

3.14 Air Quality

3.14.1 Affected Environment

3.14.1.1 Local Air Quality

All areas in the Kenai Peninsula Borough (Borough), including Cooper Landing, meet the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), airborne particulates, airborne lead, sulfur dioxide, ozone, and nitrogen dioxide set by the Environmental Protection Agency (EPA). The project area is not within a Federally designated air quality non-attainment area, maintenance area, or an Alaska Department of Environmental Conservation (ADEC) air quality area of concern for CO or particulate material (PM₁₀ and PM_{2.5}).

The Clean Air Act designates the Kenai National Wildlife Refuge (KNWR) a Class II air quality area. The act requires KNWR to preserve, protect, and enhance air quality on its lands. Wilderness areas that are Class II air-quality areas, such as the Mystery Creek and Andrew Simons Wilderness units in the project area, receive additional protection from the Wilderness Act, which requires the KNWR to minimize the effect of human use or influence on natural ecological processes and to preserve untrammled natural conditions within designated Wilderness. Class II designated areas allow moderate pollution increases. Projects must be evaluated for exceedances not only of the NAAQS but for Class II “increments.”

Airborne dust from natural and manmade sources is the most common air pollutant on the Kenai Peninsula. Sources of dust include gravel pits, unpaved roads, unvegetated areas, and river floodplains. Other air pollutants include volcanic ash, and smoke from wild forest fires and prescribed burns. During fire season, typically from March to October, the ADEC regularly issues air quality advisories for portions of the Kenai Peninsula when smoke conditions could affect public health. Vehicle emissions and smoke from operating woodstoves usually disperse quickly and typically do not reach hazardous levels within the project area.

Weather data collected from the National Weather Service in the Cooper Landing area indicate the majority of the winds come from the west. Crosswinds through the region are negligible, except at Kenai Lake, where the conjoining valleys from the southeast bring crosswinds from higher elevations and glacier ice fields. The average prevailing winds through the project area are approximately 7 mph (NOAA 2011). As a result, air quality related to dust and particulate material in Cooper Landing and the project area is generally considered good.

Automobiles, including trucks, heavy equipment, and other construction equipment, generate emissions from burning gasoline and diesel fuels, which contain air pollutants such as CO and nitrogen oxides (NO_x). At high concentrations, these chemicals are known to affect human health and ecosystems.

3.14.1.2 Greenhouse Gas Emissions and Climate Change

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). As the amount of GHGs in the atmosphere increases, more heat becomes trapped, contributing to climate change. The principal GHGs that enter the atmosphere because of human activities are carbon dioxide (CO₂), methane, NO_x, and fluorinated gases.

An inventory of Alaska’s GHG emissions found that about 35 percent of all emissions were from the transportation sector (ADEC 2008). Other statewide contributors include industrial activities and the fossil fuel industry (50 percent), residential and commercial fuel use (8 percent), electricity (6 percent), and waste and agriculture (1 percent). There is no inventory of local GHG emissions for the Borough. Given the lack of industrial activity in the project area, it is likely that transportation and residential and commercial fuel use are the major contributors in the project area.

Climate change is an issue of national and global concern. While the earth has gone through many natural climatic changes in its history, there is general agreement that the earth’s climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Anthropogenic (human-caused) GHG emissions contribute to this rapid change.

Many GHGs occur naturally. Water vapor is the most abundant GHG and makes up approximately two-thirds of the natural greenhouse effect. However, the burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Because the atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate change-related phenomena, such as changes in precipitation and sea levels.

To date, no national standards have been established regarding GHGs, nor has the EPA established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO₂ under the Clean Air Act. However, there is a considerable body of scientific literature addressing the sources of GHG emissions and their adverse effects on climate, including reports from the Intergovernmental Panel on Climate Change, the U.S. National Academy of Sciences, and the EPA and other Federal agencies.

GHGs are different from other air pollutants evaluated in Federal environmental reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO₂ and other GHG emissions is the entire planet.

3.14.2 Environmental Consequences

This section describes the effects of the project alternatives on local air quality, specifically related to changes in vehicle emissions and construction activities. As determined by ADEC Division of Air Quality and in accordance with the criteria given in Federal Transportation Conformity regulations, under 40 CFR § 93, Subpart A, this project is in an area where the State Implementation Plan for air quality does not contain any transportation control measures. Therefore the conformity procedures in 40 CFR § 93 do not apply.

From a quantitative perspective, global climate change is the cumulative result of numerous and varied GHG emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad-scale actions, such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Furthermore, presently there is no scientific methodology for attributing specific climatological changes to a particular transportation project’s emissions. For this Supplemental Environmental Impact Statement, GHGs and climate change are addressed as a cumulative impact in Section 3.27.16.

3.14.2.1 No Build Alternative

Direct and Indirect Impacts

The project area is not located in a non-attainment area and has no record of violating National Ambient Air Quality Standards (ADEC 2009). Considering the historically good air quality in the project area, the No Build Alternative is not expected to exceed air quality standards in the project area or to have any adverse regional effects compared to existing conditions.

Vehicle emissions generally are proportional to the number of vehicle miles traveled. The number of trips on the highway and within the project area is anticipated to increase by the same amount under the No Build Alternative or build alternatives within the life of the project (by 2043). Emissions in the project area associated with vehicle miles traveled would be expected to increase but would be offset in part by higher efficiencies in the vehicle fleet nationwide, in response to stricter fuel efficiency and emissions standards.

EPA is requiring refiners to reduce diesel fuel sulfur for over-the-road trucks, and is continuing to propose and finalize rules to reduce emissions of criteria pollutants and air toxics pollutants from both diesel and gasoline engines. These new rules would both reduce hazardous air pollutant emissions from vehicles in the project area and from other mobile sources in the Borough. The new emissions standards are expected to contribute to a continuation of the long-term downward trend in emissions from individual vehicles.

Congestion in the project area would be expected to increase over time under the No Build Alternative. By 2043, much or all of the existing highway is projected to be on the verge of stop-and-go congestion during busy summer weekends. Engine efficiency typically is lower and emissions overall higher under congested conditions. While emissions would be unlikely to exceed standards under the No Build Alternative, they would likely be worse than current conditions. Air quality degradation can affect visibility, plants, animals, soil, water quality, and cultural resources. Traffic congestion likely would be worst in the community of Cooper Landing, and emissions from idling slow-moving vehicles at busy times could create noticeably poorer air quality for roadside businesses, homes, walkways, and public facilities such as the Cooper Landing Boat Launch Ramp. Near designated Wilderness, access to the Sportsman's Landing experiences congestion that likely affects air quality during periods of high use. Under the No Build alternative, that congestion would continue and likely would exacerbate concentrations of air pollutants as traffic grew.

The No Build Alternative is not anticipated to exceed the NAAQS. It is anticipated that improvement in per vehicle emissions would offset the traffic increase so that the incremental changes to pollutants are anticipated to be negligible. .

3.14.2.2 Issues Applicable to the Build Alternatives

Any impact to air quality would be low and of the same type for each of the build alternatives. For this reason, discussion of each alternative is not broken out separately. There is one difference to keep in mind throughout the following paragraphs: The Cooper Creek Alternative would run through a substantial portion of the Cooper Landing community, and therefore temporary traffic-related exhaust smells, dust, and emissions may be experienced by community residents, visitors, and businesses under this alternative. The same is true for temporary construction impacts to air quality. The other build alternatives would be routed around the community in its entirety, and permanent air quality impacts associated with highway traffic,

although currently minor, would decrease further in the community compared to current conditions.

Direct and Indirect Impacts

Considering the historically good air quality in the project area, none of the build alternatives is expected to exceed air quality standards in the project area or to have any adverse regional effects.

Vehicle emissions are generally anticipated to be proportional to the number of vehicle miles traveled. The number of trips on the highway and within the project area is anticipated to increase the same under all alternatives, including the No Build Alternative, within the life of the project (by 2043). Future traffic would not reach levels that would approach or exceed any of the NAAQS. The small differences between the lengths of any of the build alternatives would not create an appreciable difference in air quality impacts among the alternatives.

Within the KNWR (and adjacent to designated Wilderness), the build alternatives are anticipated to have the same air quality effects because they have the same passing lanes, shoulders, turn pockets, etc., and have the same traffic. Only the Juneau Creek Alternative would use property from the designated Wilderness area, and therefore would shift mobile sources of air pollution (vehicles) into areas currently designated as Wilderness. It is anticipated that the improvements to per vehicle emissions over time would make any incremental deterioration of air quality to this Class II area negligible. The increase in emissions associated with vehicle miles traveled would be partially offset by increased engine efficiency and associated reductions in emissions, as explained above under the No Build Alternative.

Impacts likely would be offset further by improving the traffic flow along the highway corridor, thereby reducing congestion and allowing vehicles to operate at constant travel speeds. Vehicles traveling at constant, higher speeds are typically more fuel efficient than those operating within stop-and-go traffic congestion. All build alternatives would reduce traffic congestion. For these reasons, none of the build alternatives is anticipated to adversely affect project area air quality. No indirect impacts to air quality are anticipated, because the build alternatives would not induce growth or provide new access. As such, any of the proposed alternatives, through their compliance with State standards for visible and particulate air quality, would be consistent with the air quality standards set forth in the *2002 Chugach National Forest Revised Land and Resource Management Plan* (USFS 2002a) and KNWR Comprehensive Conservation Plan (USFWS 2010a).

Construction Impacts

Construction activities associated with the build alternatives would result in temporary impacts to air quality from increased dust and from particulate matter contained in vehicle and equipment emissions. Dust from dirt, rock, and other fine materials can become airborne when being transported in uncovered trucks and when vehicles cross dry, unpaved dirt surfaces. Ambient CO and NO_x levels are expected to increase during construction, due to concentrated activity by large construction equipment, but are not expected to exceed air quality standards. Most of the construction activity and associated emissions would take place during the warmer parts of the year, when atmospheric dispersion tends to be greater than in the colder winter months. Also, the construction-related exhaust emissions would take place across the construction area, rather than being concentrated at a single location.

These effects would be similar for all alternatives. The Cooper Creek Alternative includes a segment of construction within the developed community of Cooper Landing, so there is greater potential for temporary dust and emission effects to people in the community under that alternative.

Mitigation

None of the build alternatives would cause air quality to approach or exceed NAAQS. While no mitigation is necessary to abate long-term impacts to air quality, several mitigation measures would be used to minimize adverse air quality impacts during construction, as required by the Alaska Pollutant Discharge Elimination System Construction General Permit. Airborne dust would be minimized by applying water during construction, sweeping periodically, disposing of solid waste properly, and stabilizing all disturbed soils as soon as possible. The specific best management practices (BMPs) proposed and their frequency of use would be determined by the contractor and outlined in the project Storm Water Pollution Prevention Plan (SWPPP). Additional BMPs typically identified in the SWPPP that may minimize air quality impacts during construction include maintaining routine maintenance and servicing schedules on construction equipment, and identifying contractor operating procedures to avoid unnecessary idling by vehicles, trucks, and heavy equipment.

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