H Air Quality Discipline Report

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SR 502 CORRIDOR WIDENING

IMPROVING SAFETY • INCREASING CAPACITY • REDUCING CONGESTION

I-5 TO BATTLE GROUND

FINAL

Air Quality Discipline Report

Prepared for:

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Southwest Region
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This Project is also referred to as “SR 502/I-5 to Battle Ground – Add Lanes”

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Executive Summary

The purpose of this Executive Summary is to summarize the findings of the Air Quality Discipline Report for the SR 502 Corridor Widening Project.

What studies, methods, and coordination were used to identify existing air quality in the study area?

The study area is the general area 200 feet north and south of the centerline of the existing SR 502 roadway beginning near NE 15th Avenue and continuing east until NE 102nd Avenue. At the intersections of SR 502 and NE 29th Avenue and SR 502 and NE 50th Avenue, the study area is 100 feet east and west of the centerlines of NE 29th Avenue and NE 50th Avenue and 500 feet north and south of the centerline of the existing SR 502 roadway. The study area for Dollars Corner is defined as the limits from SR 502 / NE 72nd Avenue intersection: 1000 feet north and south; 3000 feet east and west.

Under the Clean Air Act (CAA), U.S. Environmental Protection Agency (EPA) has established the National Ambient Air Quality Standards (NAAQS), which specify maximum concentrations for six criteria pollutants. Areas that exceed the standards for the criteria pollutants have been identified as nonattainment areas. Areas that have recently attained compliance with the NAAQS and are being managed to continue to meet the NAAQS are identified as maintenance areas. The study area was compared to the nonattainment and maintenance areas identified by the EPA.

In addition to the criteria pollutants for which there are NAAQS, EPA also regulates air toxics. Toxic air pollutants are those pollutants known or suspected to cause cancer or other serious health effects. The CAA identifies 188 air toxics. The EPA has identified 93 compounds emitted from mobile sources, and EPA's 2007 rule on the Control of Hazardous Air Pollutants from Mobile Sources has highlighted seven of these that are among the national and regional-scale cancer risk drivers (acrolein, benzene, 1,3-butadiene, diesel particulate matter/diesel exhaust, formaldehyde, naphthalene, and polycyclic organic matter). EPA's 2007 rule requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. In accordance with Federal Highway Administration (FHWA) guidelines, a qualitative MSAT analysis was conducted.

How were effects to air quality determined?

The potential for the proposed improvements to substantially affect air quality during operation of the project are based on changes in transportation demand and traffic patterns in the region.

What are the existing air quality conditions in the study area?

The study area is in attainment for all criteria pollutants and therefore meets all air quality standards.

Attainment Area
An area considered to have air quality as good as or better than the National Ambient Air Quality Standards (NAAQS) for the criteria pollutants designated in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others.

What temporary effects to air quality would occur?

Fugitive dust emissions during project construction would be associated with land clearing, ground excavation and cut-and-fill operations. Construction emissions would be greatest during the earthwork phase because most emissions would be associated with the movement of dirt on the site.

Fugitive Dust
Dust is particulate matter (PM) consisting of very small liquid and solid particles. Fugitive dust is PM suspended in the air by the wind and human activities. It originates primarily from the soil and is not emitted from vents, chimneys, or stacks.

What long-term effects to air quality would occur?

Operation of the SR 502 Corridor Widening project is not expected to cause any substantial effect on air quality because no substantial changes in transportation demand and traffic patterns would occur in the region, and the NAAQS would not be exceeded. Also, the magnitude of the EPA-projected reductions in MSAT emissions is so great (even after accounting for projected increases in vehicle miles traveled [VMT]) that MSAT emissions in the study area are likely to be lower in the future with the Build Alternative.

What would be the effects to air quality if the project is not built?

If the project is not built, no substantial effect on air quality would occur in the region and the NAAQS would not be exceeded.

What measures are proposed to minimize or avoid negative effects to air quality?

During construction, the operators of a source of fugitive dust would take reasonable precautions to prevent fugitive dust from becoming airborne and would maintain and operate the source to minimize emissions (SWCAA 400-040). Air pollutants, including fugitive dust, would be controlled by incorporating guidance from the Associated General Contractors of Washington, *Guide to Handling Fugitive Dust from Construction Projects* (Associated General Contractors 1997).

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1.0 Introduction

The SR 502 Corridor Widening Project is located in north Clark County, Washington along SR 502 (NE 219th Street) between NE 15th Avenue and NE 102nd Avenue. The western terminus of the project area is approximately one mile east of Interstate 5 (I-5) and the eastern terminus is NE 102nd Avenue. The project would widen an approximate five mile segment of SR 502 from two travel lanes to four travel lanes and upgrade several intersections to improve mobility and safety. Currently, SR 502 is a rural, two-lane highway. There is one signalized intersection at SR 502 and NE 72nd Avenue. For a more detailed description of the project, see the separate *Revised Description of Alternatives* document (Parsons Brinckerhoff, 2008c).

The purpose of this document is to describe the existing air quality conditions, discuss effects and benefits the project would have on air quality, and identify mitigation measures to address adverse effects as needed. The information contained in this discipline report will be used to support the project's Environmental Impact Statement (EIS).

2.0 Background Studies, Coordination, and Methods

Air pollution is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants degrade the atmosphere by reducing visibility, damaging property, reducing the productivity or vigor of crops or natural vegetation, or harming human or animal health.

2.1 Clean Air Act Amendments of 1990 and Transportation Conformity

The Clean Air Act (CAA) Amendments of 1990 and the Final Transportation Conformity Rule [40, CFR Parts 51 and 93] direct the U.S. Environmental Protection Agency (EPA) to implement environmental policies and regulations that will ensure acceptable levels of air quality.

The CAA and the Final Transportation Conformity Rule affect proposed transportation projects. According to Title I, Section 176 (c) 2:

> "No federal agency may approve, accept, or fund any transportation plan, program, or project unless such plan, program, or project has been found to conform to any applicable State Implementation Plan (SIP) in effect under this act."

The Final Conformity Rule defines conformity as follows:

> "Conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of such standards; and
>
> That such activities will not:
>
> - Cause or contribute to any new violation of any NAAQS in any area;
> - Increase the frequency or severity of any existing violation of any NAAQS in any area; or

- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area.”

2.2 Air Quality Standards

As required by the CAA, NAAQS have been established for several air pollutants. These pollutants, known as “criteria pollutants,” are carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) less than 10 micrometers in size (PM_{10}), PM less than 2.5 micrometers in size ($PM_{2.5}$), and sulfur dioxide. The State of Washington has also adopted these standards. In addition, Washington has a standard for Total Suspended Particles.

The federal and state standards are summarized in Exhibit 1. The standards specify maximum allowable concentrations for each pollutant. The “primary” standards have been established to protect the public health. The ”secondary” standards are intended to protect the nation’s welfare, and they account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the general welfare.

2.3 Pollutants of Concern

Pollutants that have established national standards are referred to as “criteria pollutants.” The sources of these pollutants, their effects on human health and the nation's welfare, and their final deposition in the atmosphere vary considerably. A brief description of each pollutant is provided below. In addition to the criteria pollutants, greenhouse gases (GHG) and mobile source air toxics are also a concern and are described below.

Carbon Monoxide

CO is a colorless gas that interferes with the transfer of oxygen to the brain. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. Prolonged exposure to high levels of CO can cause headaches, drowsiness, loss of equilibrium, or heart disease. CO concentrations can vary greatly over relatively short distances. Relatively high concentrations of CO are typically found near congested intersections, along heavily used roadways carrying slow-moving traffic, and in areas where atmospheric dispersion is inhibited by urban “street canyon” conditions. Consequently, CO concentrations are predicted on a localized or microscale basis.

Lead

Lead is a stable element that persists and accumulates in the environment and in animals. Its principal effects in humans are on the blood-forming, nervous, and renal systems. Lead levels in the urban environment from mobile sources, such as automobiles, have significantly decreased since the federally mandated switch to unleaded gasoline.

Nitrogen Dioxide

NO_2 is a brownish gas that irritates the lungs. It can cause breathing difficulties at high concentrations. Like ozone, NO_2 is not directly emitted but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as nitrogen oxides (NO_x) and are major contributors to ozone formation. NO_2 also contributes to the formation of PM_{10}. At atmospheric concentrations, NO_2 is only potentially irritating. In high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase

Exhibit 1. Summary of Ambient Air Quality Standards

Pollutant	Averaging Period	National Standards		State Standard
		Primary	Secondary	
Carbon Monoxide (CO)	Eight Hours[1]	9 ppm (10 mg/m^3)	No Secondary Standard	9 ppm (10 mg/m^3)
	One Hour[1]	35 ppm (40 mg/m^3)	No Secondary Standard	35 ppm (40 mg/m^3)
Lead (Pb)	Rolling 3-Month Average	0.15 µg/m^3	Same as Primary Standard	1.5 µg/m^3
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 µg/m^3)	Same as Primary Standard	0.053 ppm (100 µg/m^3)
Particulate Matter (PM_{10})	Annual Arithmetic Mean[2]	50 µg/m^3 / Revoked[2]	Same as Primary Standard	50 µg/m^3
	24-Hour[3]	150 µg/m^3	Same as Primary Standard	150 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean[4]	15 µg/m^3	Same as Primary Standard	15 µg/m^3
	98th Percentile 24-Hour[5]	65 µg/m^3/ 35 µg/m^3	Same as Primary Standard	65 µg/m^3/ 35 µg/m^3
Ozone (O_3)	Fourth Highest Eight-Hour Daily Maximum[6]	0.075 ppm	Same as Primary Standard	0.08 ppm
	Maximum Daily One-hour Average[7] (Applies only in limited areas)	0.12 ppm (235 µg/m^3)	Same as Primary Standard	0.12 ppm (235 µg/m^3)
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	80 µg/m^3 (0.03 ppm)	15 µg/m^3	80 µg/m^3 (0.03 ppm)
	24 Hours[1]	365 µg/m^3 (0.14 ppm)	65 µg/m^3/ 35 µg/m^3	365 µg/m^3 (0.14 ppm)
	Three Hours[1]	–	1,300 ug/m^3 / (0.5 ppm)	–

Notes:

[1] Not to be exceeded more than once per year.

[2] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the agency revoked the annual PM_{10} standard in 2006 (effective December 17, 2006).

[3]. Not to be exceeded more than once per year on average over three years.

[4]. To attain this standard, the three-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

[5] To attain this standard, the three-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35µg/m^3 (effective December 17, 2006).

[6] To attain this standard, the three-year average of the fourth-highest daily maximum eight-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm.

[7] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$1, as determined by Appendix H of 40 CFR 50 – National Primary and Secondary Ambient Air Quality Standards http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr50_main_02.tpl .

(b) As of June 15, 2005 EPA revoked the one-hour ozone standard in all areas except the 14 eight-hour ozone nonattainment Early Action Compact (EAC) Areas. The project is not located in one of these areas.

Abbreviations: ppm = parts per million, µg/m3 = micrograms per cubic meter.

Source: EPA, "National Primary and Secondary Ambient Air Quality Standards" (49 CFR 50), October, 2006.

in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million (ppm).

Particulate Matter

Particulate pollution is composed of solid particles or liquid droplets that are small enough to remain suspended in the air. Of particular concern are those particles that are smaller than, or equal to, 10 microns (PM_{10}) or 2.5 microns ($PM_{2.5}$).

PM_{10} consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. It also forms when gases emitted from motor vehicles or industrial sources undergo chemical reactions in the atmosphere. Major sources of PM_{10} include motor vehicles; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Suspended particulates produce haze and reduce visibility.

PM_{10} poses a greater health risk than larger-sized particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections.

$PM_{2.5}$ results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur dioxide (SO_2), nitrogen oxides, and volatile organic compounds (VOCs). The main health effects of airborne $PM_{2.5}$ are on the respiratory system. Like PM_{10}, $PM_{2.5}$ can penetrate the human respiratory system's natural defenses and damage the respiratory tract when inhaled. Whereas particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles 2.5 microns or less in diameter are so tiny that they can penetrate deeper into the lungs and damage lung tissues.

Ozone

Ozone is a colorless toxic gas that enters the blood stream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. Ozone also damages plants by inhibiting their growth. Although ozone is not directly emitted, it forms in the atmosphere through a chemical reaction between reactive organic gases and nitrogen oxides, which are emitted from industrial sources and automobiles. Substantial ozone formations generally require a stable atmosphere with strong sunlight.

In the Vancouver area, the highest ozone concentrations occur from mid-May until mid-September, when urban emissions are trapped by temperature inversions, followed by intense sunlight and high temperatures. Maximum ozone levels generally occur between noon and early evening, at locations several miles downwind from the sources, after nitrogen oxides, and hydrocarbons have had time to mix and react under sunlight. For these reasons, the effects of the proposed project on ozone levels are considered only on a regional basis.

Sulfur Dioxide

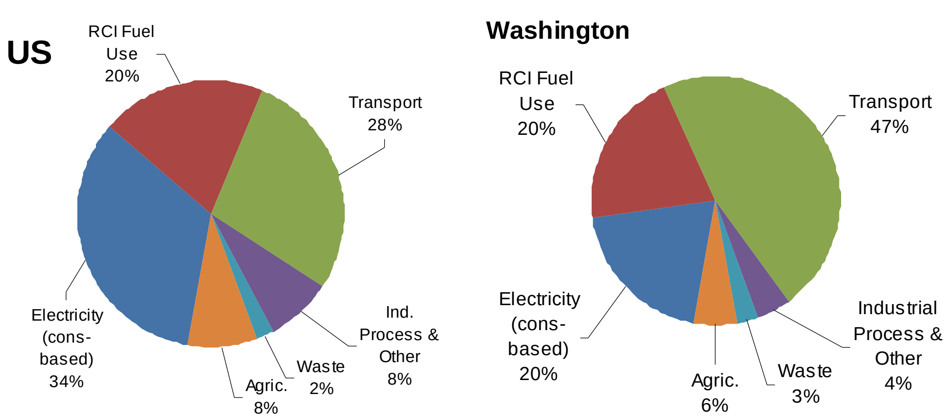
SO_2 is a product of high-sulfur fuel combustion. The main sources of SO_2 are coal and oil used in power stations, industry, and domestic heating. Industrial chemical manufacturing is another source of SO_2. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and corrode iron and steel.

Greenhouse Gases

Climate-changing GHG come in several forms. The gases associated with transportation are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). CO_2 makes up the bulk of the emissions from transportation and is the focus of this evaluation. Any process that burns fossil fuel releases CO_2 into the air. Vehicles are a significant source of GHG emissions and contribute to global warming, primarily through the burning of gasoline and diesel fuels.

National estimates show that the transportation sector (including on-road, construction, airplanes, and boats) accounts for almost 30 percent of total domestic CO_2 emissions.[1] However, in Washington State, transportation accounts for nearly half of GHG emissions because the state relies heavily on hydropower for electricity generation, unlike other states that rely on fossil fuels such as coal, petroleum, and natural gas to generate electricity (see Exhibit 2). The next largest contributors to total gross GHG emissions in Washington are fossil fuel combustion in the residential, commercial, and industrial (RCI) sectors at 20 percent and in electricity generation facilities, also at 20 percent.

Exhibit 2. Greenhouse Gas Emissions by Sector, 2005, US and Washington State



Source: Washington Climate Advisory Team, 2008

[1] This percentage is based on 2004 data from the International Energy Administration and is consistent with 1996 guidelines on greenhouse gas emissions calculations issued by the Intergovernmental Panel on Climate Change (IPCC).

Mobile Source Air Toxics

In addition to the criteria pollutants for which there are NAAQS, the EPA also regulates air toxics. Toxic air pollutants are those pollutants known or suspected to cause cancer or other serious health effects. Most air toxics originate from human made sources, including on road mobile sources, non road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries). Controlling air toxic emissions became a national priority with the passage of the CAA Amendments of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/ncea/iris/index.html). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These compounds discussed below are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While the Federal Highway Administration (FHWA) considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

- Benzene - characterized as a known human carcinogen.
- Acrolein - The potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- Formaldehyde - a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- 1,3-butadiene - characterized as carcinogenic to humans by inhalation.
- Diesel Exhaust (DE) - likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed by USEPA is the combination of diesel particulate matter and diesel exhaust organic gases. Diesel exhaust also represents chronic respiratory effects, possibly the primary noncancer hazard from Mobile Source Air Toxics (MSATs). Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.
- Naphthalene - classified as a Group C, possible human carcinogen, by EPA. Acute exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Cataracts also have been reported in workers acutely exposed to naphthalene by inhalation and ingestion.
- Polycyclic Organic Matter (POM) - defines a broad class of compounds that includes the polycyclic aromatic hydrocarbon compounds (PAHs), of which benzo[a]pyrene is a

member. Cancer is the major concern from exposure to POM. EPA has classified seven PAHs (benzo[a]pyrene, benz[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) as Group B2, probable human carcinogens.

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050.

2.4 Attainment Status / Regional Air Quality Conformity

Section 107 of the 1977 CAA Amendment requires that EPA publish a list of all geographic areas in compliance with the NAAQS, as well as those areas not in attainment of the NAAQS. The designation of an area is made on a pollutant-by-pollutant basis. EPA's area designations are shown Exhibit 3.

Exhibit 3. Attainment Classifications and Definitions

Attainment	Unclassified	Maintenance	Nonattainment
Area is in compliance with the NAAQS.	Area has insufficient data to make a determination and is treated as being in attainment.	Area once classified as nonattainment but has since demonstrated attainment of the NAAQS.	Area is not in compliance with the NAAQS.

The project is located in an area that is classified as attainment for all criteria pollutants. A CO and ozone maintenance area (Exhibit 4) is located nearby. The maintenance area had been designated as nonattainment for CO and ozone (1-hour) upon enactment of the CAA Amendments of 1990. The state submitted a CO maintenance plan on March 19, 1996, and EPA approved the plan on October 21, 1996. The South West Clean Air Agency (SWCAA) completed a second 10-year Carbon Monoxide Maintenance Plan and a final draft was completed on March 1, 2007. The plan relies on control of residential wood smoke, fugitive dust, industrial emissions, open burning, and diesel exhaust. The state submitted an Ozone Maintenance Plan on June 13, 1996, and Oregon submitted an Ozone Maintenance Plan on August 30, 1996. EPA approved the plans on May 19, 1997. SWCAA completed a supplement to the Washington State Implementation Plan for the Vancouver Portion of the Portland-Vancouver Air Quality Maintenance Area Ozone Maintenance Plan on November 2, 2006.

The project is located in an area that is classified as attainment, therefore, it is exempt from the project-level conformity criteria of the EPA Transportation Conformity Rule and with Washington Administrative Code (WAC) Chapter 173-420. Regionally significant projects must be included in a conforming Metropolitan Transportation Plan (MTP) and Transportation Improvement Plan (TIP) by the Regional Metropolitan Planning Organization (MPO). The SR 502 Corridor Widening Project is included in the latest version of the Southwest Washington Regional Transportation Council (RTC) MTP and TIP.

2.5 Pollutants for Analysis

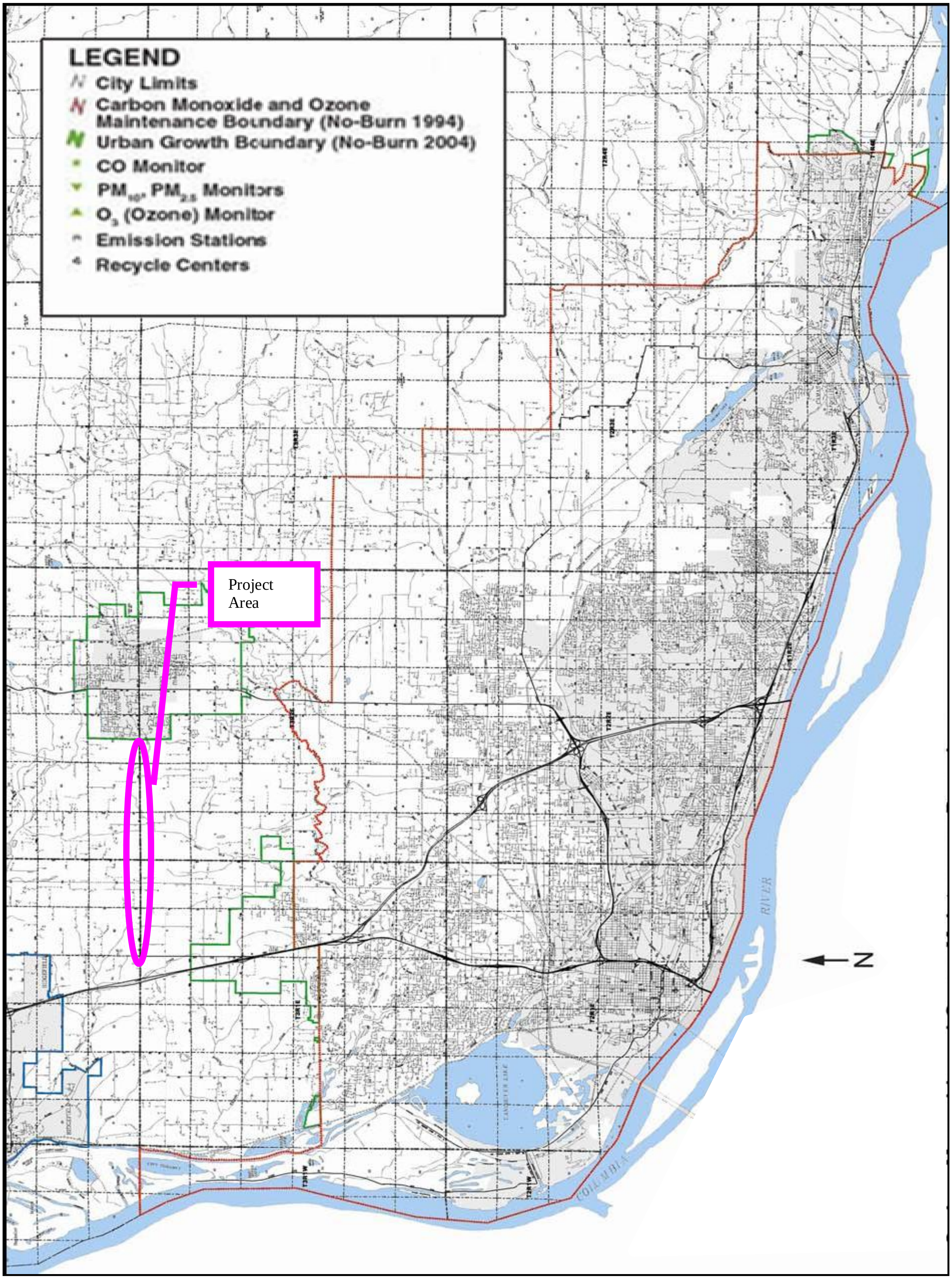
Pollutants that can be traced principally to motor vehicles are relevant to the evaluation of the project's impacts; these pollutants include CO, hydrocarbons, nitrogen oxides, ozone, PM_{10}, $PM_{2.5}$, and MSAT. Transportation sources account for a small percentage of regional emissions of SO_x and lead; thus, a detailed analysis is not required.

Hydrocarbon, VOC and nitrogen oxide emissions from automotive sources are a concern primarily because they are precursors in the formation of ozone and PM. Ozone is formed through a series of reactions that occur in the atmosphere in the presence of sunlight. Since the reactions are slow and occur as the pollutants are diffusing downwind, elevated ozone levels often are found many miles from the sources of the precursor pollutants. Therefore, the effects of hydrocarbon and nitrogen oxide emissions generally are examined on a regional or "mesoscale" basis. This analysis uses regional VMT and vehicle hours traveled (VHT) within the region, with and without the project, to determine daily "pollutant burden" levels.

PM_{10} and $PM_{2.5}$ impacts are both regional and local. A significant portion of PM, especially PM_{10}, comes from disturbed vacant land, construction activity, and paved road dust. $PM_{2.5}$ also comes from these sources. Motor vehicle exhaust, particularly from diesel vehicles, is also a source of PM_{10} and $PM_{2.5}$. PM_{10}, and especially $PM_{2.5}$, can also be created by secondary formation from precursor elements such as SO, nitrogen oxides, VOCs, and ammonia (NH_3). Secondary formation occurs due to chemical reaction in the atmosphere, generally downwind some distance from the original emission source. Thus it is appropriate to predict concentrations of PM_{10} and $PM_{2.5}$ on both a regional and a localized basis.

CO impacts are generally localized. Even under the worst meteorological conditions and most congested traffic conditions, high concentrations are limited to a relatively short distance (300 to 600 feet) of heavily traveled roadways. Vehicle emissions are the major sources of CO. The project could change traffic patterns within the project area. Consequently, it is appropriate to predict concentrations of CO on both a regional and a localized or "microscale" basis. Projects evaluated under an EIS in Washington must complete a microscale analysis that estimate CO

Exhibit 4. Vancouver Ozone and Carbon Monoxide Maintenance Area



levels at sensitive receptor sites near heavily congested intersections expected to be affected by the project under existing and future conditions.

Due to the global implications of GHG, they are analyzed on a regional level.

MSAT impacts are both regional and local. Through the issuance of EPA's Final Rule, *Control of Emissions of Hazardous Air Pollutants from Mobile Sources* (66 FR 17229), it was determined that many existing and newly promulgated mobile source emission control programs would result in a reduction of MSATs. FHWA projects that even with a 64 percent increase in VMT, the programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent. As a result, EPA concluded that no further motor vehicle emission standards or fuel standards were necessary to further control MSATs.

2.6 CO Modeling Methodology

Projects evaluated under an EIS in Washington must complete a microscale analysis that estimate CO levels at sensitive receptor sites near heavily congested intersections expected to be affected by the project under existing and future conditions.

The Washington State Intersection Screening Tool (WASIST), which was used in all mobile source analyses, is a Microsoft Windows-based screening model used for determining worst-case 1-hour and 8-hour CO concentrations at signalized intersections throughout the state. Results were based on the latest version of EPA's emission factor algorithm (MOBILE6.2.03) and EPA's CAL3QHC mobile source dispersion model. The CAL3QHC algorithm was used to calculate the CO concentrations in WASIST based on intersection geometry, user inputs, and worst-case assumptions. CO emission factors were determined for each approaching leg of traffic and for idling vehicles.

WASIST uses readily available data in a user-friendly application to make a conservative estimate of CO levels near congested intersections. This is done by using a combination of worst-case conditions that, when occurring simultaneously, produce the highest levels of CO. The purpose of the model is to allow the user to conservatively estimate the highest CO concentrations that would occur at an intersection without having to perform a more time-consuming detailed analysis. If the results from WASIST do not violate the NAAQS for CO, the effect from any other combination of conditions would also be below the standards, and no further modeling is required.

Afternoon (PM) and morning (AM) peak-period traffic data were used to estimate maximum 1-hour and 8-hour CO concentrations. These peak periods are the highest traffic-volume periods in Clark County.

Analysis sites include: critical roadway links and heavily congested intersections, locations adjacent to sensitive land uses, and representative locations throughout the study area that may be affected by the project. All major signalized intersections experiencing high delays (level of service [LOS] D or worse) with the project for the year 2033 were selected for analysis (Exhibit 5). The potential of the project to create localized CO concentrations that would exceed the

NAAQS at these locations were estimated. Where intersections failed in both the AM and PM peak-period, the period with the worse delay was evaluated.

Exhibit 5. Mobile Source Analysis Locations

	AM Peak Hour 2033 Build Alternative		PM Peak Hour 2033 Build Alternative	
	LOS	Delay	LOS	Delay
SR 502/NE 10th Avenue	F	181	E	61
SR 502/NE 29th Avenue	C	26	D	37
SR 502/NE 72nd Avenue	E	71	D	52
SR 502/NW 20th Avenue	F	87	F	146
SR 502/SR 503	F	88	F	116

Note: highlighted text shows the worse delay at intersections with LOS D or worse.

3.0 Affected Environment

This section describes the affected environment, or existing conditions, within the study area.

Exhibit 6. Ambient Air Quality Monitored Data 2005-2007

			2101 E 4th Plain Boulevard			8205 NE 4th Plain Road			1500 SE Blairmount Drive		
			2005	*2006*	*2007*	*2005*	*2006*	*2007*	*2005*	*2006*	*2007*
Carbon Monoxide (CO) [ppm]	1-Hour	Maximum	7.2	4.8	NA						
		Second Maximum	6.9	4.6	NA						
		# of Exceedances	0	0							
	8-Hour	Maximum	4.9	3.9	NA						
		Second Maximum	4.6	3.2	NA						
		# of Exceedances	0	0							
Particulate Matter [ug/m3]	PM_{10}	Maximum 24-Hour				62	30	NA			
		Mean Annual				17	12	NA			
		# of Exceedances				0	0				
	$PM_{2.5}$	Maximum 24-Hour				65	52	NA	38	38	36
		Mean Annual				10.4	9.6	NA	12.6	13.4	11.5
		# of Exceedances				0	0		0	0	0
Ozone (O_3) [ppm]	8-Hour	First Highest							.076	0.075	0.072
		Second Highest							.067	0.071	0.062
		Third Highest							.062	0.069	0.061
		Fourth Highest							.057	0.068	0.060
		# of Days Standard Exceeded							1	0	0

Source: Ecology 2008

3.1 Ambient Air Quality in the Study Area

The Washington State Department of Ecology (Ecology) is responsible for implementing and enforcing regulations to ensure that the air Washington citizens breathe is clean and healthful. Exhibit 6 details the monitored air quality for the years 2005-2007 near the study area.

3.2 Microscale CO Existing Conditions

The results of the screening-level mobile source analysis that was conducted using the WASIST model are shown in Exhibit 7. The values provided are the highest 1-hour and 8-hour CO concentrations predicted at any of the receptor sites, near the selected intersections, for 2006 existing conditions. The estimated CO concentrations are all below the 1-hour and 8-hour NAAQS of 35 and 9 ppm, respectively.

Exhibit 7. 2006 Maximum Predicted CO Concentrations (ppm)

Intersection	Peak Period	Existing Conditions (2006)	
		1-hour	8-hour
SR 502/NE 10th Avenue	AM	6.1	5.2
SR 502/NE 29th Avenue	PM	NS	NS
SR 502/NE 72nd Avenue	AM	7.0	5.8
SR 502/NW 20th Avenue	PM	7.8	6.4
SR 502/SR 503	PM	9.2	7.3

Notes: The 1-hour NAAQS is 35 ppm; the 8-hour NAAQS is 9 ppm.
NS – The intersection at NE 29th Avenue is currently not signalized.

4.0 Effects and Benefits

This section identifies potential effects and benefits to air quality associated with the No Build Alternative and the Build Alternative. Effects and benefits are discussed in terms of temporary effects associated with construction activities, and long-term effects associated with the operation and maintenance of the facility or permanent changes resulting from the project. Indirect and cumulative effects of the project are documented in a separate report, *Final Indirect Effects and Cumulative Effects Discipline Report* (Parsons Brinckerhoff, 2008b)

4.1 Temporary Effects and Benefits

No Build Alternative

There would be no temporary effects associated with the No Build Alternative

Build Alternative

Temporary fugitive PM_{10} emissions are associated with construction activities such as demolition, land clearing, ground excavation, grading, cut-and-fill operations, and structure erection. PM_{10} emissions would vary from day to day, depending on the level of activity, specific operations, and weather conditions. Emission rates would depend on soil moisture, silt content of soil, wind speed, and the amount and type of operating equipment associated with project construction. Larger dust particles would settle near the source, and fine particles would be dispersed over greater distances from the construction site.

Temporary fugitive PM_{10} emissions from construction activities would be noticeable, if uncontrolled. Mud and particulates from trucks would also be noticeable if construction trucks would be routed through residential neighborhoods. Measures to reduce the deposition of mud and emissions of particulates are listed in Section 5.1, Mitigation of Temporary Effects.

In addition to PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate $PM_{2.5}$, CO, and nitrogen oxide in exhaust emissions. If construction traffic and lane closures were to increase congestion and reduce the speed of other vehicles in the area, emissions from traffic would increase temporarily while those vehicles are delayed. These emissions would be temporary and limited to the immediate area where the congestion is occurring. Some construction phases (particularly during paving operations using asphalt) would result in short-term odors. These odors might be detectable to some people near the site, and would be diluted as distance from the site increases.

4.2 Long-Term Effects and Benefits

Regional Analysis

A regional or mesoscale analysis of a project determines a project's overall impact on regional air quality levels. This analysis uses regional VMT and VHT within the region with and without the project to determine daily "pollutant burden" levels.

The average VMT were calculated along the corridor as part of the *Energy Discipline Report* (Parsons Brinckerhoff, 2008a). Exhibit 8 summarizes the average miles traveled along the SR 502 corridor, for each alternative, for the AM and PM peak hours respectively.

Exhibit 8. Average Peak Hour Vehicle Miles Traveled along the SR 502 Corridor

Peak Period	2006 Existing (VMT)	2033 No Build (VMT)	2033 Build (VMT)
AM	12040.4	18760.2	25165.6
PM	17082.4	20205.2	31315.5

Exhibit 8 shows that along the SR 502 corridor there would be an increase in VMT from 18,760 under the No Build Alternative to 25,166 under the Build Alternative in the AM Peak, and an increase from 20,205 to 31,316 VMT in the PM Peak.

The average VHT were calculated along the corridor as part of the *Transportation Discipline Report* (Parsons Brinckerhoff, 2008d). Exhibit 9 and Exhibit 10 summarize the average travel times along the SR 502 corridor, for each alternative, for the AM and PM peak hours respectively.

The analysis shows that the travel times from NE 15th Avenue to NE 92nd Avenue would triple from 2006 to 2033 in the No Build Alternative. The projected increase in travel time along the SR 502 corridor would adversely affect regional freight mobility and commerce between I-5 and Battle Ground, northeast Clark County, and east Clark County.

Exhibit 9. Average AM Peak Hour Travel Time

	Average Travel Time (minutes)		
	Existing	2033 No Build Alternative	2033 Build Alternative
SR 502 Eastbound (NE 15th Avenue to NE 92nd Avenue)	6	22	10
SR 502 Westbound (NE 92nd Avenue to NE 15th Avenue)	7	24	9

Exhibit 10. Average PM Peak Hour Travel Times

	Average Travel Time (minutes)		
	Existing	2033 No Build Alternative	2033 Build Alternative
SR 502 Eastbound (NE 15th Avenue to NE 92nd Avenue)	8	32	8
SR 502 Westbound (NE 15th Avenue to NE 92nd Avenue)	8	31	7

At the 2033 Build Alternative, the travel times increase slightly compared to existing conditions and are significantly lower compared to the No Build Alternative. The critical movement is the eastbound direction, which has an average travel time of ten minutes in the PM peak hour.

This increase in VMT would lead to higher pollutant levels emissions for the Build Alternative along the highway corridor, along with a corresponding decrease in pollutant levels along the parallel routes. The emissions increase is offset by lower VHT due to increased speeds. Therefore, the regional daily pollutant burden levels would not be significantly affected, and the changes in the area's pollutant burden levels would be minor.

Microscale PM_{10} / $PM_{2.5}$ Analysis

The project is located in a PM_{10} and $PM_{2.5}$ attainment area. As such, a detailed analysis of PM_{10} and $PM_{2.5}$ is not required. As the project is not predicted to have significant effects on regional VMT, it is expected that the project would not have significant effect on regional levels of PM_{10} and $PM_{2.5}$.

Microscale CO Analysis

The results of the screening-level mobile source analysis that was conducted using the WASIST model are shown in Exhibit 10. The values provided are the highest 1-hour and 8-hour CO concentrations predicted at any of the receptor sites, near the selected intersections for 2015 and 2033 conditions. The estimated CO concentrations for both the No Build and Build Alternatives are all below the 1-hour and 8-hour NAAQS of 35 and 9 ppm, respectively. Because the predicted results were all below the NAAQS, the results of this analysis indicate that a more in-depth mobile source air quality analysis is not required.

Exhibit 11. Opening and Design Year Maximum Predicted CO Concentrations (ppm)

Intersection	Peak Period	2015 No Build	2033 No Build	2015 Build	2033 Build
		1 hr/8 hr	1 hr/8 hr	1 hr/8 hr	1 hr/8 hr
SR 502/NE 10th Avenue	AM	6.0/5.1	6.4/5.4	6.2/5.2	6.5/5.4
SR 502/NE 29th Avenue	PM	NS	NS	5.4/4.7	6.2/5.2
SR 502/NE 72nd Avenue	AM	5.5/4.8	6.2/5.2	6.2/5.2	6.5/5.4
SR 502/NW 20th Avenue	PM	6.1/5.2	6.3/5.3	6.3/5.3	6.3/5.3
SR 502/SR 503	PM	6.3/5.3	6.9/5.7	6.4/5.4	7.0/5.8

Notes: The 1-hour NAAQS is 35 ppm; the 8-hour NAAQS is 9 ppm.
NS – The intersection at NE 29th Avenue is not signalized under the No Build Alternative.

Greenhouse Gases

CO_2 emission estimates are based on the amount of direct energy required for each alternative and are calculated as part of the *Energy Discipline Report* (Parsons Brinckerhoff, 2008a). The direct energy values represent the energy required for vehicle propulsion. This energy is a function of traffic characteristics such as volume, speed, distance traveled, vehicle mix, and thermal value of the fuel being used. CO_2 emission factors are then applied to the energy estimates to determine the amount of CO_2 generated. For roadway energy, a CO_2 emission factor of 19.4 pounds/gallon was used for gasoline fueled vehicles. This emission factor was obtained from the EPA.

Based on the energy use, GHG are expected to be reduced by 5 to 18 percent under the Build Alternative during the peak periods. For more information, please see the Energy Discipline Report (Parsons Brinckerhoff 2008a).

Mobile Source Air Toxics

On February 3, 2006, the FHWA released “Interim Guidance on Air Toxic Analysis in NEPA Documents.” This guidance was superseded on September 30, 2009 by FHWA’s “Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents.” The purpose of FHWA’s guidance is to advise on when and how to analyze MSATs in the National Environmental Policy Act (NEPA) process for highways. This guidance is interim, because MSAT science is still evolving. As the science progresses, FHWA will update the guidance.

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at: www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm. FHWA's Interim Guidance groups projects into the following tier categories:

1. No analysis for projects with no potential for meaningful MSAT Effects;
2. Qualitative analysis for projects with low potential MSAT effects; or
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Based on the recommended tiering approach, the SR 502 Corridor Widening project falls within the Tier 2 approach. Tier 2 is appropriate for this project because it does not fall under the Tier 1 category, which includes:

- Projects qualifying as a categorical exclusion under 23 CFR, Part 771.117(c);
- Projects exempt under the CAA conformity rule under 40 CFR, Part 93.126; or
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

The project also does not fall under the Tier 3 category. Tier 3 includes projects that:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the Average Annual Daily Traffic (AADT) is projected to be in the range of 140,000 to 150,000 vehicles per day (vpd), or greater, by the design year.
- Proposed to be located in proximity to populated areas.

As stated in FHWA's guidance, Tier 2 includes projects "that serve to improve operations of highway, transit or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects. We anticipate that most highway projects that need an MSAT assessment will fall into this category. " Based on this guidance, the project was analyzed using the Tier 2 approach.

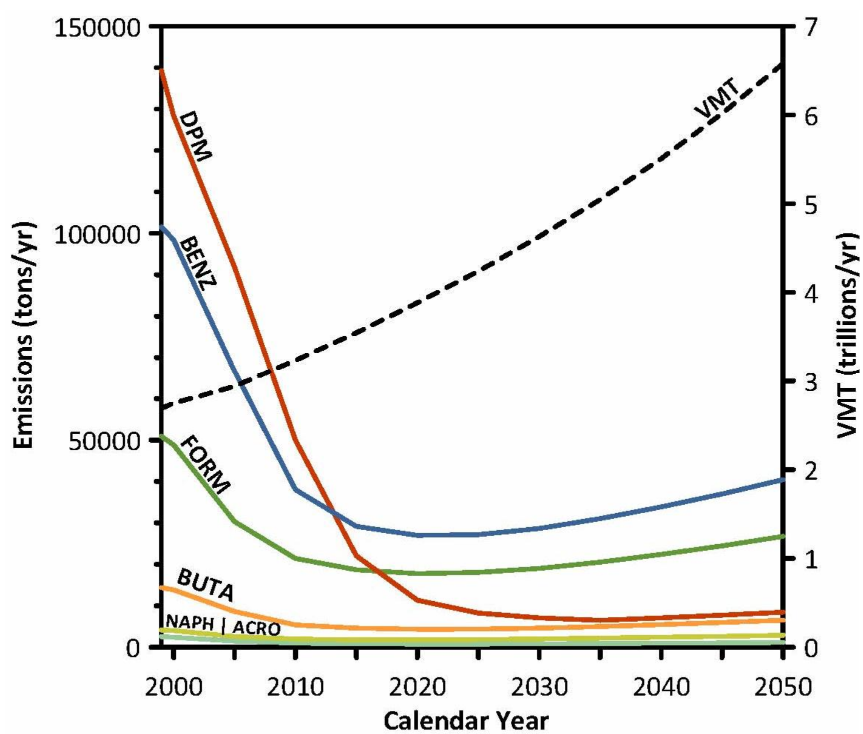
No roadways in the project area, including the widened section of SR 502, will have AADT approaching the range of 140,000 to 150,000 vehicles per day. Furthermore, for each alternative in this EIS, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. When compared to the No Build Alternative, the VMT for Build Alternative is predicted to a 25 to 30 percent increase (Exhibit 8). Also, regardless of the alternative chosen, 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 72 percent from 1999 to 2050 as shown in

Figure 12. 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 virtually all locations.

Under each alternative there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the widened section of SR 502 at NE 10th Avenue. Land uses along the corridor are rural – primarily agriculture and rural residential. However, even if increases do occur at these locations, they are expected to be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

This document has provided a qualitative analysis of MSAT emissions relative to the Build and No Build alternatives and has acknowledged that the Build Alternative involving road improvements could increase exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain. However, available technical tools do not enable prediction of the project-specific health impacts of the emission changes associated with the alternatives. Because of these limitations, the following discussion is included in accordance with the President's Council on Environmental Quality (CEQ) regulations (40 CFR, Section 1502.22[b]) regarding incomplete or unavailable information.

Exhibit 12. Vehicle Miles Traveled vs. Mobile Source Air Toxics



Note:
(1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
(2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles traveled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors
Source: U.S. Environmental Protection Agency. MOBILE6.2 Model run 20 August 2009.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

Information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, http://www.epa.gov/ncea/iris/index.html). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel PM emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an National Cooperative Highway Research Program study (http://www.epa.gov/scram001/dispersion_alt.htm#hyroad), which documents poor model performance at ten sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the

CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with NAAQS for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million;in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

4.3 Indirect and Cumulative Effects and Benefits

The air quality analysis described in this report was performed using projected traffic volumes for the future years. Therefore, the air quality analysis includes the indirect affects of the project and other traffic growth that would be associated with the project.

The air quality analysis evaluated projected traffic volumes and delays that incorporate anticipated traffic generation from planned development in the project area. Therefore, the air quality analysis includes the cumulative affects of the project and other traffic growth that would be associated with the project.

5.0 Mitigation

This section discusses potential mitigation measures that could be used to avoid or minimize effects on air quality. Potential mitigation measures are discussed for the temporary effects and the long-term effects of the Build Alternative only.

5.1 Mitigation for Temporary Effects

The following mitigation measures could be taken to avoid and minimize temporary effects on air quality. Mitigation measures include:

- The Contractors would set up construction areas, staging areas, and material transfer sites in a manner that reduces standing wait times for equipment, engine idling, and the need to block the movement of other activities on the site. These strategies could reduce fuel consumption by reducing wait times and ensuring that construction equipment operates efficiently.

As well as other possible air pollutant emission control measures (Associated General Contractors of Washington, 1997):

- Spraying exposed soil with water or other dust palliatives, which are chemicals or compounds applied to road surfaces to reduce dust created by traffic, to reduce emissions of PM_{10} and deposition of PM.
- Removing PM deposited on paved public roads to reduce mud and resultant windblown dust on area roadways.
- Maintaining as many traffic lanes as possible during peak travel times to reduce air quality effects caused by increased congestion.
- Placing quarry spall aprons where trucks enter public roads to reduce the amount of mud tracked out.
- Using the Best Management Practice (BMP) of planting vegetative cover on graded areas that would be left vacant for more than one season to reduce windblown particulates in the area.

5.2 Mitigation for Long-Term Effects

Because the MSAT emissions are not expected to increase, impact on the climate changing GHG is expected to be minimal, no exceedances of the NAAQS are anticipated, and no significant adverse air quality effects are expected from the project. Therefore, no mitigation measures would be required.

6.0 Regulatory Compliance

The project is located in an area designated as attainment, therefore, it is exempt from the project-level conformity criteria of the EPA Conformity Rule, and with WAC Chapter 173-420. Regionally significant projects must be included in a conforming MTP and TIP by the MPO. The SR 502 Corridor Widening Project is included in the latest version of the Southwest Washington RTC MTP and TIP.

Conformity Finding: The project is exempt from the criteria of 40 CFR Part 93 and WAC 173-420 for projects from a conforming plan and TIP. The project meets all of the hot-spot criteria of 40 CFR Part 93 and WAC 173-420-065. The project meets the conformity criteria of 40 CFR Part 93 and WAC 173-420 and conforms to the SIP.

7.0 Conclusion

The purpose of the SR 502 Corridor Widening project is to improve highway safety and mobility on SR 502. The project would not have a significant effect on regional CO, PM_{10}, $PM_{2.5}$ and O_3 levels. The project is also predicted to benefit GHG levels. MSAT levels are predicted to decrease significantly in the future due to federally mandated programs. The project is not expected to impact this reduction. Based on the microscale CO analysis conducted, the project is not predicted to cause or exacerbate a violation of the applicable NAAQS.

The project is on a conforming TIP and conforms to the SIP. The project has been found to conform to all the necessary criteria of 40 CFR Part 93 and WAC 173-420.

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Appendix A

WASIST OUTPUT

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WASIST Output is available electronically upon request.