

Minutes



Non-Point Source Technical Task Group, Meeting #4

Date: Tuesday May 17, 2016

Time: 10:00 am – 3:30 pm

Place: CASA Office, Edmonton, AB

In attendance:

Name	Stakeholder group
Patrick Andersen	West Central Airshed Society/Alberta Airsheds Council (AAC)
Randy Angle	Alberta Environmental Network (AEN)
Rhonda Lee Curran	Alberta Environment and Parks (AEP)
Mandeep Dhaliwal	Calgary Region Airshed Zone/AAC
Ike Edeogu	Alberta Agriculture and Forestry (AAF)
Bob Myrick	AEMERA
Victoria Pianarosa	Parkland Fuel Corporation
Frauke Spurrell	AEP
Martin Van Olst	Environment and Climate Change Canada
Amanda Stuparyk	CASA
Keith Denman	CASA
Warren Greeves	CASA

Regrets:

Richard Melick	Alberta Environment and Parks (AEP)
David Spink	Prairie Acid Rain Coalition/Alberta Environmental Network (AEN)

Action Items:

Item	Who	When
1.3: All Task Group Members will review the Resource Library listing of information/documents that will assist with the task group work. Task Group members will send any additional resources that should be reviewed by the task group as part of their work objectives (include a link to the information (or pdf) and short description for posting).	All NPS Task Group Members	Ongoing
3.7: Task Group members will draft summary information, data and resources for each of the CAAQS Regions for review by task group as follows: <ul style="list-style-type: none"> • Lower Athabasca = David • Upper Athabasca = Martin • Peace = Victoria • North Saskatchewan = Richard • Red Deer = Ike (AEP assistance) • South Saskatchewan = Frauke/Mandeep/Patrick 	As indicated	Drafts for task group review and discussion at Meeting #5. Final copies for task group acceptance and usage in Final Report at Meeting 6.
4.1: Bob will include clarifying paragraph on the methodologies used in PM measurement.	Bob	Meeting #5
4.2: Bob will provide data for NMHC in the province	Bob	Meeting #5
4.3: Bob will provide PM and ozone exceedance event details.	Bob	Meeting #5
4.4: Bob to provide the National Air Pollution Surveillance Program paper on PM speciation to the group to include into the resource library.	Bob	Meeting #5

4.5: Mandeep will provide speciation reports from the Capital Region and Calgary Regional Airshed Zones.	Mandeep	Meeting #5
4.6: Bob will provide the group with the recent speciation report completed by Warren Kindzierski.	Bob	Meeting #5
4.7: Task group to forward contact information for editors to the secretariat to determine costs.	All NPS Task Group Members	Meeting #5
4.8: Randy to discuss drafting of the final report with the secretariat.	Randy	Meeting #5
4.9: Task Group members and/or guests interested in attending CASA's board meeting on June 15 are asked to provide an RSVP at their earliest convenience.	All NPS Task Group Members	ASAP

1. Welcome and Administrative Items

The meeting began at 10:00 a.m. with Amanda chairing the meeting. All members introduced themselves and were welcomed to the meeting. Meeting quorum was achieved.

The agenda and meeting objectives for the day were approved. Meeting #2 and #3 minutes were sent to the group for review prior to the meeting. The secretariat received confirmation that the team had received the various resources provided since last meeting. The group accepted the minutes for finalization and posting on the CASA website. The status of action items from Meeting #3 were updated as follows:

Action Item	Who	Status
1.3: All Task Group Members will review the Resource Library listing of information/documents that will assist with the task group work. Task Group members will send any additional resources that should be reviewed by the task group as part of their work objectives (include a link to the information (or pdf) and short description for posting).	All NPS Task Group Members	Carry Forward
3.1: Amanda will send the Health Canada diesel exhaust report to the group once it is received and will post it to the library. David Spink will work with Martin van Olst to obtain higher resolution maps for Alberta/Regions as presented in the report.	Amanda David / Martin	Complete. The report was sent to the group and any maps will be circulated when received.
3.2: AEMERA will work on additional data requests from the task group for review at next meeting. This includes points 1-3 below.	Bob & AEMERA group	Complete. Will be discussed during the meeting.
3.3: AEP requested to provide the task group further information (census subdivision level inventory if possible) for the City of Red Deer including surrounding regions as available.	Richard	Complete. Will be discussed during the meeting.
3.4: Task group members will review the two summary EC Speciation study PowerPoint presentations posted within the NPS Resource Library for further information/learnings.	All task group members	Complete. No comments from group.
3.5: David will complete analysis and review of information for the region summary document for the task group members to review and discuss conclusions.	David	Complete. Ongoing and is captured under action item 3.7.

3.6: Randy will work with the secretariat to update the resource listings on ongoing basis for inclusion in the Task Groups Final Report.	Randy	Complete. The table has been updated for resources to date.
3.7: Task Group members will draft summary information, data and resources for each of the CAAQS Regions for review by task group as follows: <ul style="list-style-type: none"> • Lower Athabasca = David • Upper Athabasca = Martin • Peace = Victoria • North Saskatchewan = Richard • Red Deer = Ike (AEP assistance) • South Saskatchewan = Frauke/ Mandeep/Patrick 	As indicated	Carry Forward Drafts for task group review and discussion at Meeting #5. Final copies for task group acceptance and usage in Final Report at Meeting 6.
3.8: AEP will draft a sample matrix document to summarize NPS information and agreements by the task group.	Rhonda Lee	Complete. Will be discussed during the meeting.
3.9: Amanda will create and send out the Doodle poll for availability of all task group members to complete for their final meetings as discussed.	Amanda Task Group complete	Complete. Meeting dates were confirmed and sent to the group.
3.10: Amanda will prepare the Task Group Update summary document with the co-chairs to provide the project team at their next meeting.	Amanda and Co-Chairs	Complete. Amanda will provide a verbal update to the Team as their meeting is the following day.

2. Updates

CASA Update: Amanda provided an update on the secretariat initiatives.

- CASA is expecting a list of priorities from the provincial government that has the potential to lead to future CASA work.
- CASA is working with airsheds in preparation for Clean Air Day on June 8th. Training on collaborative processes and interest-based decision-making will be provided to the airsheds at a future date. CASA's Executive Director will be presenting a talk at the Peace Airshed Zone Association later in May.

Project Team Update: Amanda provided an updated on the activities of the project team.

- Project team is currently preparing for the June 15 board meeting where the team will provide an update. An update on the work of the Technical Task Group will be included.
- The project team will be provided with a presentation from Alberta Environment and Parks (AEP) on the Red Deer Response. The team will further discuss industrial volatile organic compound (VOC) and transportation emissions. The project team asks that applicable resources on this topic be provided to the secretariat for distribution.

3. Discuss Data Collection – AEMERA and AEP Data Requests

AEMERA staff (with AEP) were able to compile information and data for the requests from the group. Credit was given to Andrew Clayton (AEP), Janine Ross and Christin Adams (AEMERA) for their working gathering the data. Deliverables from AEMERA and AEP were outlined below:

1. Annual calculation for PM2.5 and O3 after the transboundary effects were removed from 2001 – 2014

2. Trend calculation for ambient concentrations – significance of trends was provided along with a table.
3. Summary of all of the dates where PM or O₃ exceeded the CAAQS (not complete)
4. Inventory of PM speciation data in Alberta – long term data for NAPS and WBEA stations

Annual calculation for PM_{2.5} and O₃

Data from the CAAQS assessment were intentionally delineated between the periods of 2001-2010 and 2011-2014 as the data was not directly comparable. Exceptional events such as forest fires were removed from the data.

PM data

Numbers provided after 2011 reflect more stringency both in the technology used and the standards provided. The discontinuation at 2010 reflects the mentioned changes. The inventory of PM speciation data in Alberta was completed for the stations where technology was available. For the Red Deer Air Zone, the low values in 2012 are likely due to the correction factors in the instrumentation used as well as the development of the CAAQS. While the technology may have pushed the readings up, the CAAQS pushed the reported data values down. Federally, the NAPS technologists have applied a correction factor to account for this. The group noted that tapered element oscillating microbalance (TEOM) instrument typically underreports data, often in the winter. A listing was provided detailing what machines were used for the applicable monitoring station. In future reports from AEMERA, a clarifier will be added noting that the conversion from the Canada Wide Standards (CWS) to the CAAQS is currently being examined by AEP. The group noted that there is the desire to have a reference method such as the federal equivalent method implemented for each air monitoring station in each air zone, which was acknowledged by the representative from AEMERA.

Action Item 4.1: Bob will include clarifying paragraph on the methodologies used in PM measurement.

The group noted that the Lancaster station only started operating in 2014 and does not have enough applicable information to graph at this time.

Ozone data

The team was taken through historical data on ozone spanning collection during the CWS through to the CAAQS. As with the above PM monitoring stations, instrumentation in the Canada-wide metrics have not changed, but the standards have changed. Through monitoring, AEMERA was able to determine that spikes did not occur as was the case for PM. The increase in VOCs and NO₂ have eaten up the ozone which was expected to increase due to the increase in Alberta's population.

Of mention were the 2002 values which illustrated exceedances for ozone in the first year the CWS were introduced. The increase in measured ozone during this year points to either a warm summer season, and/or a change in the underlying air quality.

The group noted that the Lancaster station in Red Deer appears to have reported data since 2001, which is unlikely given that the station came online in 2014. The group confirmed that the line for Lancaster was a typo. The group asked for clarification in the use of the data for Lancaster, either in its inclusion or omission.

Trend calculation for ambient concentrations

A linear regression was prepared by AEP showing the combined influence of PM_{2.5}, ozone, NO₂, SO₂ and total hydrocarbons. Trending was not completed for PM_{2.5} as the technology used in measurement changed as the standards changed. Discussion on the document is as follows:

- The team was provided with the annual average for ozone, however it was noted that peak values would be a more appropriate metric to track. The group asked to have the information presented in a more user-friendly form.
- NO₂ shows a downward concentration trend over the years.
- The group requested that graphs be completed by air zones. The group noted that airsheds have included annual inventory trends or their estimates.
- Measurement for non-methane hydrocarbons (NMHC) is more informative when compared to the data on THC. More data is available for NMHCs, and unfortunately there is not enough VOC data to make the same analysis as would be made for other emissions. The group also noted that the majority of the 150 VOCs are typically non-detectable, and a granular level of analysis would be outside the scope of the group. For more information on VOCs, the group was referred to the VOC speciation poster from the Air & Waste Management Association annual conference in 2014 which was included in the resource library. AEP is also currently completing source apportionment on the Calgary VOC information, which will be provided to the Calgary Regional Airshed Zone (CRAZ).
- The group noted that the Ft. Saskatchewan area contains applicable information on NMHC. This information could prove useful as the group each complete their regional summaries.

Action Item 4.2: Bob will provide data for NMHC in the province.

- The group determined that a recommendation could be provided to further investigate the limiting of ozone by NO_x or VOCs. An assessment into the relationship between NO_x and NO₂ on ozone is beyond the scope of the group. While AEMERA currently has the capacity to complete such an investigation, it will not do so unless a request has been made by the group. The issue was added to the parking lot for the group.
- A further examination into the 24-hour exceedances has not been completed. Analysis used in extracting events from the data will be completed by AEMERA however has been delayed due to the fires in Ft. McMurray. AEMERA will summarize a list of events that are anthropogenic, and return this information to the group for next meeting.

Action Item 4.3: Bob will provide PM and ozone exceedance event details.

PM speciation data

- Information provided by AEMERA with speciated data for PM. While some data sets are complete, more comprehensiveness is needed to provide a fulsome picture of the province.
- The group concurred that a further investigation into PM speciation is not needed at this current time, and will first examine information from the National Air Pollution Surveillance (NAPS) program. A report focusing on the McIntyre Centre was completed, and will be included in the groups resource library.

Action Item 4.4: Bob to provide the National Air Pollution Surveillance Program paper on PM speciation to the group to include into the resource library.

- Both the Capital Region and CRAZ have completed reports on PM speciation and will provide those reports to the group pending availability. A paper written by Warren Kindzierski will also be included in the resource library for the group.

Action Item 4.5: Mandeep will provide speciation reports from the Capital Region and Calgary Regional Airshed Zones.

Action Item 4.6: Bob will provide the group with the recent speciation report completed by Warren Kindzierski.

- “Investigation of Fine PM Characteristics and Sources in Edmonton” is provided in the resource library under the North Saskatchewan folder, and the secretariat directed the group to review the report.
- The team reaffirmed that the task group serve as the main forum for communication, and Bob and Richard offered to answer further clarifying questions from the group offline if required.

Red Deer inventory data

Following the last meeting, AEP looked into the area surrounding Red Deer in further detail, and found that transportation emissions are higher near the air monitoring stations than would otherwise be concluded from the overall regional emissions. Since transportation is a large contributor to the emissions, off-road and on-road emissions will need to be differentiated. The granularity of the data around the stations is useful in understanding what is driving the exceedances. The April version of AEP’s summary report will be replaced with the March version, and included in the resource library.

The team noted that the combination of data provided by AEP and AEMERA will provide a fulsome basis for the group to undertake the regional summaries.

4. Review/Updates on Regional Summaries

The earlier summary of the Lower Athabasca Region was provided as an outline for the group as they undertook their work. The group proceeded to brief the team with the progress on their regional summaries for feedback.

Peace region – Victoria

Based on the information available on top three sources of air contaminants from the 2009 emissions inventory, an analysis was provided on the total amount of tonnes emitted per year attributed to non-point sources. In comparison to the Lower Athabasca region, the Peace region does not have a large amount of data, limiting the analysis provided. Assumptions that were used were included alongside the resulting numbers. A total sum of emissions was provided as a final result.

The group noted that referring to the provincial level emissions factors may assist in establishing the share of industrial emissions that would be considered non-point source. In the draft summary provided for the Peace region, it was assumed that the rate of suspension of primary PM_{2.5} was the same for all NPS.

Estimation of emission rates in tonnes/year assumes 100% share of non-point sources, and where the emissions come from point sources, a 5% share of non-point sources was provided due to fugitive emissions. The group asked for more information to support this 5% factor. The group noted that as

further regional summaries are prepared, the methodology for calculating the share of fugitive emissions from industrial source may become more apparent.

Upper Athabasca - Martin

The group was provided with the draft summary for the Upper Athabasca region. It was noted that analysis of the Upper Athabasca region was not substantiated with the level of data found for the Lower Athabasca Region. Completion of this summary has been delayed due to shifting of resources to deal with the Ft. McMurray fires.

Discussion on future regional summaries

- In order to provide a more comprehensive look at the regions, the group asked that some level of detail on the air monitoring stations be provided. Going forward, the group committed to providing the number of air monitoring stations in the region and the pollutants measured.
- As mentioned above, the group has yet to determine a methodology for calculating the final tonnage of emissions. It was suggested that the group collect information on sources where available, and develop a comprehensive understanding what sources are significant, and which sources are not. Trending information would be useful where available, and general conclusions would help deliver a narrative to the project team.
- A commentary on the potential for human health impacts would be relevant where available.
- Station event summaries will be provided by AEMERA in the next meeting and will help build on the regional summaries completed by the task group.
- The group suggested that top sources be identified for each region separately rather than in a province-wide list. Going forward, the group will develop the regional lists of sources, then combine altogether to ensure that important distinctive factors to each region are identified. Of particular importance are the reports on the red and orange identified regions showing exceedances under CAAQS.

The team reiterated that preparation of draft regional summaries for all regions is achievable by next meeting.

5. NPS Emission Sources Listing

The task group completed an activity in an effort to refine the list of non-point sources. A comprehensive list of sources was provided as a handout to the group, and the group was asked to place select sources on a spectrum of low to high importance. The original list of sources and the results of the prioritization exercise are attached as an appendix (A) to these minutes.

Following the exercise, the group noted that the following sources were listed as a priority:

- Road dust
- Structural fires
- Transportation
- Residential heating
- Construction operations
- General solvent use
- Agriculture

Discussion on the prioritization exercise:

- Construction operations emerged as a potentially important source that may have earlier overlooked by the group.

- General solvent use high in urban areas, which are typically a dominant source of VOC emissions under quantitative assessment.
- While agriculture was listed as a priority, it was noted that the relative contribution is low at numerous monitoring stations. Ammonia, which is the identifying chemical present associated with agricultural emissions, is not exceptionally high in the wintertime. Agricultural emissions did not appear on the listing of primary particulates, but may be a significant source of precursor emissions.
- An urban-rural divide was apparent throughout the prioritization exercise. An earlier discussion at the project team level identified how data for CAAQS has been focused on urban areas, which typically display air quality issues.

The exercise provided task group members an opportunity to consider how the work of prioritization may occur, and a more fulsome discussion will follow once regional information has been provided by the team.

6. Task Group Final Report Outline & Deliverables

The team discussed their work plan and deliverables, particularly the final report and presentation to the project team. The group concurred that the main deliverable from the group will be a technical report prepared initially in draft form by the technical task group, then compiled and edited by a technical editor. The group committed to preparing as much of the report as possible following the revised outline below before handing it over to a contracted third-party who would edit the document.

Action Item 4.7: Task group to forward contact information for editors to the secretariat to determine costs.

Action Item 4.8: Randy to discuss drafting of the final report with the secretariat.

The team went through the outline of the report and made modifications as shown in the table below:

<u>Before</u>	<u>After</u>
Executive summary	Executive summary
1. Introduction <ul style="list-style-type: none"> a. Objectives b. Background c. Approach/Methodology 	1. Introduction and Scope of Work <ul style="list-style-type: none"> a. Objectives b. Background c. Approach/Methodology
2. Sources of Information/Lines of Evidence <ul style="list-style-type: none"> a. Emission inventories b. Ambient monitoring c. Dispersion modelling d. Receptor modelling e. Other 	2. Sources of Information/Lines of Evidence <ul style="list-style-type: none"> a. Emission inventories b. Ambient monitoring c. Dispersion modelling d. Receptor modelling e. Other
3. Region by Region Estimates of NPS Contributions	3. Region by Region Estimates of NPS Contributions

<ul style="list-style-type: none"> a. Lower Athabasca b. Upper Athabasca c. North Saskatchewan d. South Saskatchewan e. Red Deer f. Peace <p>4. Conclusions and Recommendations</p> <ul style="list-style-type: none"> a. Overall importance of different non-point sources b. Gaps and uncertainties c. Additional work to address information deficiencies <p>Appendix A. Technical Task Group Members Appendix B. References/Source Documents</p>	<ul style="list-style-type: none"> a. Lower Athabasca b. Upper Athabasca c. North Saskatchewan d. South Saskatchewan e. Red Deer f. Peace <p>4. Discussion</p> <ul style="list-style-type: none"> a. Provincial Overview b. Additional Considerations (Task 3) c. Gaps and Uncertainties <p>5. Conclusions and Guidance/Advice</p> <ul style="list-style-type: none"> a. Overall importance of different non-point sources b. Gaps and uncertainties and ways to proceed if gaps not addressed c. Additional work to address information deficiencies <p>Appendix A. Technical Task Group Members Appendix B. References/Source Documents</p>
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Discussion on the outline of the final report:

- Tasks three and four of the team’s terms of reference illustrated a need to include a section on “how to proceed if gaps are not addressed”. Steps on how to proceed, along with a materiality test on how the assumptions provided may affect the final product.
- Completion of the initial draft matrix developed by Rhonda Lee is a large undertaking, and should be revisited at a later time. The matrix could be repurposed to demonstrate the resources available under Section 2, and does not have to be filled with ambient data, but simply a “✓” to indicate availability of data under each region.
- A distinction was made between Section 2 (Sources of Information/Lines of Evidence) and Appendix B (References/Source Documents), being that section 2 would be a discussion on how the resources used, while Appendix B would be the reference list itself.
- Provincial-level section (4.a) will address summary work completed by AEP, in addition to the regional summaries. Additional considerations (task 3), in addition to gaps and uncertainties in the team’s work will be provided in the above section. The “parking lot”, which has been mentioned in past meetings, shall be summarized under (5.c). The parking lot contains many opportunities for improvement for monitoring in the province, and is shown below:
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The *Parking Lot* currently includes:

- Use of toxicity as one of the mechanisms for refinement of NPS emissions sources,
- Boundary layer temperature and wind profiles,
- PM2.5 speciation measurement and monitoring,

- Future roles and opportunities for modelling,
- Following some ‘plumes’ such as what ECCC did in 2013 (aircraft monitoring in the oilsands region) enabled a more accurate picture of what has come from (i.e. total PM emissions at the power plants may be missing as much as 50% of the actuals due to condensables forming within a few minutes of being emitted – it is unclear how modeling handles this),
- Additional monitoring and analysis for existing data for NO_x/NO₂.

7. Project Team Status Update

The team discussed the update which would be provided to the non-point source project team on May 18, 2016. As the project team is drafting a presentation to CASA’s board for their June 15 board meeting, the task group will have to provide expected completion times for deliverables. The task group concurred that a September timeline is still feasible, however that time may be pushed back if the group encounters issues in preparing the regional summaries.

Update to the project team:

- Expected September deadline.
- Outline for the final report has been prepared and the writing process has been undertaken. A technical editor will be required to complete the document and will require a budgetary ask from the project team.
- Work has started on identifying emission sources, and tasks have been assigned.

The secretariat noted that task group members are welcome to attend the June 15 CASA board meeting at the McDougall Centre. Members are asked to RSVP in advance for security reasons.

Action Item 4.9: Task Group members and/or guests interested in attending CASA’s board meeting on June 15 are asked to provide an RSVP at their earliest convenience.

8. Meeting Wrap-up and Next Steps

Action items and the work that will be done in between the meetings were confirmed. Objectives for the next meeting are to:

- Review, discuss data from AEMERA and any final data requests needed to complete work.
- Review draft Regional summaries and determine process for final acceptance and inclusion into the Task Group Final Report.
- Review any drafted content for the Task Group Final Report and agree to process for contracting an Editor. Discuss and agree to budget request to the Project Team.

The task group confirmed the final meeting dates as follows and agreed to work towards completing their work for September. Meetings are scheduled for JULY 20, 2016 (Edmonton - Meeting #6); AUGUST 18, 2016 (Calgary - Meeting #7); SEPTEMBER 13, 2016 (Edmonton - Meeting #8); SEPTEMBER 27, 2016 (if needed*: Calgary - Meeting #9).

The meeting adjourned at 3:30 p.m.

Appendix A: Identifying and listing NPS emission sources

Original alphabetized list of non-point sources

(Italicized sources have been previously identified as high emitters)

<i>Agriculture</i>	<i>Light duty gasoline Trucks</i>	<i>Upstream Petroleum Industry (incl. Oil Sands)</i>
<i>Air Transportation</i>	<i>Light duty gasoline vehicles</i>	<i>Petroleum Product Transportation and distribution</i>
<i>Cement and Concrete Industry</i>	Marine Transportation	<i>Pulp and Paper Industry</i>
<i>Chemicals Industry</i>	Meat Cooking	<i>Waste</i>
Cigarette Smoking	Mine tailings	
<i>Commercial Fuel Consumption</i>	Motorcycles	
<i>Construction Operations</i>	Municipal Incineration	
Crematoria	<i>Non-Ferrous Mining and Smelting</i>	
<i>Downstream Petroleum Industry</i>	<i>Off Road gasoline 2 stroke</i>	
Dry cleaning	<i>Off Road gasoline 4 stroke</i>	
Dust from Coal mining	<i>Off Road Use of Diesel</i>	
<i>Dust from Paved roads</i>	<i>Prescribed Burning</i>	
<i>Dust from unpaved Roads</i>	Printing	
<i>Electric Power Generation</i>	<i>Rail Transportation</i>	
<i>General solvent use</i>	<i>Refined Petroleum Products Retail</i>	
<i>Grain Industries</i>	Residential Fuel combustion	
<i>Heavy Duty diesel vehicles</i>	<i>Residential Fuel Wood Combustion</i>	
Heavy Duty gasoline trucks	<i>Surface Coatings</i>	
Humans	Structural fires	
Industrial and Commercial Incineration	Tire wear and brake lining	
Light duty diesel trucks		

Results from the prioritization exercise:

<u>1 – 2</u>	<u>3 – 4</u>	<u>5 – 6</u>	<u>Etc</u>
Upstream petroleum industry	General solvent use	Road dust	
On-road heavy duty diesel			
Off-road diesel	Construction	Agriculture	
Light duty transportation		Petroleum product transportation and distribution	
Commercial and residential fuel consumption			Structural fires