PIPELINE ATMOSPHERIC ENVIRONMENT

Study geographic boundaries: Air Quality PEAA is a region extending one kilometre in each direction, along the full length 1,171 km pipeline corridor RoW centreline, between Bruderheim and Kitimat.

Study time boundaries: Construction and operations phases.

Project works and activities considered in the study*: Fuel use during construction.

Study methods: Baseline air quality was established by examining twenty two ambient air quality data sets at sites located near the pipeline RoW. Baseline climate was delineated through a statistical summary of climate and meteorology parameters at sites near the pipeline RoW using 30 year climate normals (1971 to 2000). Air emission estimates were made related to pipeline construction. Pipeline pump station operation is electrically driven and does not result in air emissions.

VEC	Key Issues	KIR	Baseline Results	Measurable Parameter	Potential Project Effects**	Proposed Mitigation	Residual Effects	Cumulative Effects
Air Quality	Added CAC emissions Added HAP emissions	n/a	The existing air quality along the pipeline is varied, but generally good owing to the remoteness of the majority of the region. Throughout the pipeline PEAA, annual averages of CACs are well below the applicable objectives. The Kitimat area has a relatively heavy industrial base and the proposed Kitimat terminal will be close to several industrial sources of air contaminants. Air quality near the Kitimat terminal, while good, is reflective of that proximity. Kitimat's industrial area is primarily located on the western side of the valley, opposite the residential and commercial district. It includes Alcan's aluminium smelter and casting facility and Eurocan's unbleached kraft pulp and paper mill. A decommissioned methanol-ammonia manufacturing facility is now being retrofitted as a condensate import facility. Other industries include an asphalt plant and a cement batch plant. There are also smaller commercial and industrial sources of air contaminants, as well as vehicle and residential emissions. Monitoring results taken from 2000 to 2008 at the Kitimat railway station indicate that the ambient air quality near Kitimat is generally good, with little year-to-year variability. That being said, concentrations of particulate matter (PM), sulphur dioxide (SO2) and hydrogen sulphide (H2S) have occasionally exceeded the most stringent ambient air quality objectives. Air quality in the Bruderheim end of the pipeline, although occasionally affected by urban and industrial emissions, is generally good. Throughout the pipeline part of the project area, annual averages of CACs are well below the applicable objectives. For hazardous air pollutants (HAPs), the Bruderheim region is the only location in the PEAA where measurements are collected. This reflects a general lack of HAP emissions in the rural and remote regions crossed by the Pipeline. In the Bruderheim area, measurements of HAPs are consistent with those found in other Canadian urban areas.	Changes to Criteria Air Contaminants *Sulphur Dioxide (SO_2)* *Nitrogen Dioxide (NO_2)* *Carbon Monoxide (CO)* *Total Suspended Particulates (TSP)* *Inhalable Particulate Matter (diameter less than 10 microns - PM10)* *Respirable Particulate Matter (diameter less than 2.5 microns - PM2.5)* *Hydrogen Sulphide (H_2S)*	Heavy equipment operating onsite during the pipeline construction phase will be responsible for the majority of CAC emissions. CAC emissions from pipeline construction are limited in magnitude and temporary in nature. The potential for cumulative interactions is substantially less than for stationary, continuous or intermittent sources. Provincially accepted guidelines for burning during RoW clearing and site preparation will be followed to maximize burning efficiency. No CAC emissions from the pipeline operational phase are expected, as the pump stations along the pipeline will be electrically driven.	Steps to minimize CAC emissions will ensure compliance with federal and provincial air quality standards throughout all phases of the project. Wherever possible, the Best Available Technology Economically Achievable (BATEA) will be incorporated into the pipeline design to reduce air contaminants. In addition, best practices will be employed at all times to minimize dust and vehicle emissions.	Currently being assessed.	Currently being assessed.
				Changes to Hazardous Air Pollutants *Total Volatile Organic Compounds (VOCs)* *Benzene, Toluene, Ethylbenzene, Xylene (BTEX)* *Hydrogen Fluoride*	Heavy equipment operating onsite during the pipeline construction phase will be responsible for the majority of HAPs emissions. HAPs emissions from pipeline construction are limited in magnitude and temporary in nature. The potential for cumulative interactions is substantially less than for stationary, continuous or intermittent sources. No HAP emissions from the pipeline operational phase are expected, as the pump stations along the pipeline will be electrically driven.	Wherever possible, the Best Available Technology Economically Achievable (BATEA) will be incorporated into the pipeline design to reduce hazardous air pollutants. These measures will help ensure compliance with federal and provincial air quality guidelines throughout all phases of the project. In addition, best practices will be employed at all times to minimize dust and vehicle emissions.	Currently being assessed.	Currently being assessed.

*Refer to Figure 3.1 in *section 3, Project description*, for the full list of physical works and activities. **The effects of spills and malfunctions will be included in the update for the supplemental filing.

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VEC	Key Issues	KIR	Baseline Results	Measurable Parameter	Potential Project Effects**	Proposed Mitigation	Residual Effects	Cumulative Effects
Climate	Added greenhouse gas emissions	n/a	The climatic variability throughout the pipeline's 1171 km length is high. Along the route, the continental climate of northern Alberta prairie regions transitions to the alpine environment of the continental divide and then to the inter-montane forested regions of the British Columbia interior plateau. To provide a board greenhouse gas emission baseline, total greenhouse gas emissions (in tonnes per year of CO2 equivalents) were summarized for 1990 to 2000, with projections for the years 2005-2020 for Canada, Alberta, British Columbia and the Northwest Territories.	Changes to provincial and federal greenhouse gases due to the project.	GHG emissions from construction equipment/ support traffic will be low volume, dispersed emissions, and a negligible contribution to regional GHGs relative to permanent industrial facilities. GHG emissions from burning will be low volume, dispersed emissions, and a negligible contribution to regional GHGs relative to permanent industrial facilities or regional forest fires.	Wherever possible, the Best Available Technology Economically Achievable (BATEA) will be incorporated into the pipeline design to reduce greenhouse gas emissions. These measures will help ensure compliance with federal and provincial air quality guidelines throughout all phases of the project. In addition, best practices will be employed at all times to minimize dust and vehicle emissions.	Currently being assessed.	Currently being assessed.