APPENDIX T

AIR QUALITY MODELING MEMORANDUM

JUNEAU ACCESS IMPROVEMENTS SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT

STATE PROJECT NUMBER: 71100
FEDERAL PROJECT NUMBER: STP-000S (131)

Prepared for

Alaska Department of Transportation and Public Facilities
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OCTOBER 2004

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CAA	Clean Air Act of 1970
CFR	Code of Federal Regulation
CO	carbon monoxide
DEIS	Draft Environmental Impact Statement
DOT&PF	Alaska Department of Transportation and Public Facilities
FHWA	Federal Highway Administration
FVF	fast vehicle ferry
NAAQS	National Ambient Air Quality Standards
O_3	ozone
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
$PM_{2.5}$	particulate matter less than 2.5 microns
PM_{10}	particulate matter less than 10 microns
PSD	Prevention of Significant Deterioration
PWADT	peak week average daily traffic
SDEIS	Supplemental Draft Environmental Impact Statement
SIP	State Improvement Plan
SO_2	sulfur dioxide
USDA	United States Department of Agriculture
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

Presented in this technical memorandum are the results of the updated air quality analysis for the 2004 Juneau Access Improvements Supplemental Draft Environmental Impact Statement (SDEIS). This technical memorandum is an update to the 1994 *DEIS Air Quality Analysis Technical Report* prepared for the 1997 Juneau Access Improvements Draft Environmental Impact Statement (DEIS). The Alaska Department of Transportation and Public Facilities (DOT&PF) modified the alternatives evaluated in the 1997 DEIS from those currently being considered in the SDEIS. Additionally, traffic data has been updated for the 2004 SDEIS.

This updated air quality analysis is limited to:

- A quantitative carbon monoxide (CO) emission analysis for the projected number of motor vehicles forecasted for the highway project. This analysis was completed for Alternative 2 traffic volumes only since Alternative 2 had the highest traffic volumes relative to the other proposed alternatives for the project.
- A qualitative analysis of particulate emissions for the highway project.
- Discussion of current air quality standards and ambient air quality information for the project area.

Unless otherwise noted, the assumptions described in the 1994 *DEIS Air Quality Technical Report* were also used in the updated 2004 analysis.

As discussed in Section 4.0, the new data for the 2004 analysis did not substantially alter the estimated air quality impacts relative to those identified in the 1994 technical report. Air quality impacts were determined to be minor for both analyses, due to the low projected population within the Lynn Canal area and low traffic volumes estimated for the project.

2.0 AIR QUALITY STANDARDS AND RELEVANT POLLUTANTS

The indicator for air quality impacts is based on the expected amount of emissions for air pollutants. Air pollution is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Air quality is regulated at the federal level under the Clean Air Act (CAA) of 1970 and the Final Conformity Rule (Title 40, Code of Federal Regulations [CFR], Parts 51 and 93). The Federal Highway Administration (FHWA) conformity and priority procedures are contained in 23 CFR 770. The CAA authorizes the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) for air pollutants, which pose a risk to public health. These primary standards represent the air quality levels, with an adequate safety margin, that are required to protect public health. USEPA has established standards for seven criteria pollutants: carbon monoxide (CO), ozone (O_3), particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and airborne lead. The Alaska Ambient Air Quality Standards mirror the federal standards for most of the pollutants. Table 1 shows the federal and state air quality standards for selected pollutants.

Secondary standards represent air quality levels necessary to protect public welfare. No secondary standard for CO has been promulgated. Both the primary and secondary standards must be met outside a facility's property boundary. The federal standards also require each state to submit a State Improvement Plan (SIP) detailing strategies for attaining the standards. Air quality is regulated at the state level under the Alaska Ambient Air Quality Standards promulgated in Title 18, Chapter 50, of the Alaska Administrative Code (AAC).

In addition to the NAAQS, USEPA has developed Prevention of Significant Deterioration (PSD) standards that limit the incremental increase in air pollutant concentrations above the specified PSD standards. The project area is within the Southeast Alaska Intrastate Air Quality Control Region, where baseline dates have been set for sulfur and nitrogen dioxides and incremental increases of these two pollutants must be below the levels set by USEPA.

FHWA "*Appropriate Level of Highway Air Quality Analysis for a CE, EA/FONSI, and EIS*," March 1986, states that only pollutants of concern for a project analysis are those that would be directly affected by the project. For this project, pollutants of concern are those that can be traced back to motor vehicles and marine vessels. CO is one of the primary pollutants emitted from motor vehicles although vehicles also emit hydrocarbons, nitrogen oxides (NO_x), and particulates. Besides motor vehicles, CO emissions include sources of combustion including heating of buildings, aircraft and watercraft use, and wood burning. Ozone is formed through reactions in the atmosphere involving hydrocarbons and NO_x and is usually assessed on a regional basis. Lead and sulfur oxides are generally associated with stationary sources. Based on USEPA estimates, most of the PM_{10} is a product of fugitive dust, wind erosion, and agricultural and forestry sources.

Of the criteria pollutants, USEPA and FHWA have determined that CO is the only pollutant requiring a microscale analysis for most transportation projects. A qualitative analysis is generally suitable for particulates. Therefore, CO and PM_{10} are the only pollutants used as an indicator of the direct air quality impacts within the immediate vicinity of the project area. As discussed in previous sections, the Alaska Ambient Air Quality Standards for CO and PM_{10} adopt the federal NAAQS promulgated in 40 CFR 50.8.

3.0 REGIONAL CONDITIONS

Air quality impacts are usually assessed on a microscale (local area) and mesoscale (regional) basis. The project design and location determines the type and level of analysis most appropriate for each scale. While transportation facilities as a whole can make considerable contributions to mesoscale air quality problems, a single project the size of the Juneau Access Improvements Project does not. Therefore, project level analysis typically only considers impacts on a microscale basis with a general discussion of how the project may impact any existing mesoscale air quality issues in the region.

3.1 Attainment Status of Project Area

Regions where monitored values of any pollutant exceed the NAAQS are formally designated by USEPA as non-attainment areas. Both federal and state regulations require non-attainment areas to prepare strategies to meet attainment for each pollutant where the NAAQS are exceeded. Documentation of this strategy and planning is then included in the SIP.

The geographic region where the project is located has been designated an air quality attainment area or unclassifiable. This means that the project is in an area where the region meets the ambient air quality standard for each pollutant or there are insufficient data to make a determination. Therefore, the SIP does not contain any control measures and the conformity procedures of 23 CFR 770 does not apply to this project and a conformity determination is not required per 40 CFR 51.

The nearest non-attainment area to the project is the Mendenhall Valley, near Juneau (18 AAC 50.015). The Mendenhall Valley is approximately 40 miles south of the southern extent of the proposed project area. The existing Glacier Highway connects the Mendenhall Valley to the project area. The Mendenhall Valley area is designated as a non-attainment area for airborne particulate matter (PM_{10}). Air quality is impaired primarily during the winter when stable air masses and low winds trap particulate matter in the valley. No other criteria pollutants are above NAAQS for the Mendenhall Valley. On March 24, 1994, USEPA approved the Mendenhall Valley PM_{10} attainment plan. The plan strategy for improving air quality in the Mendenhall Valley focuses on control of wood smoke emissions and fugitive dust sources (e.g., glacial silt, dust from unpaved roads, agriculture/timber harvesting) during the winter months. The increase in traffic along the Glacier Highway is not expected to affect the Mendenhall Valley non-attainment area based on consultations with the USEPA during the 1994 DEIS.

In 1999, EPA announced the final version of the Regional Haze Rule. Regional haze refers to haze that impairs visibility in all directions over a large area. Haze-causing pollutants are directly emitted to the atmosphere by a number of activities (e.g., electric power generation, various industrial and manufacturing processes, truck and auto emissions, burning related to forestry and agriculture, construction activities). The rule requires all States to develop long-term plans to reduce pollutant emissions contributing to haze. Goals to improve visibility in Class I areas and restore them to natural conditions must be established within the plans. Class I areas are a certain type of national and international park and wilderness area. Alaska has four Class I areas. These Class I areas are Denali National Park, Tuxedni Wilderness Area, Simeonof Wilderness Area, and Bering Sea Wilderness Area (ADEC, 2001). The project area is not near or within any Class I areas.

3.2 Ambient Air Quality

Air quality analysis must take into account ambient concentrations of pollutants within the project area. With the exception of Anchorage, Fairbanks, and Juneau, Alaska does not have a statewide air toxics emission inventory (ADEC, 2004). The ambient air quality CO impact is judged insignificant for the project area and no air quality sampling was completed to determine baseline conditions. Minimal to no development has occurred within the project area, except on the ends of the project area near Haines and Skagway. The air quality within the project area is expected to be very good due to the absence of air pollution sources within most of the project area. Therefore, levels of background CO, ozone, sulfur oxides, and NO_x are expected to be low. This determination is further supported by data accumulated for the Kensington Gold Project EIS, which is within the project area, showing that background concentrations of air pollutants were significantly below NAAQS. On rare occasions, elevated PM_{10} concentrations may exist in the project area when wood smoke or smoke from fires is carried south from the Yukon under northerly winds (USDA Forest Service, 1992).

Weather and topography influence air pollution concentrations. Hydrocarbon and NO_2 emissions from automotive sources, when exposed to sunlight, are a major component of photochemical smog. Still air and temperature inversions that result in heavy fog can result in high CO concentrations, if there are sufficient pollutant sources in the area. The potential for dispersion of airborne pollutants at the project area is determined by the stability class, or measure of atmospheric turbulence. Stability classes are divided into six categories, designated "A" through 'F," with the greatest pollutant dispersion occurring for "A." The project area distribution of stability classes is expected to be similar to that found in all of southeast Alaska. Stability class "A" occurs infrequently due to the lack of strong solar insolation. Stability class "D" occurs most frequently (55 percent of the time). The moderately high frequency of stable atmosphere ("E" and "F") classes occur 40 percent of the time. This indicates that there is a potential for elevated air pollution within the project area due to temperature inversion conditions (USDA Forest Service, 1992). Air modeling for the project assumed conservative air dispersion stability class of "F" (little to no wind to disperse pollutants).

For modeling purposes, the *1994 DEIS Air Quality Technical Report* assumed a background CO concentration of one part per million (ppm) for the general project area and two ppm for more urbanized areas such as Skagway. These assumptions are also based on guidance included in the FHWA *Appropriate Level of Highway Air Quality Analysis for a CE, EA/FONSI, and EIS*," March 1986. These background assumptions were used for the 2004 analysis.

4.0 OPERATIONAL IMPACTS

4.1 CO Emission Analysis

4.1.1 1997 DEIS CO Emission Model

As part of the *1994 DEIS Air Quality Analysis Technical Report*, a simplified microscale air quality analysis was performed to predict the CO concentration produced by mobile source emissions for the project area. Hydrocarbon and nitrogen oxide mobile source emissions were not analyzed, as the FHWA does not recommend project-level analyses. No modeling of marine CO emissions (e.g., watercraft, FVF) was completed.

The CO analysis was performed by first determining the CO emission factors using the USEPA MOBILE 5 personal computer software model. Carbon monoxide concentrations (unadjusted) were then determined using the CALINE 3 dispersion model nomograph method referenced in FHWA Technical Advisory T 6640.6. The unadjusted CO concentration was then factored using the project peak vehicles per hour for the modeled period to determine the CO emissions for an artificial receptor 50 feet from the highway centerline (most conservative location).

The simplified CO analysis completed for the 1997 DEIS was modeled for highest average daily vehicular traffic volumes during winter (January) and summer (July) for the construction year and the design year. Only the DEIS alternative with the highest estimated traffic volume was modeled (Alternative 2) since this provided a worst-case scenario to determine if additional detailed microscale analysis was needed. The highest average daily vehicular traffic volumes, in conjunction with worst conditions for wind angle and velocity, atmospheric stability, and receptor location were used in the analysis.

Background CO levels of one ppm for the rural section and two ppm for the more urbanized areas near the end of the project were then added to the modeled concentrations for comparison to State and Federal standards for the 1-hour average. FHWA guidance does not require modeling for 8-hour CO concentrations if the 1-hour average is determined to be less than 9 ppm (FHWA, 1986). For the 1994 DEIS analysis, under peak traffic volumes and worst possible meteorological conditions, all modeled CO concentrations were found to be significantly below the NAAQS with the highest CO level being 3 ppm for 1-hour average (including 2 ppm background assumption).

4.1.2 2004 SDEIS CO Emission Model

For the 2004 SDEIS, the CO emission model was rerun using updated SDEIS traffic data included within the *Draft Juneau Access Traffic Forecast Report* (February 2004). Additionally, emission factors were determined using the USEPA MOBILE 5B software model since the original MOBILE 5 version would only model to the design year 2020. Attachment A includes the input and output files generated by the MOBILE 5B CO emission model and the input values and assumptions used for the model. USEPA has developed a newer emission factor model using the MOBILE 6 software and an updated CALINE 4 dispersion model, which utilizes a computer program rather than nomographs. However, for the purposes of this simplified analysis, no significant differences were noted during comparison runs of the older and newer models, other than those due to differences in inputs for traffic volume, temperatures, and highway design speeds.

The updated 2004 SDEIS model simulation included CO estimates for the construction year 2008 and the design year 2038 using the peak week average daily traffic (PWADT) for those two modeled years. Based on discussions with DOT&PF, a factor of 20 percent was applied to the PWADT traffic data to convert that value into a peak summer hourly traffic volume (both directions). A factor of 26 percent was also applied to the summer peak hourly volume to determine the peak winter hourly volume. Where possible, the most conservative values were assumed for the model inputs so that a worst-case scenario for CO emissions could be developed. Additionally, unless updated information was available, the same model inputs and assumptions were used for the 2004 and 1994 emission modeling. Model assumptions included a 40 mile per hour (mph) average speed for rural segments and 20 mph for urban segments. A minimum artificial receptor distance of 50 feet from the roadway centerline was modeled using a Stability Class of F and a zero wind angle. No CO adjustment reductions for oxygenated fuel, or inspection and maintenance programs were applied since none of these programs are in effect in the Lynn Canal area (i.e., Juneau, Skagway). Additional assumptions and notes on the model input variables are included in Attachment A.

For the 2004 SDEIS analysis, under peak traffic volumes and worst possible meteorological conditions, all modeled CO concentrations were also found to be significantly below the NAAQS (see Table2). As with the 1997 DEIS modeling, the highest CO level modeled was 3 ppm (including 2 ppm background assumption).

4.2 Particulates

A qualitative analysis was completed and which involved identifying an area with similar traffic and air quality conditions to the project area and where monitoring data for PM_{10} is available. A comparison of PM_{10} concentration based on traffic levels was completed.

A PM_{10} monitoring location located in Juneau, Alaska, at Floyd Dryden Junior High School (Dryden) on Mendenhall Loop Road had a traffic volume in 2000 of 1,201 vehicles during the peak hour. The monitoring values for all years are well below the NAAQS for PM_{10} (DOT&PF, 2003). In comparison, Alternatives 2 and 2C have a 2038 design year traffic volume of 651 and 558 vehicles during the peak summer hour, respectively. Therefore, based on project traffic volumes for the Juneau Access Improvements project, none of the project alternatives would cause or contribute to violations of the NAAQS for PM_{10} based on traffic volumes expected for both the construction and design years for Alternatives 2, 2A, 2B, 2C, and 3.

5.0 IMPACT ASSESSMENT

Simplified microscale dispersion modeling for both the 1997 DEIS and 2004 SDEIS shows that there are no CO violations in the project vicinity with or without the project for all of the alternatives. Table 2 shows the carbon monoxide concentrations for the years 2008 and 2038 if the project were to be built and if it were not built. Background CO levels were added to the modeled concentrations for comparison to state and federal standards for 1-hour CO average. Under peak traffic volumes and conservative meteorological conditions, all concentrations were found to be below the established standards.

Marine vessel CO emissions were not modeled. However, ferry operations under all alternatives would have little effect on air quality. This is supported qualitatively by the fact that Juneau has no reported exceedances of CO with much larger port facilities, larger concentration of marine vessels, and larger frequency of marine vessel operations.

A qualitative analysis was completed, identifying an area with similar traffic and air quality conditions to the project area and where monitoring data for PM_{10} is available, and making a comparison of PM_{10} concentration based on traffic levels. None of the build alternatives would cause or contribute to violations of the NAAQS for PM_{10} based on a qualitative analysis of project construction year and design year traffic levels for this project relative to those at a PM_{10} monitoring station in Juneau, Alaska.

Thus, under any build alternative (i.e., 2, 2A, 2B, 2C, 3, and 4B/4D), this project has been determined to not have a noticeable impact on local air quality and no mitigation measures are necessary.

6.0 REFERENCES

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TABLES

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Table 1
National and Alaska Ambient Air Quality Standards [1]

Pollutant	Averaging Period	Federal Standards [2]	
		Primary [3]	Secondary [3]
Carbon Monoxide (CO)	1-hour	35 ppm ($40,000\ \mu g/m^3$)	Not Applicable
	8-hours	9 ppm ($10,000\ \mu g/m^3$)	
Lead (Pb)	3-months	$1.5\ \mu g/m^3$	Same as Primary Standard
Nitrogen Dioxide (NO_2)	Annual	0.053 ppm ($100\ \mu g/m^3$)	Same as Primary Standard
Ozone (O_3)	1-hour	0.12 ppm ($235\ \mu g/m^3$)	Same as Primary Standard
	8-hours [1]	0.08 ppm ($157\ \mu g/m^3$)	
Respirable Particulate Matter (PM_{10})	24-hours	$150\ \mu g/m^3$	Same as Primary Standard
	Annual	$50\ \mu g/m^3$	
Fine Particulate Matter ($PM_{2.5}$) [1]	24-hours	$65\ \mu g/m^3$	Same as Primary Standard
	Annual	$15\ \mu g/m^3$	
Sulfur Dioxide (SO_2)	3-hours	Not Applicable	0.5 ppm ($1,300\ \mu g/m^3$)
	24-hours	0.14 ppm ($365\ \mu g/m^3$)	Not Applicable
	Annual	0.03 ppm ($80\ \mu g/m^3$)	

Notes: $\mu g/m^3$ = micrograms per cubic meter
ppm = parts per million
[1] Standards from 40 CFR 50.8 and 18 AAC 50.010. Alaska standard for ammonia is not included in this table. No corresponding Alaska standard in Title 18, Chapter 50.010, of the Alaska Administrative Code (AAC) for $PM_{2.5}$ or 8-hour ozone (Register 168, 18 AAC 50.010).
[2] National standards (other than O3, PM10, and those based on annual averages or annual arithmetic mean) not to be exceeded more than once a year. O_3 standard attained when 4th highest 8-hour concentration in a year, averaged over 3 years, =/< standard. For PM_{10}, 24-hour standard attained when 98% of daily concentrations, averaged over 3 years, =/< standard.
[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses based upon a reference temperature of 25 degrees Celsius and a reference pressure of 760 millimeters of mercury (1,013.2 millibar); ppm in this table refers to parts per million volume, or micromoles of pollutant per mole of gas.

Table 2
Peak Traffic Volume Carbon Monoxide Air Emissions for Construction and Design Years [1]

Locations	Period	Estimated Concentration of Carbon Monoxide 1-Hour Average (ppm) [2]			
		2008 No-Build [3]	2008 Build [3]	2038 No-Build [3]	2038 Build [3]
Rural Segments	January July	1 1	1 1	1 1	1 1
Urban Segments (i.e., Skagway)	January July	2 2	2 3 [A]	2 2	2 3
State and Federal Standard for Carbon Monoxide (1 hour Average) [4]		9	9	9	9

Notes: ppm = parts per million

[1] Unless noted, values shown apply to all highway alternatives (2, 2A, 2B, 2C, and 3). Calculations based on peak week average daily traffic (PWADT) for summer and winter seasons, which have been factored by 20% to reflect peak-hourly, traffic volumes.

[2] As required by the NAAQS, summarized data used for comparison to the CO standards is rounded up or down the nearest integer (40 CFR 50.8(d)). See Attachment A for CO output.

[3] Includes assumed background concentrations of 1 and 2 ppm for rural and urban segments, respectively.

[4] Standards from 40 CFR 50.8 and 18 AAC 50.010

[A] Applies to Alternative 2 only. All other road alternatives have an estimated CO emission of 2 ppm

Assumptions Used for Emissions Calculations: Vehicle Speed: 20 miles per hour (urban); 40 miles per hour (rural); PWADT for 2008 = 1,800; PWADT for 2038 = 3,250 (Source: Draft Juneau Access Traffic Forecast, February 2004); Receptor Location: 50 feet from highway centerline (15 meters); Wind Velocity: 2.24 miles per hour (1 meter/second); Stability Class: F (or 6); Temperature (Skagway): January Average Max: 26 deg F; January Average Min: 16 deg F; July Average Max: 68 deg F; July Average Min: 50 deg F (Source: http://www.wrcc.dri.edu/); Wind Angle: 0; Conversion from PWADT to peak hourly vehicles per hour: 20% (factor supplied by DOT&PF); Conversion from summer PWADT to winter PWADT: 26% (factor supplied by DOT&PF); Model Used: EPA MOBILE5B and CALINE3

ATTACHMENT A

MOBILE 5B INPUT AND OUTPUT FILES

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2004 AIR QUALITY ANALYSIS

CASE: ALTERNATIVE 2 - EAST LYNN CANAL: SEASON - SUMMER (JULY)

TRAFFIC INFORMATION (See Note [1]):

Peak Week Average Daily Traffic (PWADT)
Construction Year (2008) = 1,800
Design Year (2038) = 3,250

Vehicles Per Hour (VPH)
20% of PWADT is Peak Hour Conversion Factor (supplied by DOT&PF)
Construction Year (2008) =360
Design Year (2038) = 650

Average Speed (Highway) = 40 MPH
Note: 1994 model used 55 MPH current traffic data uses 40 MPH. In addition, slower speeds result in more conservative CO estimates (i.e., higher CO model outputs) so 40 MPH is a more conservative value than 55 MPH.

Average Speed (In City) = 20 MPH
Note: This case was added to 2004 model for areas in around Skagway where traffic comes into the city.

Note [1]: Except as noted, traffic data from February 2004 Draft Juneau Access Traffic Forecast Technical Report Tables 14 and 16.

MODEL INPUTS:

Receptor Location = 50 feet or 15 meters (Note: Distance from centerline to edge of pavement, based on current design width of highway. This value is also a conservative value receptor location and the same distance used in 1994 model.)
Stability Class = F (Note: Conservative stability class and same class used in 1994 model)
PCCN = 20.6%; PCHC =27.3%; PCCC =20.6% (Note: model default values and same as those used in 1994 model)
Effects of Reformulated / Oxygenated Gasoline/ IM Program: None (Note: same assumptions as used in 1994 model).
Fuel Volatility = 9 psi (Note: model default and same value used in 1994 model)
Region = Low Altitude (less than 500 feet) (General altitude of highway and same value used in 1994 model).
Wind Angle = 0 (Note: Conservative wind angle and same as that used in 1994 model)
Wind Velocity = 2.24 mph (1.0 meter/second) (Default conservative value and same as that used in 1994 model).
Temperature (Skagway) = Monthly Average: Max 68 F and Min 50 F for July
Updated information as provided by the Western Regional Climate Center for Skagway (http://www.wrcc.dri.edu/)
All other parameters for model use default values.

CARBON MONOXIDE EMISSION FACTOR:
Determined through use of MOBILE 5B Computer Model. See Attachment A for computer

model inputs and outputs.

Based on MOBILE 5B computer model CO emission factors are:

For Speed of 40 MPH:
Construction Year (2008)= 9.98 grams per mile
Design Year (2038) = 9.59 grams per mile

For Speed of 20 MPH:
Construction Year (2008)= 22.83 grams per mile
Design Year (2038) = 22.48 grams per mile

Note: see Attachment A for computer outputs

CARBON MONOXIDE CONCENTRATION:

Used nomograph method: CALINE 3 Graph F/0
Based on nomograph values:

For Speed of 40 MPH:
Construction Year (2008) = 2 part per million
Design Year (2038) = 1.9 part per million

For Speed of 20 MPH:
Construction Year (2008) = 5.0 part per million
Design Year (2038) = 4.8 part per million

ADJUSTMENT FOR PEAK HOUR VOLUME (nomograph is based on 4,000 VPH)

For Speed of 40 MPH – Summer (July) Alternative 2:
Construction Year (2008) = (360/4000) x 2 = **0.180 part per million**
Design Year (2038) = (650/4000) x 1.9 = **0.309 part per million**

For Speed of 20 MPH – Summer (July) Alternative 2:
Construction Year (2008) = (360/4000) x 5.0 = **0.45 part per million**
Design Year (2038) = (650/4000) x 4.8 = **0.78 part per million**

2004 AIR QUALITY ANALYSIS

CASE: ALTERNATIVE 2 - EAST LYNN CANAL: SEASON - WINTER (JANUARY)

TRAFFIC INFORMATION (See Note [1]):

Summer Peak Week Average Daily Traffic (PWADT)
Construction Year (2008) = 1,800
Design Year (2038) = 3,250

Convert from summer PWADT to winter PWADT using a 26% conversion factor (factor provided by DOT&PF):

Winter Peak Week Average Daily Traffic (PWADT)
Construction Year (2008) = 1,800
Design Year (2038) = 3,250

Vehicles Per Hour (VPH)
20% of PWADT is Peak Hour Conversion Factor (factor provided by DOT&PF)
Construction Year (2008) =94
Design Year (2038) = 170

Average Speed (Highway) = 40 MPH
Note: 1994 model used 55 MPH current traffic data uses 40 MPH. In addition, slower speeds result in more conservative CO estimates (i.e., higher CO model outputs) so 40 MPH is a more conservative value than 55 MPH.

Average Speed (In City) = 20 MPH
Note: This case was added to 2004 model for areas in around Skagway where traffic comes into the city.

Note [1]: Except as noted, traffic data from February 2004 Draft Juneau Access Traffic Forecast Technical Report Tables 14 and 16.

MODEL INPUTS:

Receptor Location = 50 feet or 15 meters (Note: Distance from centerline to edge of pavement, based on current design width of highway. This value is also a conservative value receptor location and the same distance used in 1994 model.)
Stability Class = F (Note: Conservative stability class and same class used in 1994 model)
PCCN = 20.6%; PCHC =27.3%; PCCC =20.6% (Note: model default values and same as those used in 1994 model)
Effects of Reformulated / Oxygenated Gasoline/ IM Program: None (Note: same assumptions as used in 1994 model).
Fuel Volatility = 9 psi (Note: model default and same value used in 1994 model)
Region = Low Altitude (less than 500 feet) (General altitude of highway and same value used in 1994 model).
Wind Angle = 0 (Note: Conservative wind angle and same as that used in 1994 model)
Wind Velocity = 2.24 mph (1.0 meter/second) (Default conservative value and same as that used in 1994 model).

Temperature (Skagway) = Monthly Average: Max 26 F and Min 16 F for January
Updated information as provided by the Western Regional Climate Center for Skagway (http://www.wrcc.dri.edu/)
All other parameters for model use default values.

CARBON MONOXIDE EMISSION FACTOR:
Determined through use of MOBILE 5B Computer Model. See Attachment A for computer model inputs and outputs.

Based on MOBILE 5B computer model, CO emission factors are:

For Speed of 40 MPH:
Construction Year (2008)= 16.44 grams per mile
Design Year (2038) = 15.66 grams per mile

For Speed of 20 MPH:
Construction Year (2008)= 37.65 grams per mile
Design Year (2038) = 36.87 grams per mile

CARBON MONOXIDE CONCENTRATION:
Used nomograph method: CALINE 3 Graph F/0
Based on nomograph values:

For Speed of 40 MPH:
Construction Year (2008) = 3.5 part per million
Design Year (2038) = 3.2 part per million

For Speed of 20 MPH:
Construction Year (2008) = 8.0 part per million
Design Year (2038) = 7.8 part per million

ADJUSTMENT FOR PEAK HOUR VOLUME (nomograph is based on 4,000 VPH)

For Speed of 40 MPH – Winter (January) Alternative 2:
Construction Year (2008) = (94/4000) x 3.5 = **0.082 part per million**
Design Year (2038) = (170/4000) x 3.2 = **0.136 part per million**

For Speed of 20 MPH – Winter (January) Alternative 2:
Construction Year (2008) = (94/4000) x 8.0 = **0.188 part per million**
Design Year (2038) = (170/4000) x 7.8 = **0.332 part per million**

July ADT Input File for Highway Speeds
File: JULYHW2.IN

```
1          PROMPT
 Juneau Access 2004 SDEIS Alternative 2 - July with Skagway Temperatures-40 MPH
1          TAMFLG
1          SPDFLG
1          VMFLAG
1          MYMRFG
1          NEWFLG
1          IMFLAG
1          ALHFLG
1          ATPFLG
1          RLFLAG
2          LOCFLG - LAP record will appear once, in one-time data section.
1          TEMFLG
4          OUTFMT - 80-column descriptive format.
4          PRTFLG - Calculate and print HC, CO, and NOx emissions.
1          IDLFLG
3          NMHFLG - Calculate emissions for volatile organic hydrocarbons.
1          HCFLAG - Print sum and component emissions
July-40MPH.        50.3 67.9 09.0 09.0 50 1 1 1        Local Area Parameter record
1 38 40.0 59.1 20.6 27.3 20.6 07                       Scenario description record
1 28 40.0 59.1 20.6 27.3 20.6 07                       Scenario description record
1 18 40.0 59.1 20.6 27.3 20.6 07                       Scenario description record
1 08 40.0 59.1 20.6 27.3 20.6 07                       Scenario description record
00000000000000000000000000000000000000000000000000000000000000000000000000000000000
```

July ADT Output File for Highway Speeds
File: JULYHW2.OUT

```
1 Juneau Access 2004 SDEIS Alternative 2 - July with Skagway Temperatures-40 MPH
 MOBILE5b (14-Sep-96)
0
-M170 Warning:
+              Exhaust emissions for gasoline fueled vehicles
               beginning in 1995 have been reduced as a result of
               Gasoline Detergent Additive Regulations (1994).
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0July-40MPH.
                     Minimum Temp: 50. (F)   Maximum Temp: 68. (F)
                     Period 1 RVP:  9.0      Period 2 RVP:  9.0 Period 2 Yr: 2050
0VOC HC emission factors include evaporative HC emission factors.
0_________________________________________________________________________________
0Emission factors are as of July 1st of the indicated calendar year.
0Cal. Year: 2038           Region: Low          Altitude:  500. Ft.
                      I/M Program: No        Ambient Temp:   63.6 / 63.6 / 63.6 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.575  0.207  0.089         0.034  0.002  0.006  0.084  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.00   1.26   1.75   1.41   1.72   0.29   0.42   1.17   2.08   1.16
 Exhst  CO:  8.69  11.22  15.35  12.46  11.40   0.73   0.83   5.61  10.29   9.59
 Exhst NOX:  1.42   1.57   2.18   1.75   4.26   0.97   1.13   6.72   1.17   2.05
 ________________________________________________________________________________
```

```
-M154 Warning:
+             Refueling emissions for LDGV and LDGT after 1998
              model year have been reduced as a result of the
              Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of July 1st of the indicated calendar year.
0Cal. Year: 2028          Region: Low         Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   63.6 / 63.6 / 63.6 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV    MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.575  0.207  0.089         0.034  0.002  0.006  0.084  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.00   1.27   1.75   1.41   1.72   0.29   0.42   1.17   2.08   1.16
 Exhst  CO:  8.69  11.23  15.36  12.47  11.40   0.73   0.82   5.61  10.29   9.59
 Exhst NOX:  1.42   1.57   2.18   1.75   4.26   0.97   1.12   6.72   1.17   2.05
 ________________________________________________________________________________
-M154 Warning:
+             Refueling emissions for LDGV and LDGT after 1998
              model year have been reduced as a result of the
              Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of July 1st of the indicated calendar year.
0Cal. Year: 2018          Region: Low         Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   63.6 / 63.6 / 63.6 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV    MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.577  0.206  0.089         0.033  0.002  0.005  0.083  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.00   1.28   1.78   1.43   1.73   0.29   0.40   1.17   2.08   1.17
 Exhst  CO:  8.69  11.27  15.42  12.52  11.40   0.72   0.81   5.61  10.29   9.61
 Exhst NOX:  1.42   1.57   2.20   1.76   4.33   0.97   1.10   6.75   1.17   2.06
 ________________________________________________________________________________
-M154 Warning:
+             Refueling emissions for LDGV and LDGT after 1998
              model year have been reduced as a result of the
              Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of July 1st of the indicated calendar year.
0Cal. Year: 2008          Region: Low         Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   63.6 / 63.6 / 63.6 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV    MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.593  0.199  0.088         0.032  0.002  0.003  0.078  0.005
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.05   1.37   1.93   1.54   1.86   0.28   0.38   1.17   2.08   1.23
 Exhst  CO:  8.94  11.68  16.15  13.05  13.70   0.71   0.79   5.63  10.29   9.98
 Exhst NOX:  1.44   1.63   2.29   1.83   4.81   0.95   1.08   7.33   1.17   2.12
 ________________________________________________________________________________
```

January ADT Input File for Highway Speeds
File: JANHW2.IN

```
1          PROMPT
 Juneau Access 2004 SDEIS Alternative 2 - January with Skagway Temperatures
1          TAMFLG
1          SPDFLG
1          VMFLAG
1          MYMRFG
1          NEWFLG
1          IMFLAG
1          ALHFLG
1          ATPFLG
1          RLFLAG
2          LOCFLG - LAP record will appear once, in one-time data section.
1          TEMFLG
4          OUTFMT - 80-column descriptive format.
4          PRTFLG - Calculate and print HC, CO, and NOx emissions.
1          IDLFLG
3          NMHFLG - Calculate emissions for volatile organic hydrocarbons.
1          HCFLAG - Print sum and component emissions
January-40MPH.     16.3  26.2 09.0 09.0 50 1 1 1        Local Area Parameter record
1 38 40.0 21.2 20.6 27.3 20.6 01                       Scenario description record
1 28 40.0 21.2 20.6 27.3 20.6 01                       Scenario description record
1 18 40.0 21.2 20.6 27.3 20.6 01                       Scenario description record
1 08 40.0 21.2 20.6 27.3 20.6 01                       Scenario description record
00000000000000000000000000000000000000000000000000000000000000000000000000000000000
```

January ADT Output File for Highway Speeds
File: JANHW2.OUT

```
1 Juneau Access 2004 SDEIS Alternative 2 - January with Skagway Temperatures
 MOBILE5b (14-Sep-96)
0
-M170 Warning:
+              Exhaust emissions for gasoline fueled vehicles
               beginning in 1995 have been reduced as a result of
               Gasoline Detergent Additive Regulations (1994).
-M 90 Warning:
+              Period 1 RVP reset to 15.2
-M 83 Comment:
+              One or more evaporative temperatures (input daily
               maximum, input ambient, calculated hot soak, and/or
               calculated running loss) is 40F or less, or input
               daily minimum is 25F or less; no evaporative emission
               factors (hot soak, diurnal, running loss, or resting
               loss) will be calculated.
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0January-40MPH.
                     Minimum Temp: 16. (F)   Maximum Temp: 26. (F)
                     Period 1 RVP: 15.2      Period 2 RVP:  9.0 Period 2 Yr: 2005
0VOC HC emission factors include evaporative HC emission factors.
0_______________________________________________________________________________
0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2038          Region: Low          Altitude:  500. Ft.
                       I/M Program: No       Ambient Temp:   24.1 / 24.1 / 24.1 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.575  0.207  0.089         0.034  0.002  0.006  0.084  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.40   1.95   2.73   2.19   1.39   0.29   0.42   1.17   1.73   1.60
 Exhst  CO: 14.21  19.81  26.58  21.85  14.46   0.73   0.83   5.61  15.67  15.66
 Exhst NOX:  1.79   2.02   2.82   2.26   4.61   0.97   1.13   6.72   1.42   2.43
 _______________________________________________________________________________
-M 83 Comment:
+              One or more evaporative temperatures (input daily
               maximum, input ambient, calculated hot soak, and/or
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               calculated running loss) is 40F or less, or input
               daily minimum is 25F or less; no evaporative emission
               factors (hot soak, diurnal, running loss, or resting
               loss) will be calculated.
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2028           Region: Low           Altitude:  500. Ft.
                      I/M Program: No        Ambient Temp:   24.1 / 24.1 / 24.1 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+            ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.575  0.207  0.089         0.034  0.002  0.006  0.084  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.40   1.95   2.74   2.19   1.39   0.29   0.42   1.17   1.73   1.60
 Exhst  CO: 14.21  19.83  26.61  21.86  14.46   0.73   0.82   5.61  15.67  15.67
 Exhst NOX:  1.79   2.03   2.82   2.26   4.61   0.97   1.12   6.72   1.42   2.43
 _________________________________________________________________________________
-M 83 Comment:
+              One or more evaporative temperatures (input daily
               maximum, input ambient, calculated hot soak, and/or
               calculated running loss) is 40F or less, or input
               daily minimum is 25F or less; no evaporative emission
               factors (hot soak, diurnal, running loss, or resting
               loss) will be calculated.
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2018           Region: Low           Altitude:  500. Ft.
                      I/M Program: No        Ambient Temp:   24.1 / 24.1 / 24.1 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+            ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.577  0.206  0.089         0.033  0.002  0.005  0.083  0.005
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.40   1.97   2.77   2.21   1.39   0.29   0.40   1.17   1.73   1.61
 Exhst  CO: 14.22  19.90  26.72  21.96  14.46   0.72   0.80   5.61  15.67  15.70
 Exhst NOX:  1.79   2.03   2.84   2.28   4.68   0.97   1.10   6.75   1.42   2.44
 _________________________________________________________________________________
-M 83 Comment:
+              One or more evaporative temperatures (input daily
               maximum, input ambient, calculated hot soak, and/or
               calculated running loss) is 40F or less, or input
               daily minimum is 25F or less; no evaporative emission
               factors (hot soak, diurnal, running loss, or resting
               loss) will be calculated.
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2008           Region: Low           Altitude:  500. Ft.
                      I/M Program: No        Ambient Temp:   24.1 / 24.1 / 24.1 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+            ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 40.0   40.0   40.0          40.0   40.0   40.0   40.0   40.0
   VMT Mix:  0.594  0.199  0.088         0.032  0.002  0.003  0.078  0.005
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.46   2.06   2.93   2.33   1.49   0.28   0.38   1.17   1.73   1.68
 Exhst  CO: 14.77  20.54  27.70  22.73  19.52   0.71   0.79   5.63  15.67  16.44
 Exhst NOX:  1.83   2.10   2.95   2.36   5.34   0.96   1.08   7.42   1.42   2.52
```

January ADT Input File for In City Speeds
File: JANTOWN2.IN

```
1          PROMPT
 Juneau Access 2004 SDEIS Alternative 2 - January with Skagway Temperatures at 20 MPH
1          TAMFLG
1          SPDFLG
1          VMFLAG
1          MYMRFG
1          NEWFLG
1          IMFLAG
1          ALHFLG
1          ATPFLG
1          RLFLAG
2          LOCFLG - LAP record will appear once, in one-time data section.
1          TEMFLG
4          OUTFMT - 80-column descriptive format.
4          PRTFLG - Calculate and print HC, CO, and NOx emissions.
1          IDLFLG
3          NMHFLG - Calculate emissions for volatile organic hydrocarbons.
1          HCFLAG - Print sum and component emissions
January-20MPH.     16.3  26.2 09.0 09.0 50 1 1 1        Local Area Parameter record
1 38 20.0 21.2 20.6 27.3 20.6 01                       Scenario description record
1 28 20.0 21.2 20.6 27.3 20.6 01                       Scenario description record
1 18 20.0 21.2 20.6 27.3 20.6 01                       Scenario description record
1 08 20.0 21.2 20.6 27.3 20.6 01                       Scenario description record
0000000000000000000000000000000000000000000000000000000000000000000000000000000000
```

January ADT Output File for In City Speeds
File: JANTOWN2.OUT

```
1 Juneau Access 2004 SDEIS Alternative 2 - January with Skagway Temperatures at 2
 MOBILE5b (14-Sep-96)
0
-M170 Warning:
+              Exhaust emissions for gasoline fueled vehicles
               beginning in 1995 have been reduced as a result of
               Gasoline Detergent Additive Regulations (1994).
-M 90 Warning:
+              Period 1 RVP reset to 15.2
-M 83 Comment:
+              One or more evaporative temperatures (input daily
               maximum, input ambient, calculated hot soak, and/or
               calculated running loss) is 40F or less, or input
               daily minimum is 25F or less; no evaporative emission
               factors (hot soak, diurnal, running loss, or resting
               loss) will be calculated.
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0January-20MPH.
                     Minimum Temp: 16. (F)   Maximum Temp: 26. (F)
                     Period 1 RVP: 15.2      Period 2 RVP:  9.0 Period 2 Yr: 2005
0VOC HC emission factors include evaporative HC emission factors.
0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2038           Region: Low          Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   24.1 / 24.1 / 24.1 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 20.0   20.0   20.0          20.0   20.0   20.0   20.0   20.0
   VMT Mix:  0.575  0.207  0.089         0.034  0.002  0.006  0.084  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  2.67   3.42   4.81   3.84   3.23   0.52   0.75   2.07   2.85   2.97
 Exhst  CO: 35.33  44.66  59.93  49.24  27.42   1.41   1.61  10.94  33.57  36.87
 Exhst NOX:  1.67   2.00   2.79   2.24   3.92   1.08   1.26   7.49   1.08   2.40
 ________________________________________________________________________________
-M 83 Comment:
+              One or more evaporative temperatures (input daily
               maximum, input ambient, calculated hot soak, and/or
               calculated running loss) is 40F or less, or input
               daily minimum is 25F or less; no evaporative emission
```

```
               factors (hot soak, diurnal, running loss, or resting
               loss) will be calculated.
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2028          Region: Low          Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   24.1 / 24.1 / 24.1 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 20.0   20.0   20.0          20.0   20.0   20.0   20.0   20.0
   VMT Mix:  0.575  0.207  0.089         0.034  0.002  0.006  0.084  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  2.67   3.43   4.81   3.84   3.23   0.52   0.75   2.07   2.85   2.97
 Exhst  CO: 35.33  44.69  59.98  49.28  27.42   1.41   1.60  10.94  33.57  36.88
 Exhst NOX:  1.67   2.00   2.79   2.24   3.92   1.08   1.25   7.49   1.08   2.40
 ________________________________________________________________________________
-M 83 Comment:
+              One or more evaporative temperatures (input daily
               maximum, input ambient, calculated hot soak, and/or
               calculated running loss) is 40F or less, or input
               daily minimum is 25F or less; no evaporative emission
               factors (hot soak, diurnal, running loss, or resting
               loss) will be calculated.
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2018          Region: Low          Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   24.1 / 24.1 / 24.1 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 20.0   20.0   20.0          20.0   20.0   20.0   20.0   20.0
   VMT Mix:  0.577  0.206  0.089         0.033  0.002  0.005  0.083  0.005
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  2.67   3.45   4.85   3.87   3.23   0.51   0.71   2.07   2.85   2.98
 Exhst  CO: 35.35  44.86  60.23  49.49  27.43   1.41   1.57  10.94  33.57  36.98
 Exhst NOX:  1.68   2.01   2.81   2.25   3.98   1.08   1.22   7.52   1.08   2.40
 ________________________________________________________________________________
-M 83 Comment:
+              One or more evaporative temperatures (input daily
               maximum, input ambient, calculated hot soak, and/or
               calculated running loss) is 40F or less, or input
               daily minimum is 25F or less; no evaporative emission
               factors (hot soak, diurnal, running loss, or resting
               loss) will be calculated.
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of Jan. 1st of the indicated calendar year.
0Cal. Year: 2008          Region: Low          Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   24.1 / 24.1 / 24.1 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 20.0   20.0   20.0          20.0   20.0   20.0   20.0   20.0
   VMT Mix:  0.594  0.199  0.088         0.032  0.002  0.003  0.078  0.005
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  2.75   3.56   5.03   4.01   3.50   0.49   0.68   2.07   2.85   3.07
 Exhst  CO: 35.75  44.98  59.90  49.54  37.02   1.38   1.54  10.98  33.57  37.65
 Exhst NOX:  1.71   2.07   2.89   2.32   4.54   1.07   1.21   8.27   1.08   2.48
 ________________________________________________________________________________
```

July ADT Input File for In City Speeds
File: JULTOWN2.IN

```
1          PROMPT
 Juneau Access 2004 SDEIS Alternative 2 - July with Skagway Temperatures -20 MPH
1          TAMFLG
1          SPDFLG
1          VMFLAG
1          MYMRFG
1          NEWFLG
1          IMFLAG
1          ALHFLG
1          ATPFLG
1          RLFLAG
2          LOCFLG - LAP record will appear once, in one-time data section.
1          TEMFLG
4          OUTFMT - 80-column descriptive format.
4          PRTFLG - Calculate and print HC, CO, and NOx emissions.
1          IDLFLG
3          NMHFLG - Calculate emissions for volatile organic hydrocarbons.
1          HCFLAG - Print sum and component emissions
July-20MPH.       50.3 67.9 09.0 09.0 50 1 1 1        Local Area Parameter record
1 38 20.0 59.1 20.6 27.3 20.6 07                      Scenario description record
1 28 20.0 59.1 20.6 27.3 20.6 07                      Scenario description record
1 18 20.0 59.1 20.6 27.3 20.6 07                      Scenario description record
1 08 20.0 59.1 20.6 27.3 20.6 07                      Scenario description record
000000000000000000000000000000000000000000000000000000000000000000000000000000000
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July ADT Output File for In City Speeds
File: JULTOWN2.OUT

```
1 Juneau Access 2004 SDEIS Alternative 2 - July with Skagway Temperatures -20 MPH
 MOBILE5b (14-Sep-96)
0
-M170 Warning:
+              Exhaust emissions for gasoline fueled vehicles
               beginning in 1995 have been reduced as a result of
               Gasoline Detergent Additive Regulations (1994).
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0July-20MPH.
                     Minimum Temp: 50. (F)   Maximum Temp: 68. (F)
                     Period 1 RVP:  9.0      Period 2 RVP:  9.0 Period 2 Yr: 2050
0VOC HC emission factors include evaporative HC emission factors.
0_________________________________________________________________________________
0Emission factors are as of July 1st of the indicated calendar year.
0Cal. Year: 2038           Region: Low          Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   63.6 / 63.6 / 63.6 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV    MC   All Veh
+           ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 20.0   20.0   20.0          20.0   20.0   20.0   20.0   20.0
   VMT Mix:  0.575  0.207  0.089         0.034  0.002  0.006  0.084  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.82   2.14   2.99   2.40   3.11   0.52   0.75   2.07   2.86   2.05
 Exhst  CO: 21.60  25.30  34.60  28.09  21.62   1.41   1.61  10.94  22.06  22.48
 Exhst NOX:  1.33   1.55   2.16   1.73   3.62   1.08   1.26   7.49   0.89   2.04
 ________________________________________________________________________________
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of July 1st of the indicated calendar year.
0Cal. Year: 2028           Region: Low          Altitude:  500. Ft.
                      I/M Program: No       Ambient Temp:   63.6 / 63.6 / 63.6 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV    MC   All Veh
```

```
+            ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 20.0   20.0   20.0          20.0   20.0   20.0   20.0   20.0
   VMT Mix:  0.575  0.207  0.089         0.034  0.002  0.006  0.084  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.82   2.14   3.00   2.40   3.11   0.52   0.75   2.07   2.86   2.05
 Exhst  CO: 21.60  25.32  34.63  28.11  21.62   1.41   1.60  10.94  22.06  22.49
 Exhst NOX:  1.33   1.55   2.16   1.73   3.62   1.08   1.25   7.49   0.89   2.04
 ________________________________________________________________________________
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of July 1st of the indicated calendar year.
0Cal. Year: 2018           Region: Low          Altitude:  500. Ft.
                     I/M Program: No       Ambient Temp:   63.6 / 63.6 / 63.6 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+            ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 20.0   20.0   20.0          20.0   20.0   20.0   20.0   20.0
   VMT Mix:  0.577  0.206  0.089         0.033  0.002  0.005  0.083  0.004
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.82   2.16   3.03   2.42   3.12   0.51   0.71   2.07   2.86   2.06
 Exhst  CO: 21.61  25.41  34.76  28.22  21.63   1.41   1.57  10.94  22.06  22.53
 Exhst NOX:  1.33   1.55   2.17   1.74   3.68   1.08   1.23   7.52   0.89   2.04
 ________________________________________________________________________________
-M154 Warning:
+              Refueling emissions for LDGV and LDGT after 1998
               model year have been reduced as a result of the
               Onboard Refueling Vapor Recovery Regulations (1994).
0Emission factors are as of July 1st of the indicated calendar year.
0Cal. Year: 2008           Region: Low          Altitude:  500. Ft.
                     I/M Program: No       Ambient Temp:   63.6 / 63.6 / 63.6 F
                Anti-tam. Program: No      Operating Mode:   20.6 / 27.3 / 20.6
                 Reformulated Gas: No
0Veh. Type:  LDGV  LDGT1  LDGT2   LDGT   HDGV   LDDV   LDDT   HDDV   MC   All Veh
+            ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
 Veh. Spd.: 20.0   20.0   20.0          20.0   20.0   20.0   20.0   20.0
   VMT Mix:  0.593  0.199  0.088         0.032  0.002  0.003  0.078  0.005
0Composite Emission Factors (Gm/Mile)
 VOC    HC:  1.88   2.26   3.19   2.54   3.34   0.49   0.68   2.07   2.86   2.13
 Exhst  CO: 21.70  25.55  34.85  28.39  25.97   1.38   1.54  10.97  22.06  22.83
 Exhst NOX:  1.35   1.60   2.24   1.80   4.09   1.06   1.21   8.17   0.89   2.09
 ________________________________________________________________________________
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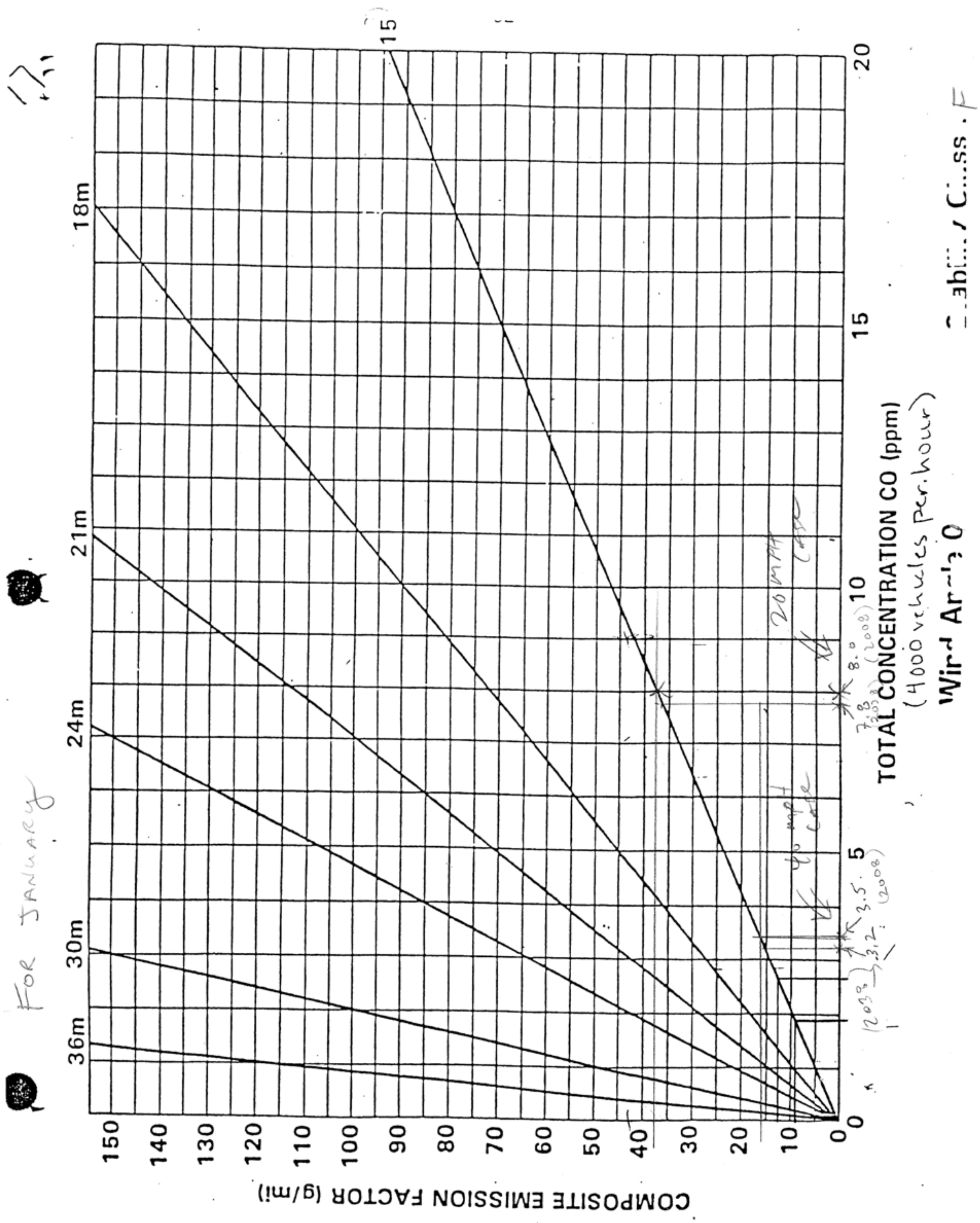
CALINE 3 Nomograph used to Calculate Total CO Concentrations
Wind Angle of 0 and a Stability Class of F.
This example is for the Winter (January) Case.



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