Draft

Air Quality Technical Report

Washoe Regional Transportation Commission &
Nevada Department of Transportation

Lemmon Drive Project

Reno, Nevada

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LEMMON DRIVE
PROJECT

Acronyms and Abbreviations

AtkinsRéalis	AtkinsRéalis, Inc.
CAA	Clean Air Act
City	City of Reno, Nevada
CFR	Code of Federal Regulations
CO	Carbon Monoxide
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
FEMA	Federal Emergency Management Agency
HAP	Hazardous Air Pollutants
IRIS	Integrated Risk Information System
LOS	Level of Service
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NNPH	Northern Nevada Public Health
NO_2	Nitrogen Dioxide
O_3	Ozone
Pb	Lead
PM2.5	Particulate Matter Smaller than 2.5 Micrometers in Diameter
PM10	Particulate Matter Smaller than 10 Micrometers in Diameter
POAQC	Projects of Air Quality Concern
POM	Polycyclic Organic Matter
ppb	parts per billion by volume
ppm	parts per million by volume
Project	Lemmon Drive Project Traffic Improvements and Resiliency Project
RTC	Regional Transportation Commission – Washoe County

RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
SO_2	Sulfur Dioxide
SIP	State Implementation Plan
STIP	Statewide Transportation Improvement Program
TIP	Transportation Improvement Program
$\mu g/m^3$	micrograms per cubic meter

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1.0 Introduction

1.1 Project Overview

The Regional Transportation Commission of Washoe County (RTC Washoe), in cooperation with the Nevada Department of Transportation (NDOT) and the Federal Highway Administration (FHWA) are proposing improvements to Lemmon Drive in the City of Reno, Washoe County, Nevada. The Lemmon Drive Traffic Improvements and Resiliency Project (Project) involves realigning Lemmon Drive to reconstruct a safer and more resilient roadway between Fleetwood Drive and Ramsey Way. The project proposes to realign Lemmon Drive to the west on an existing berm, elevating the roadway to mitigate flooding impacts. The project also includes the reconstruction of a multi-use path within the project limits and the construction of a new path connecting Lemmon Drive to Lemmon Valley Elementary School. Additionally, the project would eliminate residential driveway connections to a regional road, implement required earthwork balancing to avoid altering the base flood elevation, and stormwater improvements, including the construction of retention and equalization basins. These comprehensive measures collectively enhance safety, connectivity, and transportation resiliency in Lemmon Valley.

This technical memorandum discusses air quality as it relates to the Project, including existing conditions in the corridor, resource effect analysis, and mitigation measures.

1.2 Purpose and Need of the Project

1.2.1 Why is the Project Needed?

In 2017, Lemmon Drive was overtopped by floodwaters and faced emergency closures and an extensive mitigation response which disrupted the community's access highlighting the need for a more resilient roadway. Washoe County has limited financial and human resources to continuously provide flood mitigation for Lemmon Drive and private property. The total cost for maintenance, HESCO barrier placement, and continuous pumping for the 2017-2019 flood event was $11.6 million (Washoe County, 2022).

In addition, multimodal enhancements were identified as a community need in the RTC's North Valleys Regional Transportation Study.

1.2.2 What is the Purpose of the Project?

The purpose of the project is to provide a safe and reliable regional road with at least one dry lane in each direction of travel during a 100-year flood event and provide safe access for all multi-modal users.

1.3 Proposed Action and Alternatives

1.3.1 Build Alternative

The Build Alternative would reconstruct and raise the profile of the existing roadway from Fleetwood Drive to Palace Drive along the existing alignment. The section of roadway would provide two through lanes in each direction with a raised median. Dedicated left- and right-turn lanes would be provided at the intersections of Fleetwood Drive, Patrician Drive, and Palace Drive.

As the roadway extends to the north it would transition to provide one lane in each direction with a raised center median. In the northbound direction, dedicated right turn pockets would be provided at Arkansas Street, Chickadee Drive, Arizona Street, and Oregon Drive. Just north of Deodar Way the roadway alignment would shift west of the existing roadway. This realigned segment of roadway would run along the east side of an existing berm allowing the roadway to be constructed above the existing Federal Emergency Management Agency (FEMA) 100-year flood elevation. Arkansas Street, Chickadee Drive, and Arizona Street would be extended to tie into the new, realigned roadway. Near Oregon Drive the roadway alignment would tie into the existing roadway alignment with full reconstruction extending to Ramsey Way. **See Figure 1**.

The Build Alternative would also involve modifications to cross-street direct access realigned Lemmon Drive at Nectar Street, Tupelo Street, Waterash Street, Idaho Street, Pompe Way, and Dillon Way. Pompe Way and Dillon Way would be connected via a new frontage road which provides access to Lemmon Drive at Ramsey Way. Idaho Street and Waterash Street would utilize rehabilitated existing Lemmon Drive as local frontage road access to Arizona Street or Chickadee Drive which would then provide access to the realigned Lemmon Drive. A new connection from the Matterhorn Drive and Tupelo Street intersection to Chickadee Drive would provide access to the realigned Lemmon Drive also.

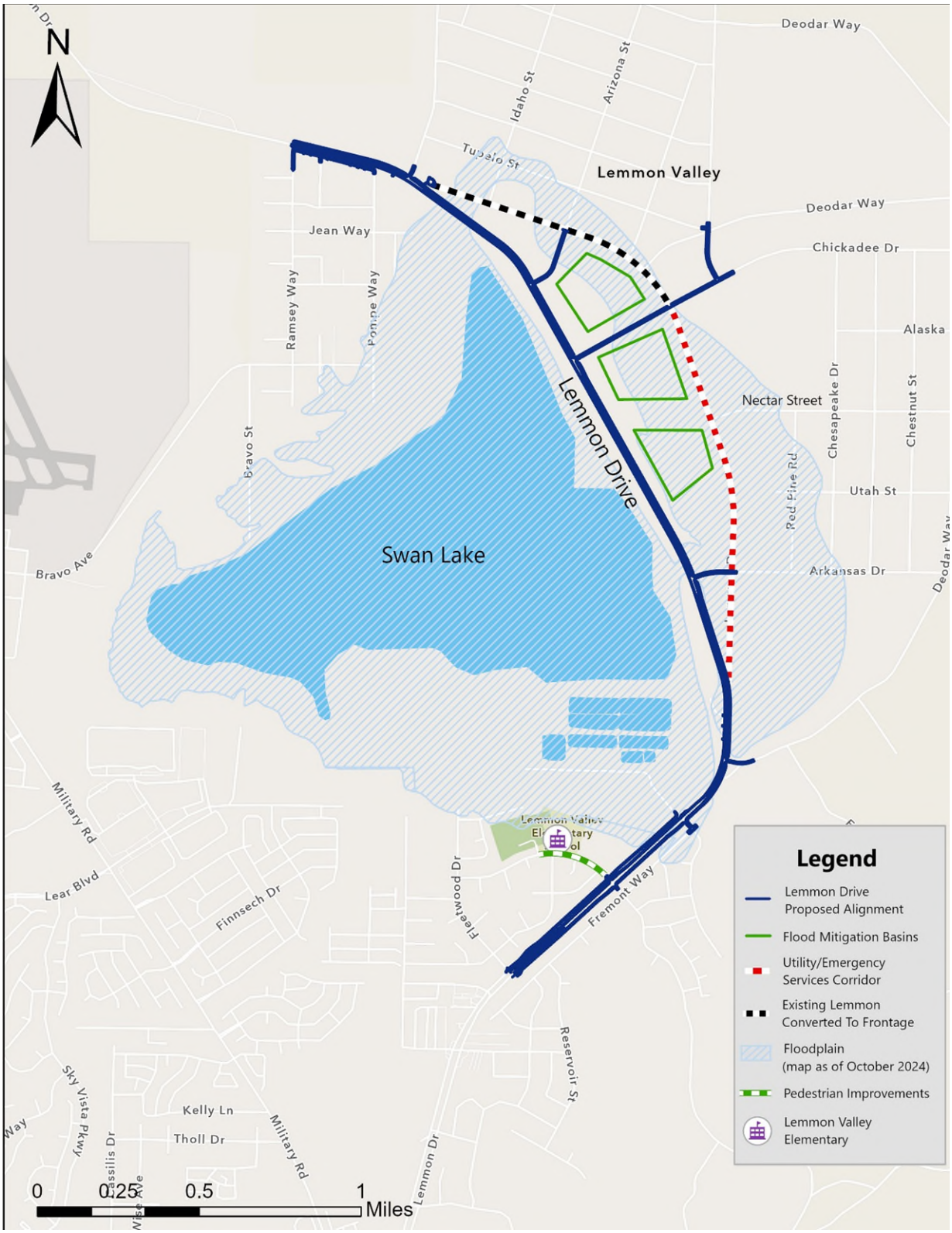
In addition to roadway improvements, substantial drainage improvements would also be constructed under the Build Alternative. Key drainage features would include rehabilitation of the existing drainage channel from Fleetwood Drive to Palace Drive. Equalization culverts would be constructed to replicate existing drainage between the east and west side of the existing berm during higher Swan Lake water elevations. These equalization culverts would be located at existing breaks in the berm north of Deodar Way and near Idaho Street. Volumetric mitigation basins would also be constructed between the new, realigned Lemmon Drive and existing Lemmon Drive within the FEMA floodplain. This mitigation would provide 1.3 cubic yards of basin excavation for everyone 1 cubic yard of embankment placed within the FEMA 100-year floodplain.

Additional items to be constructed with the Build Alternative include a 10-foot shared use path along the reconstructed and realigned Lemmon Drive roadway, intersection lighting, signing, striping, and reconstruction of the Patrician Drive rectangular rapid flashing beacon (RRFB). Additional pedestrian enhancements would be constructed from Lemmon Drive to the Lemmon Valley Elementary School along Patrician Drive.

1.3.2 No Build Alternative

The No Build Alternative would not construct any improvements to Lemmon Drive and only routine maintenance would continue. Lemmon Drive would remain below the 100-year floodplain. The No Build Alternative would eliminate the costs associated with construction of the project but would not meet the project's purpose and need.

Figure 1: Lemmon Drive Build Alternative



2.0 Applicable Laws, Regulations, and Guidance

The Clean Air Act (CAA), amended 1990, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for certain air pollutants of concern to protect human health and the environment. These air pollutants, referred to as criteria pollutants, are carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter smaller than 10 micrometers in diameter (PM_{10}), particulate matter smaller than 2.5 micrometers in diameter ($PM_{2.5}$), sulfur dioxide (SO_2), ozone (O_3), and lead (Pb). **Exhibit 1** below summarizes the NAAQS for the criteria pollutants. The units of measure for the NAAQS are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu g/m^3$).

Exhibit 1: National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level
CO	Primary	8 hours	9 ppm
		1 hour	35 ppm
Pb	Primary and Secondary	Rolling 3-month average	0.15 $\mu g/m^3$ (1)
NO_2	Primary	1 hour	100 ppb
	Primary and Secondary	1 year	53 ppb (2)
O_3	Primary and Secondary	8 hours	0.070 ppm (3)
$PM_{2.5}$	Primary	1 year	9.0 $\mu g/m^3$
	Secondary	1 year	15.0 $\mu g/m^3$
	Primary and Secondary	24 hours	35 $\mu g/m^3$
PM_{10}	Primary and Secondary	24 hours	150 $\mu g/m^3$
SO_2	Primary	1 hour	75 ppb (4)
	Secondary	3 hours	0.5 ppm

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 $\mu g/m^3$ as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards are not revoked and remain in effect for designated areas. Additionally, some areas may have certain continuing implementation obligations under the prior revoked 1-hour (1979) and 8-hour (1997) O_3 standards.

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its SIP to demonstrate attainment of the required NAAQS.

Source: https://www.epa.gov/criteria-air-pollutants/naaqs-table

An area that meets or does better than the national standard is defined as an attainment area; areas that do not meet the national standard are designated nonattainment areas. Furthermore, areas that currently meet the NAAQS but previously were considered nonattainment are defined as maintenance areas.

While the CAA requires the EPA to set the NAAQS, the individual states are responsible for establishing measures to attain and maintain these standards. A State Implementation Plan (SIP) is required in areas not meeting NAAQS. Northern Nevada Public Health– Air Quality Management Division (NNPH AQMD) is responsible for preparing and implementing the SIP to assure compliance with the NAAQS within Washoe County.

On January 20, 2025, President Trump signed Executive Order (E.O.) 14148 --Initial Rescissions of Harmful Executive Orders and Actions and E.O. 14154 – Unleashing American Energy. The E.O.s revoked E.O. 13990 – Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (January 20, 2021) and E.O. 14008 – Tackling the Climate Crisis at Home and Abroad (January 27, 2021). Subsequently on January 29, 2025, Secretary Duffy signed a Memorandum for Secretarial Offices and Heads of Operating Administrations – Implementation of Executive Orders Addressing Energy, Climate Change, Diversity, and Gender. On February 25, 2025, the Council on Environmental Quality (CEQ) published an Interim Final Rule removing the CEQ's National Environmental Policy Act (NEPA) implementing regulations, effective April 11, 2025 (90 Fed. Reg. 10610). As a result of these actions, FHWA will not include greenhouse gas emissions and climate change analyses in the federal environmental review process. Any purported greenhouse gas emissions and climate change impacts were not considered in the federal decision. Accordingly, no greenhouse gas emissions or climate change analyses are included in the Lemmon Drive Traffic Improvements and Resiliency Project Environmental Assessment and supporting technical reports.

The following list of applicable laws, regulations, and guidance provided the methods for the analysis performed in this memorandum.

- Clean Air Act (CAA) as amended (42 U.S.C. 7401)
- U.S. Environmental Protection Agency (EPA), Determining Conformity of Federal Actions to State or Federal Implementation Plans (40 CFR 93)
- EPA. 2015. Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas.
- EPA. 2023. EPA Greenbook: Nevada: Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, as of July 23, 2023
- Federal Highway Administration (FHWA), Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents (2023)

2.1 Mobile Source Air Toxics

With the passage of the CAA Amendments of 1990, Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants (HAPs) in order to control toxic emissions

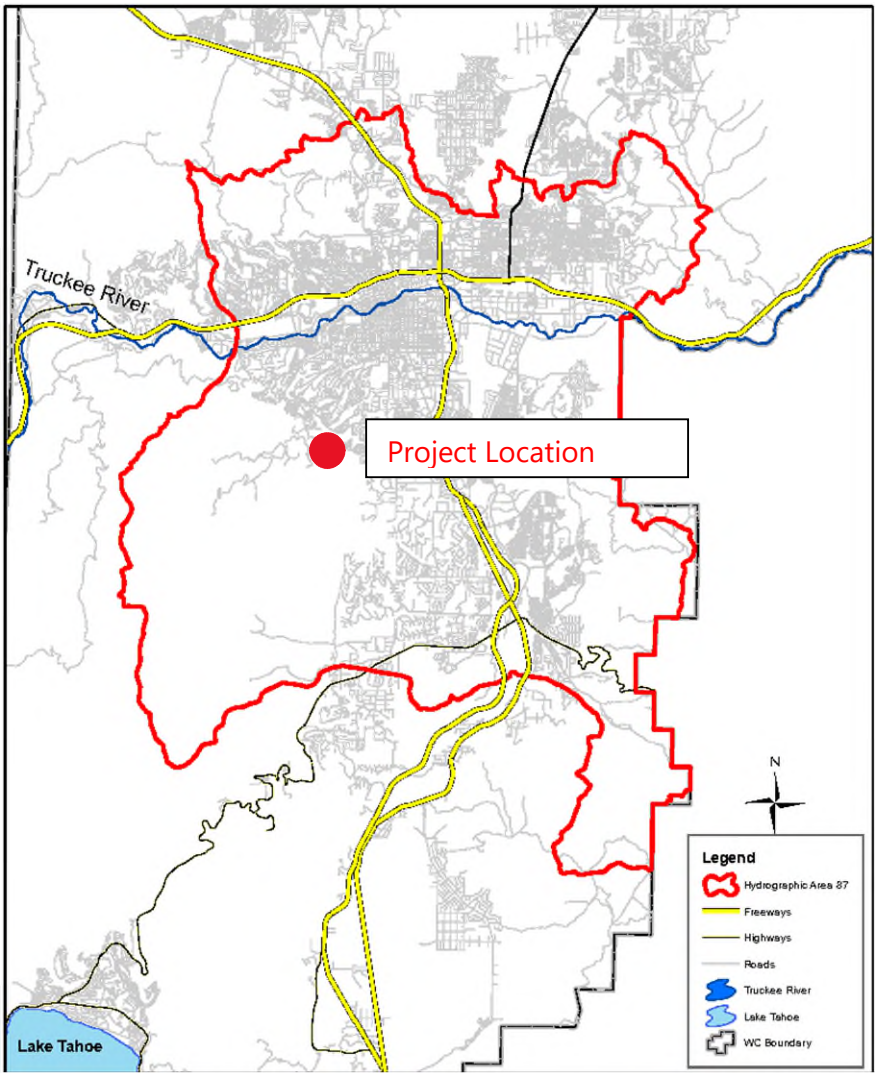
from transportation sources. The EPA assessed this list of air toxics in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System (IRIS). In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment. These Mobile Source Air Toxics (MSATs) are 1,3 butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter (POM) (FHWA, 2023). In contrast to criteria pollutants, MSATs do not have ambient air standards, making evaluation of their impacts more subjective. It is not possible to determine whether project specific MSAT emission levels should be considered significant. However, it is possible to determine MSAT emission trends over time and to determine whether meaningful differences in MSAT emission levels occur between project alternatives (NDOT, 2018).

3.0 Affected Environment

3.1 Study Area

The Study Area is located outside of Hydrographic Area 87, Washoe County, Nevada (see **Figure 2),** which is designated as a maintenance area for CO and PM_{10}, and attainment/unclassifiable for all other criteria pollutants (EPA, 2023b). In addition, Washoe County is currently designated as attainment/unclassifiable for the 2015 O_3 NAAQS (NNPH, 2022). The local air quality in the Study Area is affected by traffic, local emission sources, topography, climate, and regional background concentrations.

Figure 2: Washoe County Hydrographic Area 87



3.1.1 Emission Sources

Emission sources are divided into several source categories including point, mobile, biogenic, and area sources. The local emission sources within the Study Area include mobile (on-road and nonroad) and area sources. On-road mobile emission sources include vehicles travelling on Lemmon Drive and the cross streets within the Study Area. Nonroad mobile emission sources include construction vehicles and equipment that will be used during construction of the project. In addition, fugitive dust created during construction of the project would contribute to area source emissions.

3.1.2 Climate and Topography

The climate conditions and topography can affect the emission rates and pollutant concentration near the Study Area. The principal climatic features of Nevada are bright sunshine, a small amount of annual precipitation, dry air, and a large daily range of temperatures. Nevada lies on the eastern side of the Sierra Nevada Range which serves as a mountain barrier that influences the climate of the state. The prevailing winds are from the west, and as the warm moist air from the Pacific Ocean ascends the western slopes of the Sierra Nevada, the air cools, condenses, and precipitates. As the air descends the eastern slope, it is warmed by compression and very little precipitation occurs (WRCC, 2024). The average annual precipitation in Reno 8.3 inches (U.S. Climate, 2024). Strong surface heating occurs during the day and rapid cooling during the night because of the dry air. This results in a wide daily range of temperatures. The average high temperature in Reno is 47 degrees Fahrenheit (°F) in January and 91°F in July (U.S. Climate, 2024).

3.2 Criteria Pollutants of Concern

The EPA has set NAAQS for six common criteria pollutants: CO, NO_2, PM_{10}, $PM_{2.5}$, SO_2, O_3, and Pb. The pollutants of concern in nearby Hydrographic Area 87, Washoe County, Nevada are CO, PM_{10}, and O_3.

3.2.1 Carbon Monoxide

CO is a colorless, odorless gas formed by the incomplete combustion of fuels. It is directly emitted from cars, trucks, and other vehicles or machinery that burn fossil fuels. CO levels may be elevated outdoors at intersections with long vehicle delays and poor level of service (LOS). Breathing in air with a high concentration of CO reduces the ability of blood to bring oxygen to body cells and tissues. High concentrations of CO may be particularly hazardous to people who have heart problems and people who have damaged lungs or breathing passages. In severe cases, CO poisoning can cause death. Washoe County was previously considered nonattainment for CO but was re-designated to a maintenance area on August 4, 2008 (EPA, 2023b) and the project is located outside of the maintenance area.

3.2.2 Particulate Matter

PM is a general term used for a complex mixture of small solid particles and liquid droplets found in the air. PM is made up of varying components, such as nitrates, sulfates, organic chemicals, metals, and soil or dust particles. Their small size allows the particles to pass through the throat and nose and enter the lungs and can cause serious health effects. The EPA groups PM into two size ranges, known PM_{10} and $PM_{2.5}$. PM_{10} includes coarse particles that have diameters less than or equal to 10 micrometers and typically occurs near roadways and dusty industries. $PM_{2.5}$ includes fine particles that have diameters less than or equal to 2.5 micrometers and typically occurs in smoke and haze. The difference in size affects how the particles behave in the atmosphere. $PM_{2.5}$ can remain airborne for long periods of time and travel hundreds of miles due to its smaller size. On the other hand, PM_{10} does not remain airborne as long and is not

readily transported because the particles are generally too large to remain suspended in air. PM_{10} has previously been a concern in Washoe County, but the County was re-designated to a maintenance area on January 7, 2016 (EPA, 2023b) and the project is located outside of the maintenance area. Washoe County is in attainment for $PM_{2.5}$; therefore, $PM_{2.5}$ is not a pollutant of concern in the Study Area (NNPH, 2022).

3.2.3 Ozone

O_3 is a pollutant that is not emitted directly into the air but is created by chemical reactions of volatile organic compounds (VOC) and nitrogen oxides (NOx) in the presence of sunlight. It is more common to reach unhealthy levels on hot sunny days in urban environments but can still reach high levels during colder months. In addition, O_3 can be transported long distances by wind, so even rural environments can experience high O_3 levels. High O_3 levels can trigger a variety of health problems including chest pain, coughing, throat irritation, airway inflammation, and damaged lung tissue. In addition, O_3 also affects ecosystems and can harm sensitive vegetation during the growing season (EPA 2024b). Washoe County is designated as attainment/unclassifiable for the 2015 ozone NAAQS (NNPH, 2022).

3.3 Air Quality Monitoring

The NNPH AQMD currently has six air quality monitoring stations throughout Washoe County that monitor concentrations of criteria pollutants. The closest monitoring station to the Study Area is the Sparks monitoring station located at 750 Fourth Street, Sparks, Nevada. **Exhibit 2** summarizes the concentrations for criteria pollutants in Washoe County for the years 2020 through 2023 for CO, PM_{10}, and O_3.

Exhibit 2: Maximum Pollutant Concentrations in Washoe County (2020-2023)

Monitoring Station (Air Quality System Site ID)	Pollutant	Monitoring Year				
		NAAQS	2020	2021	2022	2023
Lemmon Valley 750 Fourth Street, Sparks (32-031-1005)	CO 1-hour (ppm)	35	2.7	2.2	2.7	2.1
	CO 8-hour (ppm)	9	2.2	2.1	2.3	1.5
	PM_{10} 24-hour ($\mu g/m^3$)	150	194	136	141	64
	O_3 (ppm)	0.070	0.074	0.860	0.070	0.065

Source: EPA, 2023c
ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter

4.0 Air Quality Analysis

As previously discussed, the project is located in an area of Washoe County, which has been determined to comply with the NAAQS. The Study Area is located outside of Hydrographic Area 87, Washoe County, Nevada, which is a maintenance area for CO and PM_{10}, and attainment/unclassifiable for all other criteria pollutants (EPA, 2023b). Because the proposed project is in an attainment area, 40 CFR Parts 51 and 93 are not applicable. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

4.1 MSAT

The purpose of the project is to provide a safe and reliable regional road with at least one dry lane in each direction of travel during a 100-year flood event and provide safe access for all multi-modal users. This project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxic (MSAT) concerns. As such, this project will not result in changes in traffic volumes, an increase in truck percentages, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the project from that of the no-build alternative.

Moreover, Environmental Protection Agency (EPA) regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES3 model forecasts a combined reduction of over 76 percent in the total annual emissions rate for the priority MSAT from 2020 to 2060 while vehicle-miles of travel are projected to increase by over 31 percent (FHWA, 2023). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

4.2 Construction Impacts

Construction is not expected to last longer than five years; therefore, long-term air quality effects are not anticipated because of construction of the project. However, short-term air quality effects are expected during construction of the project; there may be localized increases of fugitive dust and temporary construction equipment emissions of CO, nitrogen oxides, SO_2, volatile organic compounds, and particulate matter. Per 40 CFR 93.123 (c)(5), hot-spot analyses are not required to consider construction related activities which cause temporary increases in emissions.

The primary emissions of fugitive dust (PM) are from site preparation and surface disturbance during construction. The amount of fugitive dust emissions depends on variables such as the area of surface disturbed, the amount of construction equipment on site, wind speed, and soil moisture. In addition, during construction, exhaust emissions will be generated by fuel combustion in construction equipment and motor vehicles. The primary construction equipment related emissions are from the use of diesel-powered construction equipment vehicles on site. Motor vehicle emissions may increase within the study area due to the slowing of traffic.

4.3 Mitigation

The project is not expected to cause adverse effects on air quality during operation or expected to exceed the NAAQS; therefore, mitigation measures are not required.

Construction of the project is anticipated to disturb more than a quarter acre of land; therefore, the project will be required to obtain a Dust Control Operating Permit from the Northern Nevada Public Health Air Quality Management Division. A Dust Mitigation Plan will need to be submitted, which will include measures to control fugitive dust and specifications for construction in accordance with NDOT's Standard Specifications for Road and Bridge Construction (NDOT, 2014). Construction mitigation measures may include:

- Minimize land disturbance by initiating construction in phases when possible
- Use watering trucks to minimize dust
- Cover trucks when hauling dirt and materials
- Minimize unnecessary vehicular and machinery activities
- Maintain construction vehicles and equipment in good operational condition
- Limit construction vehicle and equipment idling when possible
- Limit vehicle paths within the temporary construction area

5.0 Transportation Conformity

Transportation conformity is required under the CAA section 176(c) to help ensure that federally supported highway and transit project activities are consistent with the local air quality goals outlined in the State Implementation Plan (SIP). By conforming to the SIP, transportation activities should not cause or contribute to new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS (FHWA, 2017). Transportation conformity requirements apply in areas of nonattainment and maintenance for the NAAQS. Because the proposed project is in an attainment area, conformity with transportation plans in not required. This project is not anticipated to create any adverse effects on the air quality of this attainment area. RTC Washoe has determined that the project is not a project of air quality concern, and therefore, interagency consultation is not required to comply with 40 CFR 93.105 and 93.112.

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