



Best Practices Guide for Dust Management in Alberta

Final Project Charter
Clean Air Strategic Alliance
12/8/22

Best Practices Guide for Dust Management in Alberta Project Charter

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Acronyms

AAAQOs	Alberta Ambient Air Quality Objectives
AEP	Alberta Environment and Parks
AER	Alberta Energy Regulator
CAAQS	Canadian Ambient Air Quality Standards
ECO	Environmental Construction Operations
EPEA	<i>Environmental Protection and Enhancement Act</i>
FAQ	Frequently Asked Questions
GoA	Government of Alberta
IAP2	International Association for Public Participation
NGOs	Non-governmental organizations
NO _x	Nitrogen oxides
NO ₂	Nitrogen dioxide
OH&S	Occupational Health and Safety
PM _{2.5}	Particulate matter with an aerodynamic diameter of 2.5 micrometers or less
PM ₁₀	Particulate matter with an aerodynamic diameter of 10 micrometers or less
SO ₂	Sulphur dioxide
TPM	Total particulate matter
TSP	Total suspended particulate matter
VOCs	Volatile organic compounds

Definitions

Alberta Ambient Air Quality Objectives (AAAQOs)

Alberta's AAQOs are developed to provide protection of the environment and human health to an extent technically and economically feasible, and reflective of Albertans' social concerns.

The objectives are used to:

- Evaluate the adequacy of facility design in regulatory applications
- Establish approval conditions for regulated air emission sources
- Assess beyond project boundary impacts of air pollutant sources and evaluate facility performance
- Compare to air quality measurements to inform Albertans and guide special air quality surveys and focused studies
- Augment reporting of the national Air Quality Health Index to respond to real-time air quality events
- Report on the condition of the environment in Alberta, including trending and the use of triggers and limits in regional Air Quality Management Frameworks

Canadian Ambient Air Quality Standards (CAAQS)

CAAQS are the driver of the collaborative national Air Quality Management System to better protect human health and the environment across Canada. There are CAAQS for PM_{2.5}, ozone, SO₂, and NO₂. The CAAQS are established as air quality objectives under the *Canadian Environmental Protection Act*. They are supported by four colour-coded management levels, which are determined by the amount of a pollutant within an air zone and guide recommended air quality management actions.¹

Coarse Particulate Matter (PM_{10-2.5})

Particulate matter with an aerodynamic diameter larger than 2.5µm and smaller than, or equal to 10µm.

Dust

Small, dry, solid particles projected into the air by natural forces, such as wind, volcanic eruption, and by mechanical or man-made processes. Dust particles are usually in the size range from about 1 to 100µm in diameter (adapted from Glossary of Atmospheric Chemistry Terms (IUPAC, 1990))

Dustfall

Used to describe particulate matter that settles by gravity over a given area and time.

Dust Impact Assessment

Dust impact assessments are an identification of dust generating aspects of a project and the environmental, human health, and social impacts potentially associated with each. It can include estimates of dust emissions, modelling, consideration of factors that influence the levels of dust in the ambient air, dust control measures, and other factors that can be used to assess the impact of dust from a project.

Fine Particulate Matter (PM_{2.5})

Particulate matter with an aerodynamic diameter less than 2.5µm.

Indigenous Participants

Representatives from Indigenous communities and organizations.

Non-Point Source

Describes emission sources that are either too small and numerous, too geographically dispersed, or too geographically large to be estimated or represented by a single point (e.g., forest fires, fugitive emissions from various sources within industrial facilities, dust from roadways, vehicle exhaust).

Particulate Matter

¹ <https://ccme.ca/en/air-quality-report>

Particulate matter is a complex mixture of small liquid droplets and solid particulates suspended in the air. Particulate matter can originate from natural (e.g., volcanoes, fires, dust storms) or manmade sources (e.g., industrial processes, combustion, vehicle emissions). Depending on the source, particulate matter emissions may contain a variety of chemical constituents.²

Point Source

Describes a single discharge source of emissions that can be easily identified (e.g., a stack).

Primary Particulate Matter

Particles released directly from a source to the atmosphere.

Secondary Particulate Matter

Particles that form in the atmosphere through photochemical reactions that involve other gaseous pollutants, particularly SO₂, NO_x, ammonia, and VOCs.

Social Impacts of Dust

Social impacts are the effect on people and communities that happen as the result of an action or inaction, an activity, project, program, or policy. For the purposes of this project, social impacts of dust include negative impacts on people's life satisfaction and well-being. Nuisance impacts are a subset of social impacts, and refer to odour, noise, and visual impacts that interfere with the use of or enjoyment of property.

Total Particulate Matter (TPM)

Airborne particulate matter with an upper size limit of approximately 100µm in aerodynamic equivalent diameter.

Total Suspended Particulates (TSP)

The totality of small solid matter suspended and observed in the atmosphere.

² <https://www.sciencedirect.com/topics/engineering/particulate-matter-emission>

Introduction

The Government of Alberta (GoA) is committed to comprehensive air quality management, including implementing the Canadian Ambient Air Quality Standards (CAAQS) as part of the national Air Quality Management System. Air emissions are managed for Alberta to achieve the CAAQS as these standards are updated over time. While secondary particulate matter remains a major regional contributor to ambient PM_{2.5}, dust is one of the contributors to primary particulate matter levels measured at CAAQS monitoring stations across the province and is applicable across multiple sectors.

Dust is a generic term for airborne particulate matter that originates from certain sources under certain conditions. For the purposes of this Project Charter, dust is defined as:

“Small, dry, solid particles projected into the air by natural forces, such as wind, volcanic eruption, and by mechanical or man-made processes. Dust particles are usually in the size range from about 1 to 100µm in diameter” (Glossary of Atmospheric Chemistry Terms (IUPAC, 1990))

Based on the 2020 Air Pollutant Emissions Inventory, dust from construction operations, unpaved roads, and paved roads are collectively a major source of particulate matter emitted in the province. Based on the “Results of the Alberta Annual Emissions Inventory Reporting Program: 2018 Inventory Year” report, the largest total particulate matter (TPM) emitting industrial facility types with EPEA approvals are:

- Oil Sands - Mining, Processing and Upgrading
- Mining and Quarrying – Coal Mining and Processing
- Electric Power and Heating – Coal
- Petroleum Products – Bulk Storage Terminals

The Renewed Clean Air Strategy (2012) highlights the importance of managing both point sources and non-point sources to address cumulative impacts. Non-point source air emissions include dust. Addressing dust emissions can support local air quality management.

Benefits of dust management for all sectors may include:

- improved human health, environmental, and social (including nuisance) issues associated with dust and its constituents
- improved air quality conditions for workers, residents, and others nearby
- reduced complaints from residents regarding dust issues
- improved safety due to improved visibility
- reduced erosion and sediment issues from materials tracked from the site, entering watercourses, deposition on soils, or covering vegetation, and thereby reducing the potential for environmental impacts such as acidification and eutrophication.

Alberta has Ambient Air Quality Objectives (AAAQOs) for PM_{2.5} and TSP and Ambient Air Quality Guidelines for PM_{2.5} and dustfall. Of note is that there is currently limited monitoring across the province on particulate matter in size fractions greater than 2.5µm. This work in developing best practices for dust management should therefore include considerations for

coarser particulate matter monitoring options, such as PM₁₀ and/or TSP, to support program design and operational decision making with respect to dust reduction or mitigation measures as well as managing the potential health related impacts associated with PM₁₀.

Background

The CASA Non-Point Source Project (2015-2017) was tasked with helping to address non-point source air emissions contributing to ambient PM_{2.5} and ozone standard non-achievement in Alberta, and road and construction dust were identified by the project's Technical Task Group as a source of PM_{2.5} in all air zones. This project charter was informed by the project's consensus-based Recommendation 10, as follows:

“That Alberta Environment and Parks and Alberta Transportation work with municipalities, construction companies, and other stakeholders to develop and disseminate a best practices guide to address dust from construction and roads that:

- i. identifies why this issue is important and what can be done to address it
- ii. provides templates for environmental policies and plans
- iii. prepares for potential requirements in the future.”

For this project, the scope is expanded to include best practices for dust from industrial operations, including activities that do and do not require an *Environmental Protection and Enhancement Act* (EPEA) authorization. The development and dissemination of a best practices guide for dust management is expected to aid municipalities and provincial regulators, be a resource for industry and others, and would represent fulfillment by AEP and Alberta Transportation of the above noted Recommendation 10.

For brief context, dust issues under municipalities' jurisdiction are typically managed reactively, rather than proactively, through Community Standards bylaws. While the City of Edmonton, City of Calgary, and Alberta Transportation have helped address dust management by requiring Environmental Construction Operations (ECO) Plans for contractors performing work on their behalf, these plans address a wide range of environmental impacts from construction and the ECO Plan Framework does not currently provide specific guidance on dust mitigation measures. During the CASA Non-Point Source Project, municipal representatives indicated that templates for environmental policies and plans related to dust emissions would be beneficial.

Many industrial activities require an authorization under EPEA, through an approval or registration, and for certain types of facilities these authorizations have dust management requirements. Dust management plans are needed for Environmental Impact Assessments of oil sands facilities, and operating coal mines and oil sands mines, although there is no specific guide or template for preparing such plans. Other examples of industrial sources of dust emissions include pits, quarries, raw material storage/stockpiles, and materials handling. Some activities such as abrasive (sand) blasting, residential and commercial building construction and demolition, and sand crushing facilities which store sand on-site but do not have a gravel pit, do not require an authorization under EPEA but must comply with the general provisions of the Act and any municipal requirements. While some of those industrial activities are not considered road or construction dust sources as identified by the CASA Non-Point Source Project, the

nature of these activities and dust sources are similar as they involve material (i.e., earth, ore, aggregates) excavation, handling, and storage.

PM_{2.5}, PM₁₀, and TSP are considered in this project. Based on the 2020 Air Pollutant Emissions Inventory, PM_{2.5} makes up approximately 5% of the total PM emitted as dust in Alberta, therefore the inclusion of size fractions greater than 2.5 microns is critical to dust management considerations.

Scope

- Human health, environmental, and social (including nuisance) issues associated with dust and its constituents.
- Development and dissemination of a best practices guide for dust management that 1) covers anthropogenic activities whereby particulate matter may be generated; resuspended; or released by materials stored, stockpiled, or handled; 2) considers dust monitoring that is practical and effective; and 3) provides references to additional relevant information. Dust sources are identified in the CASA Non-Point Source Project Report, and for this project include:
 - Road dust – emissions resulting from the re-suspension of particulate matter by vehicles travelling on paved and unpaved roads (all sectors)
 - Construction operations – emissions resulting from soil disturbance on construction sites (all sectors, i.e., residential, industrial-commercial-institutional, engineering)
 - Industrial non-point sources (such as at mines, pits, quarries, asphalt paving plants, concrete producing plants), whether the activity requires an EPEA authorization or not.
- Consideration of any existing best practices for management, in all sectors, to help inform the guide.
- Focus on air and to include multi-media (air, water, and land) considerations where appropriate.
 - Undertake a holistic view of dust mitigation measures and their impacts and include considerations for climate and weather.

The working group recognizes there are limitations impacting dust management from certain sources that should be considered in establishing the dust sources that should be a focus of the best practices guide. For example, there are many gravel roads in the province that cover large distances, and therefore the focus needs to be on when and where management of this dust source is appropriate.

Project Goal

To provide guidance information that will enable Albertans to reduce and mitigate particulate matter emissions from anthropogenic non-point sources to help improve local air quality management in Alberta and support regional CAAQS achievement.

Project Objectives and Strategies

Below is a list of project objectives, strategies, and potential outcomes/deliverables.

The “Potential Outcomes/Deliverables” under each objective are not meant to be prescriptive or limit the creativity of the project team, rather to provide additional context around the intent of the objectives. They are meant to help inform discussions of the project team by providing an understanding of Working Group conversations. The project team members will create more detailed work plans which will outline how each strategy is to be executed. As they do so, specific outcomes and deliverables will be identified based on what is most appropriate and useful to achieving each objective.

Objective 1: A common understanding of dust sources, dust emissions and assessments, dust measurement, monitoring, and management practices, and the health, environmental, social, and nuisance impacts of dust.

Strategies

- i. Develop a scope of work for a consultant, if necessary.
- ii. Complete a literature review on dust sources, dust monitoring and management practices, climate change impacts on dust generation, and the health, environmental, social, and nuisance impacts of dust, including Indigenous Knowledge-based dust monitoring and management practices.
- iii. Complete a jurisdictional and regulatory review of dust impact assessments, dust monitoring and management practices, dust-related air quality standards and objectives, complaint processes for individuals and communities, and criteria to quantify dust issues.
- iv. Identify gaps in dust management in Alberta based on the literature, jurisdictional, and regulatory reviews from both dust emission and ambient air quality perspectives.

Potential Outcomes/Deliverables

A document outlining the results of the literature review, jurisdictional review, and gap analysis.

Resources

A list of potential data sources is in appendix B.

The working group believes this work may be undertaken by a consultant, with support from project team members and subject matter experts, if project funds are available. The budget estimate includes a request for funds for this objective.

Objective 2a: Effective engagement of subject matter experts to support development of a best practices guide for dust management

Strategies

- i. Establish a Communications Subgroup to develop a Communications and Engagement Plan for use during the project and after the project is complete.

- ii. Involve subject matter experts in the project as defined in the Communications and Engagement Plan. Methods of involvement could include:
 - a. Participating on the project team as an observer
 - b. Participating in a workshop either as a presenter or attendee
 - c. Participating in, or providing feedback to, the Technical Task Group (Objective 4)

Potential Outcomes/Deliverables

- i. A communications and engagement plan, including:
 - a. The audience(s) for outreach and best practices guide distribution.
 - b. Key engagement subjects, such as dust management and monitoring practices, and level of desired participation (i.e., IAP2 spectrum for public participation)
 - c. Communications tools (FAQ sheet, backgrounder, workshop, focus groups, etc.) and their desired outcomes.
 - d. Communications channels.
 - e. Performance measures or indicators to assess best practices guide uptake and effectiveness of the best practices guide.

Resources

The Communications and Engagement Plan and a survey/questionnaire can be developed using expertise and capacity from within the project team members or the project team members' organizations.

Retaining subject matter experts may require project funds and it has been included in the budget request.

Objective 2b: Effective engagement of stakeholders and Indigenous participants to support communication and dissemination of a best practices guide for dust management

Strategies

- i. Leverage existing connections from project team members and CASA member organizations to engage stakeholders and Indigenous participants and share information on the project.
- ii. Provide a forum to gather feedback from stakeholders, Indigenous participants, and subject matter experts on dust management and monitoring practices and preferred methods of communicating best practices for dust management.
- iii. Distribute a questionnaire or use another method of gaining input on dust management and monitoring practices, and preferred methods of communicating best practices for dust management.

Potential Outcomes/Deliverables

- i. A report detailing results of stakeholder and Indigenous participant engagement along with questionnaire results.

Resources

Forum for gathering feedback may require project funds depending on format.

Objective 3: A best practices guide for dust management in Alberta based on available science and other appropriate resources, and informed by stakeholder and Indigenous participant feedback

Strategies

- i. Establish a Technical Task Group or Groups to review information gathered in the previous objectives and identify appropriate best practices for dust management for use in Alberta.
- ii. Develop a scope of work for a consultant, if necessary.
- iii. Develop a detailed and informative best practices guide.

Potential Outcomes/Deliverables

A technical report, including:

- i. An overview of dust impacts to health and the environment, and dust's social and nuisance impacts (see Objective 1)
- ii. An overview of sources and activities that generate dust in Alberta
- iii. Criteria that can be used to quantify or qualify dust issues
- iv. Information on complaints processes
- v. Best practices for dust management, monitoring, and mitigation.

Resources

The working group believes this work may be undertaken by a consultant, but also could be completed through the collective capacity and expertise of the project team members or member organizations.

Objective 4: Tools and mechanisms to support implementation of a best practices guide for dust management in Alberta

Strategies

- i. Identify and document existing tools and mechanisms available to support implementation of best practices for dust management.
- ii. Develop materials that can be easily understood and applied by a wide audience (including Indigenous communities) to support implementation of the best practices for dust management, monitoring, and mitigation identified in objective 3, where appropriate.

Potential Outcomes/Deliverables

A suite of resources and materials to be included in a Best Practices Guide for Dust Management in Alberta, potentially as an accompaniment to the technical report from objective 3

Resources

The working group anticipates this objective can be completed through access to subject matter experts and with collective expertise from within the project team and member organizations.

Objective 5: Project Team Final Report

Strategies

- i. Document the work of the project team, including information sources and methods used to develop the Best Practices Guide for Dust Management in Alberta, and any supplementary reports (e.g., workshop report, communication and engagement plan)
- ii. Provide any project team advice or recommendations

Potential Outcomes/Deliverables

A project team final report to accompany the Best Practices Guide for Dust Management in Alberta.

Resources

The working group anticipates this objective can be completed using resources available through the project team, including the CASA staff.

Project Deliverables

The project team will provide the following deliverables:

- 1) A literature and jurisdictional review on existing dust management resources including required or voluntary dust management and monitoring practices, assessment criteria, health impacts, and environmental impacts.
- 2) A stakeholder and Indigenous participant engagement forum for information gathering from specialists in their area
- 3) A best practices guide for dust management that identifies why dust is an issue and what can and should be done to address it. The guide should include templates to inform environmental policies and plans, templates for complaint report and response, and consider specific guidance for unique situations or sources.
- 4) A project team report detailing the project background, methods, and any team recommendations.
- 5) A Frequently Asked Questions document to increase understanding of how different activities are regulated and where to direct inquiries in case of dust concerns.
- 6) Performance measures or indicators to assess best practices guide uptake and effectiveness
- 7) A communications and engagement plan.

Project Structure and Schedule

Project work should begin by January 2023. The working group anticipates the entire project will take a little over one year, with concurrent activities where possible and an estimated completion date of April 2024.

Refer to Table 1 for a high-level illustration of the process.

The timelines are based on the assumption that no blackout period associated with the next provincial election in 2023 will impact this project.

If funding is not available to retain a consultant for Objective 3, the overall project timeline will be extended to provide time for the project team to complete the work.

Table 1: Best Practices Guide for Dust Management in Alberta Project Timeline

		2023												2024			
Objective		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	Common Understanding	[Orange]															
2	Communication and Engagement		[Orange]														
					*	*											
3	Best Practices Guide				[Orange]												
4	Tools and mechanisms to support the Guide						[Orange]										
5	Final Report										[Orange]						
	Sector review														[Orange]		
	Board approval																[Orange]

*Potential engagement forum date

Projected Resources and Costs

Table 2 outlines the potential internal and external costs over the life of the project, as anticipated by the working group. As the work of the project team progresses, detailed work plans and associated budgets will be developed.

Table 2: Estimated Best Practices Guide for Dust Management in Alberta Project Budget

Item	Estimated Cost
Core Funds	
Stakeholder support	\$20,000
Hosting	\$10,000
Communications (design and layout, printing)	\$10,000
Total Estimated Internal Costs	\$40,000
Project Costs	
Literature review for Objective 1 (potential consultant)	\$60,000
Stakeholder and Indigenous participant engagement for Objective 2*	\$20,000
Best practices guide for Objective 3 (potential consultant)**	\$25,000
Communication costs for Objective 2 and 5	\$10,000
Total Estimated External Costs	\$115,000

*This estimate is based on leveraging existing connections to stakeholders and Indigenous participants; the reach is unknown until these connections can be further explored. While engagement for this project is not the same as formal consultation for policy development, all First Nations, Metis Settlements, Credibly Asserted Metis Communities, and the Metis Nation of Alberta may be invited to send a representative to attend an engagement session.

** Optional project cost. The project can proceed without this budget item, but the timeline will need to be extended due to increased workload on the project team.

Risk Analysis

Identifying, analyzing, and mitigating project risks is a key component of executing a successful project. The project team will incorporate proactive risk management into the project to mitigate risks that could undermine its success.

Table 3 lists the risks as well as possible mitigation strategies identified by the working group that the project team should consider as they undertake their work.

Table 3: Risk Analysis including Possible Mitigation Strategies

Risks	Possible Mitigation Strategies
The COVID-19 pandemic prevents the team from holding meetings or engaging stakeholders and Indigenous Participants	<ul style="list-style-type: none"> • Employ social distancing measures for in-person meetings • Ensure the team is familiar with and able to use remote meeting platforms and tools (e.g., Zoom, GoToMeeting, Miro Board) • Use facilitation tools/methods to garner fulsome participation during remote meetings
Timely funding not available	<ul style="list-style-type: none"> • Identify who the “customers” of this work are. Who will find this valuable – seek funding there. • Develop a strong value-proposition that includes examples of sectors that may be involved or affected. • Project Team members discuss the work and associated need for funding with their constituents early in the process. • Determine what can be done, in full or in part, through in-kind support
Lack of/limited information (accessibility)	<ul style="list-style-type: none"> • Ensure Project Team membership enables the team access to data. • Use judgement to fill gaps where data is imperfect. • Reference existing guidelines and processes where possible. • Make use of best available information
Lack of Subject Matter Experts	<ul style="list-style-type: none"> • Team members and CASA staff connect with their respective networks to find out who might be able to inform or participate in the work (rather than being limited to expertise around the table). • Consider funds for an expert advisory team or consultant.
Project Team doesn’t understand or follow the Project Charter	<ul style="list-style-type: none"> • Working group to create a project charter that is clear, especially with respect to the intent for sequencing of the objectives. • Board receives regular updates to ensure progress is monitored. • Request Board approval of a revised project charter, where appropriate
Lack of engagement/ownership on the Project Team	<ul style="list-style-type: none"> • Identify and communicate with potential stakeholders and Indigenous participants early in the process so they can participate in the team. • Create a clear value proposition. • Be clear about what is being asked of stakeholders and Indigenous participants.

Risks	Possible Mitigation Strategies
Insufficient time scheduled for Objectives	<ul style="list-style-type: none"> • Prior to finalizing workplans, test how much time the outlined tasks might take with people who know (e.g., subject matter experts, consultants). • Have clear parameters in RFPs for timeframe, scope, and deliverables. • Practice strong oversight and communication with consultants. • Consider the need for outside resources (i.e., consultants) early in the process, and plan accordingly to avoid delays. • Collectively contribute to the objectives and not rely on only one member or member organization.
Scope creep results in increased budget expenditure or project team work	<ul style="list-style-type: none"> • The project team should clearly define areas of potential creep (e.g., multi-media considerations, climate change impacts) and ensure those areas are monitored to ensure they stay within scope.
Stakeholders and Indigenous participants engaged are not representative of diverse roles within organizations	<ul style="list-style-type: none"> • Invite stakeholders and Indigenous participants to participate based on roles as well as affiliation

Operating Terms of Reference

An Operating Terms of Reference describes how the project team agrees to work together. The project team should discuss and reach consensus on the following items:

- Requirements for quorum
- Governance
- Meeting protocols
- COVID-19 social distancing procedures
- Roles and expectations of project team members
- How decisions will be made
- Ground Rules
- Frequency of project team meetings
- Frequency of updates and reports to the CASA Board
- Protocols for handling media requests
- Protocols for providing updates to interested parties
- Any other considerations for working together

Stakeholder and Indigenous Participant Analysis and Engagement Plan

In general, stakeholders and Indigenous Participants will be engaged in different capacities and at different times as necessary to meet the project outcomes.

The working group identified the following categories of stakeholders and Indigenous Participants whose involvement would benefit the project:

Table 4: Potential Stakeholders and Indigenous Participants to Consider for Involvement in the Best Practices Guide for Dust Management in Alberta Project

Individual or Organization	Possible Interests, Concerns, or Involvement
NGOs	<ul style="list-style-type: none"> • Project team members who have input on all project objectives and may represent various stakeholders impacted by dust
Organizations involved with construction, road dust management, or other industrial activities	<ul style="list-style-type: none"> • May be impacted by a best practices guide for dust management, and should be on the project team where possible and have input on all project objectives; engaged during objective 2 at minimum if not a project team member • May have existing dust management practices/expertise • May receive dust complaints
Large Urban Municipalities	<ul style="list-style-type: none"> • May be involved in implementation of a best practices guide for dust management, and should be on the project team where possible and engaged during objective 2 • May have dust management requirements or receive dust complaints
Counties and Rural Municipalities	<ul style="list-style-type: none"> • Make decisions on approving local projects (e.g., gravel pits or other industrial operations and residential developments) • Build and maintain rural roads • May have dust management requirements or receive dust complaints
Airshed Organizations	<ul style="list-style-type: none"> • Project team members who have input on all project objectives and can provide information to support the project team • Have ambient air monitoring expertise
First Nation and Metis	<ul style="list-style-type: none"> • May be involved in implementation of a best practices guide for dust management, should be on the project team where possible and engaged during objective 2 • May be impacted by dust
Agriculture	<ul style="list-style-type: none"> • Project team members who have input on all project objectives • May have existing dust management practices/expertise • May receive dust complaints
Alberta Health Services	<ul style="list-style-type: none"> • Project team members or engaged specifically for objective 1 regarding health impacts of dust
Alberta Lung Association	<ul style="list-style-type: none"> • Project team members or engaged specifically for objective 1 regarding health impacts of dust
Provincial Government (AEPA, Transportation, Agriculture & Irrigation) and Regulators (AER) and Agencies (NRCB)	<ul style="list-style-type: none"> • Project team members who have input on all project objectives • May have dust management requirements/guidance or receive dust complaints • Have ambient air monitoring expertise

Appendix A: Working Group Membership

Name	Organization
Co-Chairs	
Danlin Su	Prairie Acid Rain Coalition
Laura Cline	Alberta Sand and Gravel Association
Rahul Shrivastava	Alberta Transportation
Members	
Adi Isaac Adiele	Fort McKay Metis Nation
Amber Link	Rural Municipalities of Alberta
Dan Moore	Alberta Newsprint Company
David Spink	Prairie Acid Rain Coalition
Marlow Currie	AEN Clean Air Caucus
Rhonda Lee Curran	Alberta Environment and Protected Areas
Rich Smith	Alberta Beef Producers
Scott (Sheila) Cunningham	Natural Resources Conservation Board
Wally Qiu	Alberta Energy Regulator
Alternates	
Ann Baran	Southern Alberta Group for the Environment
Irene Dahl	Canadian Forest Products Limited
Kristi Anderson	Mewassin Community Council
Lauren Greenhough	Alberta Sand and Gravel Association
Melissa Guglich	Alberta-Pacific Forest Industries
Tasha Blumenthal	Rural Municipalities of Alberta
Corresponding Members	
Jennifer Knievel	West Fraser
Jessica Sabell	Lehigh Hanson Materials Ltd.
Lorna Morishita	Airsheds
Monique Holowach	Alberta Forest Products Association
CASA Staff	
Katie Duffett	Clean Air Strategic Alliance
Alec Carrigy	Clean Air Strategic Alliance

Appendix B: Reference Materials

The working group identified information sources which may be of use to the project team. They include:

- Voluntary or informal standards of practice
- Existing requirements from regulators
- Canada's Air Pollutant Emissions Inventory (APEI)
- [CASA Non-Point Source Project Team](#)
- [CASA Odour Management Project Team](#)
- [CASA Impacts of Reduced Transportation on Air Quality in Alberta Associated with COVID-19 Project Team](#)
- [National Pollutant Release Inventory \(NPRI\)](#)
- [Alberta's Ambient Air Quality Objectives and Guidelines](#)
- [Canadian Ambient Air Quality Standards](#)
- [Canadian Council of Ministers of the Environment Air Quality Report](#)
- [Results of the Alberta Annual Emissions Inventory Reporting Program: 2018 Inventory Year](#)
- [Health Impacts of Air Pollution in Canada: Estimates of morbidity and premature mortality outcomes – 2021 Report](#)
- Silica & Dust Exposure Control Handbook (Rev. 1), Nielsen Consulting, 2014
- WBEA: PAHs in Lichens and Ambient Particulate Matter Receptor Modeling Study (Final Report Version No.1), Integrated Atmospheric Solutions, 2015
- [Potential Human Risks via Crystalline Silica Exposure due to Quarry Operations – Southwest Calgary Ring Road Project, CH2M HILL Canada Limited, 2017](#)
- [Calgary Region Airshed Zone \(CRAZ\) Dust Health Effects & Suppression Workshop, November 2017](#)
- Identification of Ambient SO₂ Levels and Sources in Athabasca Oil Sands Region in the Context of LAR Air Quality Management Framework, WBK & Associates, 2018
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