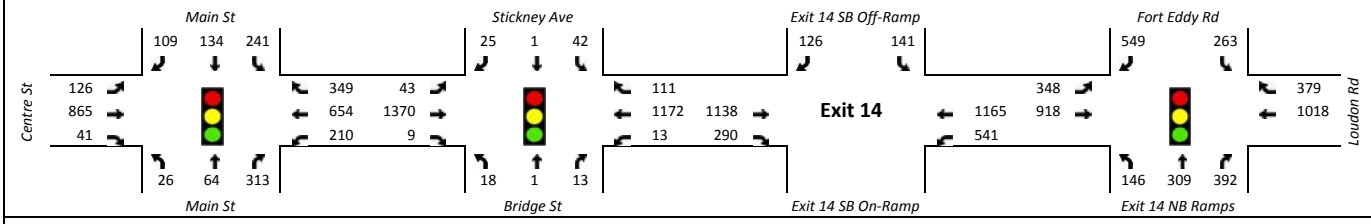



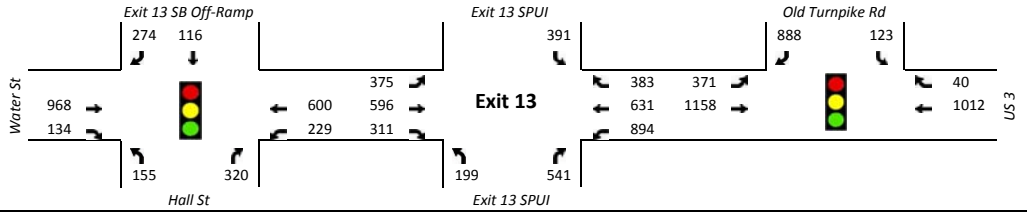



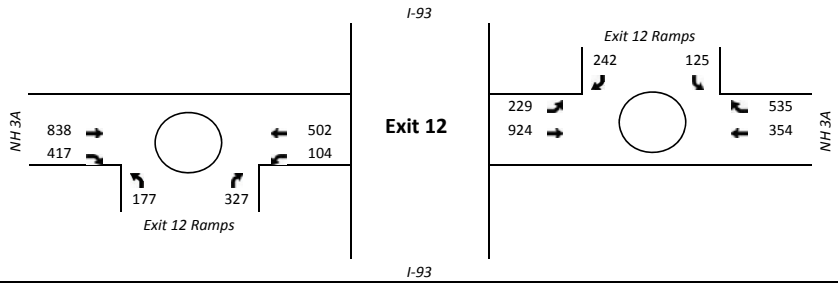



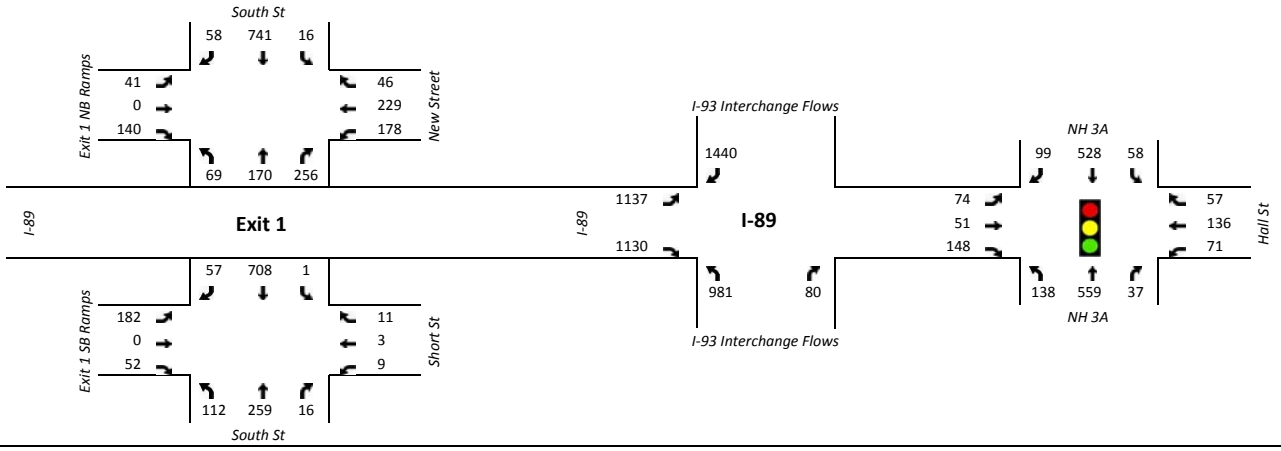
**Scenario D - 2035 PM Peak Hour Model Throughput**



**Loudon Road & Stickney Ave**

Coord Beg of Yellow

Yield Point: By Phase

| | Cycle | Offset |
|---|---|---|
| AM | 120 | 39 |
| PM | 120 | 77 |

| | Barrier 1 | | Barrier 2 |
|---|---|---|---|
| Ring 1 | 1 | 2 | 4 |
| Ring 2 | 5 | 6 | 8 |

| Phase | 1 | 2 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|
| Movement | WBL | EBT | SB | EBL | WBT | NB |
| Min Green | 5 | 6 | 6 | 5 | 6 | 6 |
| Yellow | 4 | 4 | 4 | 4 | 4 | 4 |
| All Red | 2 | 2 | 2 | 2 | 2 | 2 |
| Extension | 2 | | 3 | 2 | | 3 |
| AM Recall | | Max | | | Max | |
| PM Recall | | Max | | | Max | |
| Simult Gap | Yes | Yes | Yes | Yes | Yes | Yes |
| Coordinated | | Yes | | | Yes | |
| Walk + FDW | | 15 | 10 | | 15 | |
| Max Inhibit | No | - | No | No | - | No |
| AM Split | 16 | 88 | 16 | 16 | 88 | 16 |
| PM Split | 20.4 | 83.6 | 16 | 16 | 88 | 16 |

**Loudon Road & Exit 14 SB Ramps**

Coord Beg of Yellow

Yield Point: By Phase

| | Cycle | Offset |
|---|---|---|
| AM | 120 | 16 |
| PM | 120 | 77 |

| | Barrier 1 | | Barrier 2 |
|---|---|---|---|
| Ring 1 | 1 | 2 | 4 |
| Ring 2 | | 6 | |

| Phase | 1 | 2 | 4 | 6 |
|---|---|---|---|---|
| Movement | WBL | EBT | SB | WBT |
| Min Green | 6 | 6 | 6 | 6 |
| Yellow | 4 | 4 | 4 | 4 |
| All Red | 2 | 2 | 2 | 2 |
| Extension | 3 | 3 | 3 | 3 |
| AM Recall | | Min | | Min |
| PM Recall | | Max | | Max |
| Simult Gap Out | Yes | Yes | Yes | Yes |
| Coordinated | | Yes | | Yes |
| Walk + FDW | | 15 | | 15 |
| Max Inhibit | No | - | No | - |
| AM Split | 19 | 40 | 61 | 59 |
| PM Split | 36 | 60.3 | 23.7 | 96.3 |

**Loudon Road & Fort Eddy Road**

Coord Beg of Yellow

Yield Point: By Phase

| | Cycle | Offset |
|---|---|---|
| AM | 120 | 97 |
| PM | 120 | 74 |

| | Barrier 1 | | Barrier 2 | |
|---|---|---|---|---|
| Ring 1 | | 2 | | |
| Ring 2 | 5 | 6 | 8 | 7 |

| Phase | 2 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|
| Movement | EBT | WBL (+SBR) | WBT | SB | NB |
| Min Green | 4 | 4 | 4 | 4 | 4 |
| Yellow | 4 | 4 | 4 | 4 | 4 |
| All Red | 2 | 2 | 2 | 2 | 2 |
| Extension | 3 | 3 | 3 | 3 | 3 |
| AM Recall | | Min | | | Min |
| PM Recall | | Min | | | Min |
| Simult Gap Out | Yes | Yes | Yes | Yes | Yes |
| Coordinated | Yes | | Yes | | |
| Walk + FDW | 14 | | 14 | | |
| Max Inhibit | | Yes | | Yes | Yes |
| AM Split | 51 | 16 | 35 | 28 | 41 |
| PM Split | 53 | 20 | 33 | 45.8 | 21.2 |

**Exit 13 SB Off Ramp & Water St**

Coord Beg of Green

Yield Point: Single

| | Cycle | Offset |
|---|---|---|
| AM | 100 | 0 |
| PM | 120 | 107 |

| | Barrier 1 | | Barrier 2 | Barrier 3 |
|---|---|---|---|---|
| Ring 1 | | 2 | 4 | |
| Ring 2 | 5 | 6 | | 8 |

| Phase | 2 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| Movement | WBT | SB | WBL | EBT | NB |
| Min Green | 4 | 4 | 4 | 4 | 4 |
| Yellow | 4 | 4 | 4 | 4 | 4 |
| All Red | 2 | 2 | 2 | 2 | 2 |
| Extension | 4 | 4 | 4 | 4 | 4 |
| AM Recall | Max | | | Max | |
| PM Recall | Max | | | Max | |
| Simult Gap Out | No | No | No | No | No |
| Coordinated | Yes | | | Yes | |
| Walk + FDW | | | | | |
| Max Inhibit | | Yes | Yes | | Yes |
| AM Split | 51 | 28 | 16 | 35 | 21 |
| PM Split | 65 | 21 | 19 | 46 | 34 |

**Exit 13 SPUI**

Coord Beg of Yellow

Yield Point: By Phase

| | Cycle | Offset |
|---|---|---|
| AM | 100 | 0 |
| PM | 120 | 0 |

| | Barrier 1 | | Barrier 2 |
|---|---|---|---|
| Ring 1 | 1 | 2 | 4 |
| Ring 2 | 5 | 6 | 8 |

| Phase | 1 | 2 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|
| Movement | WBL | EBT | NB | EBL | WBT | SB |
| Min Green | 5 | 5 | 5 | 5 | 5 | 5 |
| Yellow | 4 | 4 | 4 | 4 | 4 | 4 |
| All Red | 2 | 4 | 8 | 2 | 4 | 8 |
| Extension | 2 | 3 | 3 | 3 | 3 | 3 |
| AM Recall | | Max | | | Max | |
| PM Recall | | Max | | | Max | |
| Simult Gap | No | No | No | No | No | No |
| Coordinated | | Yes | | | Yes | |
| Walk + FDW | | | | | | |
| Max Inhibit | Yes | | Yes | Yes | | Yes |
| AM Split | 30 | 40 | 30 | 30 | 40 | 30 |
| PM Split | 36 | 48 | 36 | 36 | 48 | 36 |

I-93 Between Exits 15 and 16
7/9/2013

**AM (7:00 - 8:00)**

| Biles | Cars | 2 Axle Long | Busses | 2 Axle 6 Tire | 3 Axle Single | 4 Axle Single | <5 Axle Comb | 5 Axle Comb |
|---|---|---|---|---|---|---|---|---|
| 15 | 2518 | 979 | 3 | 78 | 21 | 6 | 17 | 66 |
| 0.4% | 67.5% | 26.3% | 0.1% | 2.1% | 0.6% | 0.2% | 0.5% | 1.8% |

| | |
|---|---|
| 94% | cars and light trucks |
| 6% | medium and heavy trucks |

**PM (16:00-17:00)**

| Biles | Cars | 2 Axle Long | Busses | 2 Axle 6 Tire | 3 Axle Single | 4 Axle Single | <5 Axle Comb | 5 Axle Comb |
|---|---|---|---|---|---|---|---|---|
| 20 | 2612 | 1079 | 5 | 56 | 15 | 0 | 7 | 61 |
| 0.5% | 67.5% | 27.9% | 0.1% | 1.4% | 0.4% | 0.0% | 0.2% | 1.6% |

| | |
|---|---|
| 96.0% | cars and light trucks |
| 4% | medium and heavy trucks |

**AM (7:00 - 8:00)**

| >6 Axle Comb | <6 Axle Multi | 6 Axle Multi | >6 Axle Multi |
|---|---|---|---|
| 23 | 1 | 1 | 0 |
| 0.6% | 0.0% | 0.0% | 0% |

**PM (16:00-17:00)**

| >6 Axle Comb | <6 Axle Multi | 6 Axle Multi | >6 Axle Multi |
|---|---|---|---|
| 8 | 1 | 4 | 0 |
| 0.2% | 0.0% | 0.1% | 0% |

| | | 2035 Avg Maximum Queues (ft) | | | |
|---|---|---|---|---|---|
| | | AM | | PM | |
| | | No Build | Scen D | No Build | Scen D |
| Stickney | EB | 209 | 100 | 535 | 286 |
| | WB | 116 | 108 | 113 | 105 |
| | NB | 18 | 18 | 31 | 32 |
| | SB | 34 | 42 | 61 | 63 |
| Exit 14 SB | EB | 53 | 109 | 80 | 120 |
| | WB | 171 | 249 | 171 | 231 |
| | SB | 679 | 303 | 264 | 140 |
| Exit 14 NB | EB | 145 | NA | 160 | NA |
| | WB | 201 | | 203 | |
| Fort Eddy | EB | 156 | 195 | 192 | 199 |
| | WB | 1390 | 526 | 2276 | 731 |
| | NB | 1087 | 314 | 241 | 318 |
| | SB | 58 | 167 | 288 | 333 |
| Exit 13 SB Off-Ramp | EB | 100 | 88 | 439 | 419 |
| | WB | 143 | 175 | 213 | 266 |
| | NB | 144 | 174 | 204 | 187 |
| | SB | 147 | 153 | 138 | 167 |
| Exit 13 SPUI | EB | 102 | 213 | 217 | 315 |
| | WB | 156 | 171 | 368 | 358 |
| | NB | 800 | 302 | 865 | 241 |
| | SB | 144 | 186 | 212 | 214 |