Construction Impacts. During construction, noise from construction activities would add to the noise environment in the noise study area. Activities involved in construction would generate noise levels ranging from 82 to 86 dBA at a distance of 100 feet. As a point of comparison, the FHWA's residential NAC is 66 dBA. Noise also would be generated by increased truck traffic on area roadways associated with transport of heavy materials and equipment. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours, although some work may be done at night. Construction activities done at night will be limited to quieter actions and require prior approval from ITD.

If noise generation would result in levels higher than shown in Table 5-17, "FHWA Construction Noise Abatement Criteria (NAC)," the policies and standards contained in 23CFR772.19 (Construction Noise) are applicable. Table 5-17 lists acceptable noise levels for different land uses.

TABLE 5-17
FHWA Construction Noise Abatement Criteria (NAC)

Activity Cat.	L_{eq} (h)[a]	L_{10} (h)[b]	Activity
A	57 (exterior)	60 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	70 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (exterior)	75 (exterior)	Developed lands, properties, or activities not included in the previous two categories.
D	-	-	Undeveloped lands.
E	52 (interior)	55 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

[a] L_{eq} is the equivalent steady-state sound level that in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period. L_{eq} (h) is the hourly value of L_{eq}.
[b] L_{10} is the sound level that is exceeded 10 percent of the time (the 90th percentile) for the period under consideration. L_{10} (h) is the hourly value of L_{10}.

Source: 23CFR772.19.

Additional details can be found in the "Noise" Discipline Report (CH2M HILL, 2008h).

5.8 Air Quality

5.8.1 Methodology

Existing air quality conditions were determined by reviewing air monitoring data available for the area, which consists of measured concentrations of specific pollutants in the air.

ITD has developed screening guidance for identifying highway projects which, based on their type, configuration, and projected traffic volume, will or will not result in operating

emission concentrations approaching or exceeding the NAAQS.[7] In accordance with the screening guidance, criteria pollutant emissions[8] during operations were addressed qualitatively for each of the Build alternatives. Effects from MSATs—air toxics that are emitted from motor vehicles and non-road equipment exhaust—were addressed qualitatively according to the current FHWA *Interim Guidance on Air Toxic Analysis in NEPA Documents* (FHWA, 2006).

Air quality impacts during construction were addressed qualitatively. Construction activities that typically result in temporary emissions of air pollutants were addressed, as applicable to this Proposed Action.

5.8.2 Regulatory Framework

Air quality is currently regulated by both the Federal Clean Air Act (42 USC Section 7401 et seq.) and its amendments, and IDAPA (58.01.01). Regulations have been developed to protect air quality, and are enforced by the USEPA and IDEQ.

Federally funded transportation projects are required to evaluate impacts to air quality on the human environment to meet NEPA regulations and to comply with 23CFR771.

In nonattainment and maintenance areas[9], the Clean Air Act (implemented by USEPA regulations 40CFR51 and 40CFR93) and the State of Idaho Administrative Code (IDAPA 58-01.01.563-574) require federally funded transportation projects to conform with the state implementation plan (SIP), the state's plan for meeting and maintaining compliance with the NAAQS. Conformity with the SIP means that transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS.

A conformity determination for CO and PM_{10} was made for the Proposed Action because a portion of the study area for the Proposed Action is in Northern Ada County, which is designated a maintenance area for both CO and PM_{10}. In addition to performing a project-level conformity analysis, it is necessary to show that the Proposed Action is included in the STIP and the TIP, which have met regional conformity requirements.

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[7] NAAQS are standards established by USEPA that apply for outdoor air throughout the country. Primary standards are designed to protect human health, with an adequate margin of safety, including sensitive populations such as children, the elderly, and individuals suffering from respiratory disease. Secondary standards are designed to protect public welfare from any known or anticipated adverse effects of a pollutant (for example, building facades, visibility, crops, and domestic animals).

[8] There are six criteria air contaminants or pollutants: Ozone (O_3), particulate matter (PM_{10}, coarse particles; $PM_{2.5}$, fine particles); carbon monoxide (CO); sulfur dioxide (SO_2); nitrogen oxides (NO_x); and lead (Pb). The standards are listed in 40CFR50.

[9] A nonattainment area is any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant. Maintenance areas are those geographic areas that were classified as nonattainment, but are now consistently meeting the NAAQS. Maintenance areas have been re-designated by the EPA from "nonattainment" to "attainment with a maintenance plan"; commonly called "maintenance areas." These areas have demonstrated through monitoring and modeling they have sufficient controls in place to meet and main the NAAQS. They also have contingency measures in place that would be implemented should the areas start showing exceedances.

5.8.3 Impacts

No Action Alternative

If the Proposed Action is not built, the construction and operation effects would not occur. The Proposed Action is intended to increase transportation capacity in this region and reduce north-south travel time between I-84 and destinations north of the Boise River. If it is not built, additional traffic congestion on existing roadways, particularly at the existing interchanges providing access to and from I-84, would occur.

Based on information in the "Transportation" Discipline Report, several signalization and intersection improvements are planned and may occur as part of the No Action Alternative (CH2M HILL, 2008q). However, additional traffic congestion on local roadways and I-84 would result in increased delays and lower travel speeds of motor vehicles, both which translate to higher emissions from vehicle exhaust. While these increases may not be enough to cause the area to violate air quality standards, they still represent an increased potential for effects on air quality.

Build Alternatives

Direct Impacts. One of the primary objectives of the Proposed Action is to increase mobility in the region, which translates to fewer delays for motor vehicles and lower vehicle exhaust emissions. Regionwide, fewer delays and lower emissions are a positive effect of the Proposed Action.

Six Build alternatives are being considered. Alternatives 1 and 1B follow the existing McDermott Road alignment, and are referred to as the "On-McDermott Road" alignments. Alternatives 2, 2D, 3A, and 3C are shifted slightly east or west of the existing McDermott Road alignment and are referred to as the "Off-McDermott Road" alignments. From a modeling perspective, traffic volume sensitivity of the alignments is limited to two general conditions—either on or adjacent to the existing McDermott Road alignment. In other words, the actual differences anticipated in modeling each of the six alternatives would be minute; however, more noticeable differences would be noted between alternatives along the existing McDermott Road alignment, versus those adjacent to the existing alignment. Therefore, the first modeled Build network, reflecting Alternatives 1 and 1B, assumes a new Idaho 16 alignment along the current McDermott Road ROW, while the second modeled Build network, reflecting Alternatives 2, 2D, 3A, and 3C, offsets the Idaho 16 alignment approximately 1,300 feet east of the current ROW. Both alternatives include a new interchange at Franklin Road.

CO Emissions. The Build alternatives are forecast to experience traffic volumes less than 175,000 annual average daily traffic (AADT) in the year 2030 for all study area intersections. According to the ITD Air Screening Guidance (ITD, 2007a), since entering traffic volumes are below this threshold—175,000 vpd—at these intersections, it can be concluded that the Build alternatives would have no significant adverse impact on air quality as a result of CO emissions. Table 5-18 presents the AADT at the five highest volume intersections within the study area.

This Proposed Action does not include or directly affect any roadways for which forecast traffic volumes will exceed the criteria level of ITD's Project Level Air Quality Screening

Procedures. It is concluded that the Proposed Action will have no significant adverse impact on air quality due to CO.

TABLE 5-18
AADT Volumes for Select Intersections in the Study Area

Intersection	2030 No Action	2030 On-McDermott Road Alignments	2030 Off-McDermott Road Alignments
Idaho 44 (State Street)/Linder	76,000	68,100	68,700
Idaho 44 (State Street)/Eagle	69,900	67,100	67,400
Chinden/Eagle	81,000	75,800	76,100
Franklin/Eagle	101,100	98,300	98,900
Eagle/I-84 WB[a]	66,400	63,300	65,400

[a] Complete volume data was not available for this intersection, but the total AADT is expected to be well below the screening threshold of 175,000.

$PM_{2.5}$ and PM_{10} Emissions. On March 10, 2006, USEPA issued amendments to the Transportation Conformity Rule to address localized impacts of PM: "$PM_{2.5}$ and PM_{10} Hot-Spot Analyses in Project-level Transportation Conformity Determinations for the New $PM_{2.5}$ and Existing PM_{10} National Ambient Air Quality Standards"(71CFR12468). This amendment requires the assessment of localized air quality impacts in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas for projects of air quality concern which are defined in the following manner: New or expanded highway projects that have a significant number of or significant increase in the number of diesel vehicles

- Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that would change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location
- Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ or PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation (40CFR93.123[b][1])

The Build alternatives would not be considered "a project of air quality concern" based on the above criteria, as defined in 40CFR93.123(b)(1); therefore, the project-level conformity determination requirements of 40CFR93.116 have been satisfied and no qualitative PM hot-spot analysis is necessary to compare between Build alternatives.

Emissions due to the construction activities for this Proposed Action will be minimized by implementation of BMPs identified in this chapter in Section 5.18, "Legal Requirements and Best Management Practices."

MSATs. The FHWA guidance ("Interim Guidance on Air Toxic Analysis in NEPA Documents") suggests a three-tiered approach to analyzing the effects of a transportation project in terms of public exposure to MSAT emissions. The level of analysis is related to expected size and impact of the project, as follows:

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

The purpose of this Proposed Action is to accommodate regional growth, increase regional mobility and circulation, and reduce congestion on existing north-south arterials. As such, this Proposed Action would generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from analysis for MSATs.

With each alternative there may be localized areas where VMT would increase, and other areas where VMT would decrease. It is possible that localized increases and decreases in MSAT emissions may occur; however, even if these increases do occur, they will be substantially reduced in the future, due to implementation of USEPA's vehicle and fuel regulations.

The Proposed Action will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts. As such, FHWA has determined that this Proposed Action will have a minimal impact with respect to MSATs. Moreover, USEPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years—thus minimizing any new emissions as a result of this Proposed Action—and at the same time to lower current background levels from the transportation network as a whole.

Localized Reductions in Emissions. The addition of the new roadway would relieve traffic congestion in the vicinity of the several existing north-south thoroughfares, such as Eagle Road. Vehicle emissions are greatest during idling. Reduction in volumes and idling time at traffic signals results in a reduction of air pollutant emissions. Table 5-19 presents peak-hour traffic volume and delay at the five highest volume intersections in the study area. In all cases, there is a reduction of volume or delay as a result of the Proposed Action. Emissions of CO, PM_{10}, MSATs, and other pollutants from vehicle exhaust would be reduced.

Whether Idaho 16 should be built so that it goes over two local roadways (Cherry Lane and McMillan Road) or whether the local roadways should go over Idaho 16 is being analyzed. In either case, the air quality from vehicle emissions would not be impacted.

Indirect Impacts. As previously mentioned, the Proposed Action would have no significant impact on air quality due to CO, is not considered a project of air quality concern for $PM_{2.5}$ and PM_{10} emissions, and is exempt from analysis for MSATs. Therefore, the Proposed Action would also have no indirect impacts on air quality.

TABLE 5-19
Vehicle Count and Delay Comparisons

Intersection	Build Scenario	Total Vehicles per Hour	Delay in Seconds
Idaho 44 (State Street)/Linder	2030 No Action	6,260	>100
	2030 On-McDermott Road Alignments	5,470	53.9
	2030 Off-McDermott Road Alignments	5,680	56.4
Idaho 44 (State Street)/Eagle	2030 No Action	6,620	97.4
	2030 On-McDermott Road Alignments	6,380	73.5
	2030 Off-McDermott Road Alignments	6,500	76.8
Chinden/Eagle	2030 No Action	7,205	>100
	2030 On-McDermott Road Alignments	6,795	>100
	2030 Off-McDermott Road Alignments	6,515	>100
Franklin/Eagle	2030 No Action	9,310	>100
	2030 On-McDermott Road Alignments	9,020	98.2
	2030 Off-McDermott Road Alignments	9,015	>100
Eagle/I-84 WB	2030 No Action	6,375	>100
	2030 Alt On-McDermott Road Alignments	6,210	53.6
	2030 Off-McDermott Road Alignments	6,310	57.7

Source: "Transportation" Discipline Report (CH2M HILL, 2008q).

Cumulative Impacts. Past development and the associated increase in VMT have contributed to Northern Ada County area's status as a maintenance area for both CO and PM_{10}. Reasonably foreseeable development will almost certainly result in an increase in VMT. It is unclear; however, whether the increase in VMT will necessarily result in degraded air quality. Projects like the Proposed Action actually can reduce pollutant levels by reducing congestion and vehicle idling time. Beyond that, the federal mandate to meet primary ambient air quality standards requires areas designated as nonattainment areas to develop SIPs to bring these areas into attainment.

Greenhouse Gases/CO_2 Emissions. According to current studies, the transportation sector is the second largest source of total greenhouse gases (GHGs) in the U.S., and the greatest source of carbon dioxide (CO_2) emissions, a predominant GHG. In 2004, the transportation sector was responsible for about 31 percent of U.S. CO_2 emissions. The principal anthropogenic (human-made) source of CO_2 emissions is the combustion of fossil fuels, which accounts for approximately 80 percent of anthropogenic emissions of carbon worldwide. Almost all (98 percent) of transportation-sector emissions result from the consumption of petroleum products such as gasoline, diesel fuel, and aviation fuel (USEPA, 2008b).

Greenhouse gas—and specifically CO_2 emissions—are not currently regulated at the federal or state level in Idaho. However, recognizing this as a growing issue, FHWA is working nationally with other modal administrations through the DOT Center for Climate Change and Environmental Forecasting to develop strategies to reduce the transportation sector's contribution to greenhouse gases—particularly CO_2 emissions—and to assess the risks to transportation systems and services from climate change.

Research indicates that GHG emissions, including CO_2, are shown to be directly related to energy consumed. Transportation-related emissions can be related to VMT. For this EIS, the COMPASS 2030 travel demand forecast model was used to project future estimated traffic volumes. Additional calculations in the model provide projected estimated VMTs for each of the modeled scenarios evaluated in the EIS: No Action, Build Option 1 (new facility on the McDermott Road alignment), and Build Option 2 (new facility off the McDermott Road alignment). Table 5-20 shows the model's projected daily travel demand for each scenario, and the correlating estimated VMT.

In both build scenarios, the change in estimated model VMT from the No Action Alternative is 0.5 percent or less. As a result, the estimated change in GHG emissions resulting from the Project Build alternatives is expected to be 0.5 percent or less, compared to the No Action Alternative.

TABLE 5-20
Projected Daily Travel Demand for Each Scenario, and the Correlating Estimated VMT

Alternative	Projected 2030 Average Daily Travel Demand[a]	Percent Change	Estimated model VMT[b]	Percent Change
No Action	11,523,623	0%	3,054,308	0%
On McDermott (Alts 1, 1B, 3A, 3C)	11,491,115	-0.28%	3,059,030	0.15%
Off McDermott (Alts 2, 2D)	11,572,146	0.42%	3,069,609	0.50%

[a] Total Projected Traffic Demand in COMPASS Model in vehicles per day.
[b] Estimated vehicle miles of travel, calculated

Construction Impacts. Construction activities may have short-term impacts on air quality. During construction, there is a potential for generation of fugitive dust during excavation, demolition, and any activity that involves the movement or disturbance of soil. Fugitive dust during construction can be controlled using a variety of measures including:

- Spraying exposed soil with water or other suppressant
- Using wind fencing
- Covering dirt, gravel, and debris piles

Air pollutants are emitted from the exhaust of vehicles traveling to and from the site, as well as from vehicles and construction equipment operating onsite. Emissions also may increase in the vicinity of a transportation project as a result of detours and delays of local traffic traveling near construction areas.

Paving of roadways results in emissions from the paving material and the equipment applying the new pavement. Where asphalt is used, these emissions may result in

temporary odors in the vicinity of the paving activity. Impacts to air quality during construction would be temporary and would not be anticipated to cause a violation of air quality standards.

Additional details can be found in the "Air Quality" Discipline Report available on the CD-ROM that accompanies this document (CH2M HILL, 2008d).

5.9 Surface Water/Floodplains/Water Quality

5.9.1 Methodology

Relevant water resource-related plans, policies, and data were obtained from IDEQ, IDWR, NMID, and other irrigation district offices relative to canals and irrigation drains located in the study area along a 300-foot-wide corridor for each of the Build alternatives being considered. GIS mapping used existing aerial photography to depict the regulatory floodway, as well as the 100-year and 500-year floodplain boundaries. A literature search was conducted to gather existing water quality information for the study area. Water quality sampling data from the Boise River, Five Mile Creek, Ten Mile Creek, and Fifteen Mile Creek were collected from the USGS National Water Information System. Stream classifications, beneficial uses, CWA listings, and TMDLs were gathered from the IDEQ.

Surface Water

Analyses were performed using GIS software on data obtained primarily from the IDWR Web site. Surface water features displayed on aerial photography were cross-checked against the database. NMID and other irrigation districts provided surface water inventories in the form of system maps.

Floodplains/Floodways

The floodplain analyses include a Location Hydraulic Study (location study) based on existing information and data from the FEMA, USACE, IDWR, and USGS to analyze the extent, amount, and importance of any floodplains to be impacted by the Proposed Action and its alternatives. The 100-year floodplain and regulatory floodway were identified from studies performed in 2003 for FEMA to determine flood hazards in Ada County. For crossings of the Boise River, Ten Mile Creek, and Five Mile Creek, appropriate FIRMs were used to determine the area of floodplain encroachments, type of floodplain encroachment (transverse or longitudinal), and length and extent of floodway encroachment. For each alternative, floodplain zones and the FIRM Community Panel Numbers and effective dates were documented for each area of floodplain or floodway involvement. Map panels used include Ada County FIRMS 16001C0140H and 16001C0250J. These maps define the boundaries of the Boise River regulatory floodway and the 100-year floodplains of the Boise River, Ten Mile Creek, and Five Mile Creek.

Three Hydrologic Engineering Center River Analysis System (HEC-RAS) hydraulic model simulations—FEMA Effective Model, Corrected Effective Model, and Proposed Bridge Model—were prepared to evaluate the impact of the proposed bridge structure on the existing water surface in the Boise River.