Report on Discussion Sessions for the Development of Management Frameworks for Surface Water Quality and Air Quality for the South Saskatchewan Regional Plan

environmental • social • economic

Land-use Framework

Alberta Government

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1.0 Introduction

Alberta Environment and Sustainable Resource Development (ESRD) is leading the development of environmental management frameworks to help manage the cumulative effects of multiple development activities within a given region. Management frameworks are being developed on a regional basis and in support of regional plans under Alberta's Land-use Framework. Management frameworks for air quality, surface water quality and groundwater management have already been put in place under the Lower Athabasca Regional Plan, and similar management frameworks are now being developed as part of the South Saskatchewan regional planning process.

As part of the development of draft management frameworks, ESRD led an engagement process with key external stakeholders within the South Saskatchewan Region to review the issues and options for those frameworks. Discussions were held with key stakeholders from municipal government, partners and non-government organizations (NGOs) and industry. ESRD retained ISL Engineering and Land Services (Team ISL) to design and implement the sessions.

Purpose

The purpose of the project was to engage key stakeholders on the design and implementation of surface water quality and air quality management frameworks within the South Saskatchewan Region.

The goal was to seek facilitated feedback on air quality and surface water quality, as they pertain to the:

- management frameworks
- indicators, triggers and limits and
- implementation implications

Approach

The engagement sessions covered four six-hour workshops. Two were scheduled in Calgary (November 21 and 27, 2012), one in Medicine Hat (November 20, 2012), and one in Lethbridge (December 5, 2012). Each session included three distinct stakeholder groups: municipal government, partners/NGOs and industry. The session in Medicine Hat was cancelled due to low registration, and participants were invited to attend the sessions in Calgary and Lethbridge.

A total of 58 individuals attended the workshops, with 18 individuals attending on November 21 in Calgary, 11 individuals attending on November 27 in Calgary and 29 individuals attending on December 5 in Lethbridge. Engagement with First Nations, the federal government and other provincial government agencies and departments is to be done in a separate process by ESRD.

The engagement approach included structured facilitated sessions with key discussion questions and prepared information packages for stakeholders. The session began with a technical presentation by ESRD staff regarding the management frameworks followed by a question-and-answer session for stakeholder clarification prior to the workshop activity. Stakeholders were split into groups. Facilitators led and recorded the discussion using the key discussion questions. ESRD technical experts were available to respond to questions. The information packages provided to stakeholders who attended the session included a copy of the PowerPoint presentation, agenda, comment form, evaluation form and fact sheets.

Highlights of all feedback received from stakeholders sessions are included in the following section. Collated verbatim comment forms are available in the Appendix B. Notes from the stakeholder sessions were prepared following the sessions and the resulting feedback from all groups have been combined into one feedback document for each session, included in Appendix C.

Conclusion

The participants in these discussion sessions on the air and water management frameworks under the SSRP have helped to build the initial collaboration and advance framework development.

2.0 What We Heard

This section provides an overview of the facilitators' understanding of the stakeholder comments from the three sessions.

Common Themes

Overall common themes included:

- There is a general understanding and support from participants for the management actions and implementing proactive measures to avoid reaching triggers and limits.
- More details on the indicators, triggers, limits, implementation and management response for the management frameworks are required.
- Additional consultation with stakeholders regarding the details in the draft management frameworks is required prior to releasing the draft South Saskatchewan Regional Plan and frameworks to the general public.
- Downstream and upstream impacts should be considered in management frameworks.
- Information sharing and collaboration between ESRD and stakeholders is appreciated and required.

Summarized Comments by Question:

Is the purpose and intent of the management frameworks explained in a clear way?

- The purpose and intent of management frameworks for air quality and surface water quality is explained in a clear way to participants. However, clarity can be improved so all stakeholders (with varying levels of technical knowledge and understanding) can understand.
- Stakeholders require more details and consultation on the components of the management frameworks (i.e. indicators, triggers, limits, management responses and implementation, etc.). There are a lot of questions about management framework details.
- The process to develop the management frameworks should be a collaborative process with stakeholders and ESRD sharing information and providing feedback on framework components.

- The overall management framework design should be developed in a clear way with simple graphics and system explanations. The framework should include the overall circular feedback loop from objectives to monitoring to management action to evaluation and back to objectives. The current process, provided in the PowerPoint presentation is linear, which implies an end point. This process, however, must be on-going without an end point.
- More clarity is required on the audience for management frameworks (i.e. elected officials, industry, organizations, or the public) and what their potential roles are at each stage of the management process.
- The information in the management framework needs to be balanced for the specific target audience (i.e. technical experts, high level personnel or the general public).
- Defining the role of different orders of planning (i.e. regional, sub-regional, etc.) should be explained within the management frameworks.

Does the management approach – its indicators, triggers and limits and implementation and reporting approach work? Did we get it right? If not, why?

- The management approach should be flexible and adapt to new realities and emerging issues.
- There is support for a proactive, rather than reactive, approach to prevent disasters, and avoid extreme and/or costly management actions.
- Management frameworks require clarity and details on what indicators, triggers and limits are and how the frameworks will be implemented.

Are the air and surface water indicators appropriate? If not, why? Are there any that should be added or removed?

- Local indicators in sub-regions should be linked and coordinated with the regional indicators and management frameworks.
- Continual review of indicators used to monitor air and surface water quality is required.

Water

- Additional indicators to include in the management frameworks include the following:
    - Pharmaceuticals
    - Heavy metals (i.e. arsenic, mercury, selenium)
    - Pesticides (i.e. ones that impact public health)
    - Herbicides

- Dissolved oxygen
- Volatile organic compounds.

- Include watershed interest groups in the process to help determine the indicators.

Air

- Additional indicators to include in the management frameworks include the following:
  - Sulphur oxides
  - Nitrogen oxides
  - Dust
  - Sulphur dioxide
  - Odour
  - Smoke
  - Poly-Aromatic Hydrocarbons.
- Indicators being proposed are acceptable.
- Indicators should be consistent between regional plans.
- Including odour as an indicator is a concern because the measure is subjective and it will be difficult to monitor.
- An indicator/threshold for regulation is required so as not to regulate industry out of operation.
- Non-point sources such as vehicle emissions are the biggest polluters in this region, as opposed to point source polluters in the northern region of Alberta. How do we realistically regulate these non-point sources within the management frameworks?
- How does ESRD manage regulated vs. non-regulated and point source vs. non-point sources such as car pollution? Both regulated and unregulated industry need to be considered.

Is the approach to the air and surface water triggers appropriate?

- There is general support for the trigger approach to be proactive before hitting a limit.
- Clarity and education are required on what the triggers are and how the levels were set. Stakeholders would like to receive the details on the trigger numbers and be given the opportunity to comment prior to the release of the information to the general public.

- Triggers and limits need to be the same for all stakeholder groups (e.g. industry, agriculture, public, etc.).
- While triggers focus on levels, overall management efforts to analyze trends in the data, will be critical to a successful framework.
- Triggers that are set too low may cause management responses to be mandated by natural events or one-off events during a peak.
- Place-based triggers and limits should be utilized when appropriate.
- Triggers should not be too close to a limit as there would be no room to address it before the limit is reached.
- Triggers should vary for different times of the year (i.e. high and low flow and ice cover conditions).
- Clarity is required regarding the relationship between triggers and management actions, and the management actions need to be developed in conjunction with triggers.
- Triggers should be flexible to accommodate fluctuations and address improvements in monitoring and measuring technology.
- Stakeholders should be notified before a trigger is reached to be more proactive and prevent management actions.

Is the approach to the air and surface water limits appropriate? If not, why?

- There is support for the science-based limit approach.
- Clarity is required regarding what the limit numbers are before stakeholders are able to provide detailed comments.
- Limits should be consistent across the region.
- Triggers and limits need to be flexible to address improvements in monitoring, measuring and general changes.

Are there other issues regarding the triggers and limits? If so, what are they and how should they be addressed?

- Industries fear regulatory creep (i.e. the addition of new regulations every year, or with new technology) as eventually the regulations could make business in Alberta difficult or impossible.
- Triggers and limits should be linked to the bigger cumulative effects management picture.
- Concerns exist about differences in limits for different regions.

- Clear communication to the public and stakeholders is needed, including flow charts, definitions and visuals explaining how the frameworks connect to the SSRP.
- How will the frameworks impact water licencing and new licences?

Are the monitoring criteria appropriate?

- More information about the details of the monitoring criteria is required.
- There is support for the monitoring criteria at this time; however, the criteria should adapt with changes in technology.
- There are concerns that nine water and five air monitoring stations are not enough and additional monitoring stations are required. However, there are mixed views on whether there should be air monitoring stations in rural areas. There is a concern about costs for monitoring an area with no or little impact to air quality.
- There is support for the use of portable air monitoring units in rural areas if required.
- There is some concern whether monthly testing may be enough.
- There is mixed concern regarding using 10 years of historical data as a benchmark. Some feel that 10 years is not enough historical data. Others feel that the 10-year timeframe is limiting to the addition of other relevant indicators and to other monitoring locations.
- Headwater, wetland, riparian and tributary issues need to be considered.
- There is a desire for the raw data to be more easily available and to combine data sources. It was suggested that ESRD incorporate data provided by air and water partners and non-government organizations into their database.
- Upstream and downstream monitoring around large population locations should be considered.

Are the types of management responses appropriate? If not, why?

- There are concerns about the additional time, resources and economic implications of management responses on stakeholders.
- There is support for proactive measures to avoid management responses.
- Collaboration with all stakeholders (i.e. NGOs, municipalities, agriculture, industry, etc.) regarding the management responses is required.
- There is concern about how to deal with point vs. non-point source polluters.
- Details regarding the management responses are required by stakeholders for review before they are finalized and included in the management framework.

- Education is required to be proactive and prevent management actions.
- A tiered management-response approach dependent on the type and level of contamination was suggested.
- It was suggested that incentives/rewards vs. penalties/punishments would be a better approach where possible.
- A separate emergency process is required but may be included for information in the management framework.

Are the reporting periods appropriate? If not, why?

- There is support for yearly reporting in a timely manner.
- There is concern about reporting being out of date as reporting is not up to date with current monitoring (i.e. reports include data from two-three years ago).
- Instant reporting is needed if something critical occurs.
- Data and reports should be provided online and accessible to stakeholders.
- Report on management actions (i.e. when, what, where occurred) is needed.

Do you understand how the frameworks will be implemented?

- It is not clear on how frameworks will be implemented; clear communication of framework implementation is required.
- The implementation process is critical to ensure the right stakeholders are involved.
- Stakeholders require notification before triggers and limits are reached in order to be proactive.
- Clarity is required on the costs associated with the implementation of the frameworks and who is responsible.

Once the framework is implemented how do you see it affecting your organization? What changes would your organization have to make to your operations and approvals? What information or support would your organization require? What can ESRD do to help work with stakeholders on the implementation of the frameworks?

- Changes, information and support required depends on details of the management frameworks (i.e. indicators, triggers, limits, monitoring criteria, management responses, etc.) and how it's implemented (i.e. roles, authorities, mandates, budgets, decision-makers, enforcement, education, etc.)
- There is concern about cost of implementation on stakeholders.

- Clear communication and education from ESRD to stakeholders and the public regarding management frameworks are needed. Communication must be appropriate for the stakeholder group being targeted.
- Clarity is required regarding the regulatory aspects of the management frameworks.
- How are local vs. regional issues dealt with?
- A collaborative approach with ESRD and all stakeholders is required to develop and implement the management frameworks.
- Impacts of management framework implementation could be significant for small stakeholders (i.e. municipalities, industry, agriculture, landowners, etc.).

Is there something else that the government should be considering in the management frameworks to manage the air quality and surface water quality in the SSRP area?

- Event and seasonal monitoring is needed to determine cause and effect, and how they contribute to the long-term systems and help plan for future.
- Work completed by other stakeholders such as WPAC's needs to be acknowledged and aligned with them to build on what's already been done.
- Are there funding, cost sharing or taxation solutions available to relieve the burden on stakeholders?
- Communication, sharing information, education and awareness with stakeholders and the public is critical.
- A biodiversity management framework is needed.
- Surface water management framework needs to consider aquatic life and environment.
- There should be an opportunity with air and water stewardship groups to provide public education.
- Banff National Park should be included in the management frameworks.

Appendix A

Key Discussion Questions

Part 1
Air and Water Quality Management Framework Workshop Questions

- Are the purpose and intent of the frameworks explained in a clear way?
- Does the management approach – its indicators, triggers, limits, and implementation and reporting approach work? Did we get it right? If not, why?
- Are the air and surface water indicators appropriate? If not, why? Are there any that should be added or removed?
- Is the approach to the air and surface water triggers appropriate? If not, why?
- Is the approach to the air and surface water limits appropriate? If not, why?
- Are there other issues regarding the triggers and limits? If so, what are they and how should they be addressed?

Part 2
Air and Water Quality Management Framework Workshop Questions

- Are the monitoring criteria appropriate? If not, why?
- Are the types of management actions appropriate? If not, why?
- Are the reporting periods appropriate? If not, why?
- Do you understand how frameworks would be implemented? If not, what are your key questions and concerns?
- Once the framework was implemented:
  - How do you see it affecting your organization?
  - What changes would your organization have to make to your operations and approvals?
  - What information or support would your organization require?
- What can ESRD do to help work with stakeholders on the implementation of the frameworks?
- Is there something else that the government should be considering in the management frameworks to manage the air and water quality in the SSRP area?

Appendix B

Workshop and Comment Form Summary

Part 1
Air and Water Quality Management Framework Workshop Questions

1. Are the purpose and intent of the frameworks explained in a clear way?

December 5:

- Yes for Stakeholders.
- Public audiences need direct explanation – simple language.
- Mainly regulatory – what connection to healthy epidemiology?
- Not showing cumulative relationships?
- Air quality in southeast – only an urban station – need a rural station where large number of rural operators in confined areas.

2. Does the management approach – its triggers, indicators, limits, and implementation and reporting approach work? Did we get it right? If not, why?

December 5:

- Seems OK – but needs to better define the differences between indicators and triggers and offer new inputs if needed for triggers.
- Does it allow for a new significant input after five years?
- Instream flow parameters where are they as guidelines – to relate to annually?
- Looks good so far – needs to be expanded to tributaries and other indicators as soon as possible.
- Like the trend reporting – that's important.

3. Are the air and surface water indicators appropriate? If not, why? Are there any that should be added or removed?

November 21:

- Water – pharmaceuticals, heavy metals – ones that are currently included are good. I would like consideration for the biological effects of herbicides/pesticides to be included.
- Air – yes as long as they are consistently monitored.

December 5:

- Yes – it is what there is data for.
- Add others once there is data – pharmaceuticals, viruses, bacteria, heavy metals, pesticides, etc.
- Ones that impact healthy – focus on those, need to look at costs vs. benefits and risks.
- Need more monitoring – monthly grab samples not enough, hardly any air monitoring.
- New invasive organisms.
- Trends re: antibiotic resistant microorganisms in water and air.
- Heavy metal indicator?

4. Is the approach to the air and surface water triggers appropriate? If not, why?

December 5:

- Once a month for water not sufficient.
- Will vary with a drought or extreme precipitation event – do you have evaluations for this in the management.
- Makes sense to compare to 10-year median – ideally would have longer dataset.
- Need a good dose of common sense and a look at current conditions (drought, flood) to make sure there is an appropriate reaction.
- Carefully identify source.
- People need to take responsibility for their actions.

5. Is the approach to the air and surface water limits appropriate? If not, why?

December 5:

- What is the option to a limits-based approach.
- Will the limits be giving a safe – or lesser risk-based level? Will this be conveyed to the primitive component not only regulatory.
- Makes sense to use existing guidelines – health for humans + livestock + wildlife + fish most important to consider.
- Air – use mobile stations.
- Water
    - Low-hanging fruit – test for more things @ existing stations.
    - Use/incorporate existing data from universities, etc.
    - Look at cheaper technology.

6. Are there other issues regarding the triggers and limits? If so, what are they and how should they be addressed?

December 5:

- Funding to back up necessary monitoring ___ management responses.
- Future needs – e.g. metals, pesticides, pharmaceuticals in "input maker" for irrigation and water treatment.
- Seems like there's a lot of discretion – needs to be dealt with if serious.
- Need more monitoring.
- To be proactive – need funding for BMPs, treatment plant upgrades, etc.
- If this is serious needs to be backed up with staff, funding, etc.

Part 2
Air and Water Quality Management Framework Workshop Questions

1. Are the monitoring criteria appropriate? If not, why?

December 5:

- Would be useful to have above and below significant contributors such as City of Lethbridge so not following trends or significant hot spots.
- Need more sites, on tributaries, before and after towns + cities.

2. Are the management response criteria appropriate? If not, why?

December 5:

- Need to have cow/calf operations regulated as stringently as other inputs for "non-point" source polluters.
- Education mechanisms re: fertilizer and pesticide inputs.
- How point source/how much is non-point source?
- Very general – seems appropriate. Highly dependent on the situation.
- For non-point source exceedances
  - strike a multi-stakeholder group to deal with issues but need leadership and resources to get action on the ground.
  - WPAC good at this type of thing
- Work together, provide incentives rather than fines if possible. May need both tools.

3. Are the reporting criteria appropriate? If not, why?

December 5:

- OK – if in a concise form are indicating risk levels or trends and simple analytic conveying implications for public and other management groups. Needs to be a simple fact sheet showing links and index and applications to pollution.
- Yes.

4. Do you understand how frameworks would be implemented? If not, what are your key questions and concerns?

December 5:

- Needs to be clear somewhere in the document as to who implements what and why.
- Operations that are not well covered under regulatory frameworks, e.g., cow/calf operations not included under *Confined Feeding Operation/Agricultural Operation Practices Act* guidelines.
- Yes.

5. Once the framework is implemented: How do you see it affecting your organization? What changes would your organization have to make to your operations and approvals? What information or support would your organization require?

December 5:

- enable us to provide education tools.
- enable us to plan research projects.
- enable us to inform ourselves.
- interpretation of data – possible sources of mitigation measures.
- WPACs help by promoting and funding BMPs, planning education, etc.
- Need funding for staff, incentives, education programs, etc. to make it happen.

6. What can ESRD do to help work with stakeholders on the implementation of the frameworks?

December 5:

- Educate public on water management, current status, etc.
- Provide incentives for BMPs.
- Monitor.

- Expand frameworks as possible to more indicators, sampling sites, etc.
- Increase their staff and resources.
- Work with WPACs to do this.

7. Is there something else that the government should be including in the management frameworks to manage the air and water quality in the SSRP area?

December 5:

- Some preventative actions to protect water and air quality.
- Getting a handle on data re: actual fertilizer + manure, pesticides applications quantities in zones – to work towards non-point source problems.
- Support to and strategic alignments of municipal district guidelines for developments, operations and operators.
- Setting some green zones limits to certain land use and agricultural practices in certain areas
- Looks good overall.
- Looking forward to seeing more details and frameworks for groundwater, biodiversity, etc.

Appendix C

Stakeholder Discussion Session Notes

Air and Water Management Framework Workshop Summary
Calgary
November 21, 2012

Are the purpose and intent of the frameworks explained in a clear way? Does the management approach – its indicators, triggers, limits, and implementation and reporting approach work? Did we get it right? If not, why?

- A more holistic overview and summary of the management framework design should be developed. Outline the relationships between the SSRP recommendations, valued objectives, indicators and thresholds, monitoring regime and management response.
- An overview of the rationale for the setting of different threshold levels is needed.
- More detail on the approach to monitoring is needed, outlining how the data and monitoring systems are set.
- More detail on the management response, roles of the parties at each stage, management tools, levels of enforcement and forms of education and communication need to be elaborated.
- Provide process and presentation up front.
- What happens when triggers are hit?
- What will the triggers be?
- Confirmation of the limits is required.
- There are a lot of management questions at this point.
- Circular risk management model – similar to the one in Bow River Management Plan.
- Clarify LARP process.
- Volume as an indicator
    - Fear of where it will occur, it not here
    - South Saskatchewan water conversation? Links, how?
    - Needs to be done now to influence future plans.
- Circular process should be used not a step process.
- What happens after management response?
- Indicators, trigger and limits work.
- Historical data

- Need to be evaluated within science.
- Ten years is very brief – may have already been screwed up 10 years ago
- Historical with scientific knowledge for accuracy to deal with anomalies.

- Look at un-impacted river for historical data.
- Triggers trying to ensure ambient water quality works for all users/uses – pro-active approach.
- The intent needs to be made clearer.
- There is a lot of information to take in.
- There should be use of plain language for the purpose and intent of the management frameworks leading in to the more technical information as not all users of the management frameworks will have technical expertise.
- Need to provide clarity on the audience that the management framework is intended – elected officials, industry, organizations or the public.
- Balance management frameworks for technical experts and more high-level personnel.
- How do the other plans (e.g. LARP, SSRP, etc) fit with the management frameworks?
- Will the air quality and water quality management frameworks for the SSRP look similar to the management frameworks in LARP?
- There should be flexibility in the air and water quality management frameworks as things in the province and other plans change.

Are the air and surface water indicators appropriate? If not, why? Are there any that should be added or removed?

Water

- Basic water quality indicators developed by SSRP experts.
- Potential water indicators (fall outside of normal water quality measurements, but make sense in dry years).
- Water treatment facilities.
- Pharmaceuticals.
- Road salts in urban areas.
- Heavy metals – mercury.
- Herbicides.
- Pesticides.

- Dissolved Oxygen
- Because something is difficult to do, doesn't mean we shouldn't do it (i.e. heavy metals and pharmaceuticals).
- Don't remove anything from existing list.
- Don't exclude things just because we don't have historical information – we need to start somewhere.
- Monthly testing vs. yearly testing.
- . Use appropriate timing for testing.
- Volatile Organic Component (VOCs) are hard to monitor but the monitoring of VOCs should be looked into.
- Ammonia should be included on the list of indicators.
- Pesticides should be added to the list of indicators once data is available especially due to agricultural focus of the area.
- How have watershed groups been involved in the process? Since they are locally driven, how do they fit in to the process and big picture as their focus is local vs. regional?
- Is there a biodiversity management framework?

Air

- Indicators should include:
  - PM
  - Ozone
  - NO_2
  - $S0_2$
  - Dust
  - Odour – subjective and therefore not regulated
  - Smoke – is part of the PM and dust
  - PaH Polyaromatic Hydrocarbons
- $S0_2$ is low here, as emission sources are in pockets.
- Why was SO_2 left of the list of indicators?
- Non-point sources are the biggest pollutants in this region.
- Use constant measurements across the province.
- Vehicle emissions, wind, construction, etc. all measured by existing ESRD list.
- How to manage non-point sources?

- Restrict activities on “dry” days – i.e. don’t combine on dry days.
- Decrease taxes if close to a nuisance (M.D. of Foothills).
- Something’s are just life, don’t live there if you don’t like it.
- Air quality stations are very expensive, so we have a limited number, located in urban health areas.
- No point on monitoring where you cannot do anything about it (i.e. dust in agricultural areas).
- Surface water needs to consider healthy aquatic life and environment.
- The appropriate determination of indicators may vary by sub-region.
- Local indicators collected in sub-regions should be linked and coordinated with the regional management framework.
- Indicators used within the management frameworks should be reviewed as a part of the five-year evaluation
- Continual monitoring of indicators that aren’t regional is required.
- Is there funding for non-indicator monitoring?
- Will the system of the licensing process with municipalities remain? Concerned about downloading of responsibilities from Alberta Environment to municipalities.

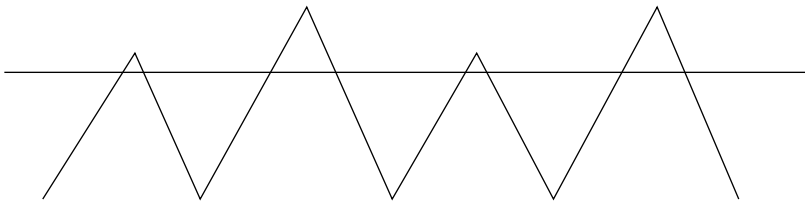
Is the approach to the air and surface water triggers appropriate? If not, why?

Water

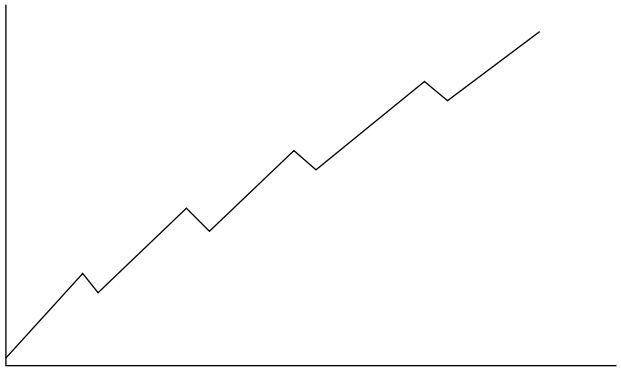
- Be careful that a spike in one year is not indicative of a trend.
- Don’t respond based on one piece of data.
- Look at trends.
- Dependent on flow and abnormal events (i.e. flooding, dry year).
- Would like more information on how they will be set
- Historical influences.
- Will the numbers come out in spring with SSRP?
- Don’t want to see a hard number such as 25 mg/l, need to accommodate variability.
- Have to look at multiple factors.
- Trending is important to prevent jumping to limit unnecessarily.
- Need to act to protect quality, don’t want to overreact.
- Water triggers are for local and regional as water has more defined boundaries.
- There should be two separate triggers for open water (high and low flow) and ice cover situations.

- Fluctuating up and down between triggers and limits.
- Average is not changing over time.
- Need to accommodate for fluctuations.
- Management plans need to be aware that we cannot plan for everything.
- Trends are critical.

Trigger



Trend



<u>Air</u>

- Based on Canadian Air Quality Standards.
- If reaching a specific amount, then hit trigger.
- LARP makes sense to use – consistency across province.
- 2/3 to 1/3.
- Air triggers are for the region as air does not have a defined boundary.
- More detail on what air quality triggers are is needed.
- What are the triggers?
- What are actual trigger numbers?
- Will they be different than the triggers in LARP?
- How will the triggers be determined?

- The escalated trigger process is good to identify issues proactively.
- There should be separate triggers for different times of year.
- On board with the tiered trigger approach.

Is the approach to the air and surface water limits appropriate? If not, why?

- Air and water limits are based on existing guidelines and therefore appropriate science.
- We are good with this approach.
- On board with tiered approach with triggers before the limit is reached.
- Where does enforcement fit in? Need to be clearer on where enforcement factors in to management response.
- How do you manage federal and sources outside of the region (emissions and discharges) and non-regulated sources (e.g. transportation, air, and agriculture, water).
- There is an opportunity for public education with the water stewardship groups.

Are there other issues regarding the triggers and limits? If so, what are they and how should they be addressed?

- Clear communication to public.
- Definitions.
- Flow charts.
- Continuous circle.
- Steps imply stopping point.
- Circle implies flow.
- Clear connection to science.
- Visual of how frameworks connect to SSRP.
- Getting buy-in for the whole SSRP will be harder than for air and water quality.
- Easy to get support for air and water quality frameworks.
- Land rights bigger issue.
- Licensing questions – why water volumes is so crucial.
- Need to discuss as a crucial element.
- Airsheds and air management zones need to be linked and coordinated.
- There is an opportunity for stakeholder feedback or discussion on trigger numbers.
- Further consultation is required before trigger numbers are set or included in the draft report.

Are the monitoring criteria appropriate? If not, why?

Water

- Monthly monitoring.
- More monitoring during problematic times – eg. 2x / month.
- Herbicides, pesticides, pharmaceuticals – biannual monitoring.
- How does provincial and regional monitoring fit together?
- Principal, regional and private sector collaboration and sharing of information.
- Monthly data accessible to private sector should be readily available.
    - Upstream air monitoring is needed to complement downstream monitoring.
    - What is the guideline used at each or all monitoring stations for water?

Air

- All monitoring stations in higher populated areas – should there be monitoring stations in rural areas?
- Maybe n value for monitoring stations in rural areas, but could provide baseline.
- Costs for more monitoring stations is a concern.
- What would be done with air quality numbers in rural areas?
- Focus should be in more populated areas?
- Air monitoring needs to link and coordinate regional monitoring with sub-regional and industrial sites and indicators.
- Airshed monitoring and an airshed zone is needed in southwest Alberta.
- An inventory of local or sub-regional sources of information outside of monitoring stations is required. This would be helpful for airsheds and municipalities.
- The approach to monitoring in the management framework presentation did not provide us with enough detail to really provide comment on the criteria.
- More source sampling is needed.
- More monitoring stations (air) are needed in the rural areas.
- Monitoring needs to be sufficient to support the management frameworks.
- Common data and data calibration protocols need to be set.
- If through the monitoring at the stations triggers are met, will ESRD investigate the potential source? How would organizations, municipalities and industries be involved once triggers are met?
- Concerned about extra step for municipalities, organizations or industries to monitor air and water quality.

- Continuous monitoring is needed to identify seasonal, one-off and annual occurrences.

Are the types of management actions appropriate? If not, why? Are the reporting periods appropriate? If not, why?

Water

- Not a lot of information on non-point source pollution and management response.
- Management response for things that can be tackled.
- Trend assessment for multi-years.
- Need to understand pollution sources.
- Make sure management response is possible to implement.
- Reponses aligned with indicator.
- Identify actions that can be implemented prior to trigger or limit being reached – e.g., educational opportunity on non-point source side.
- Without information on where pollution is coming from, industry is targeted – concern.
- Protection of wetland and riparian areas is critical.
- Tributaries are hard to monitor but should be monitored.
- Some information from WPACs is available.

Air

- Management response based on levels.
- Use of modelling to I.D. sources.
- Modelling based on growth – needs to occur.
- As levels increase – look at emission reduction before you get to level 4.
- Industry and government collaboration on management response.
- Industry has monitoring system to comply with allowable levels as non-compliance has major impacts.
- Industry easier to control – what about other polluters?
- How can non-industry polluters be monitored and would different triggers be developed for rural vs. non rural polluters? (e.g. individuals pay for vehicle emission tests).
- Practical monitoring for on-off or seasonal impacts.
- Incorporate education to deal with long-term impacts.
- If stringent rules are developed, enforcement is critical.

- Annual reports with timely data available.
- A guide on how management responses and triggers are determined needs to be a part of the review. This was not brought up in the presentation or forum.
- Low level/soft triggers are recommended to initiate early and preventative action.
- A synoptic survey of air and water is needed to support the management frameworks.
- How do you manage local issues?
- Local issues should be managed by involving local stakeholders and provide provincial resources as required (e.g. portable monitoring station).
- It's unclear as to if it's up to organizations, industries and municipalities to report on air and water quality or is this ESRD's responsibility?
- Annual reporting to partners should be posted online or provided to partners or notified that the report is available online.
- Seasonal/one-off occurrences should be captured in reporting but should be dealt with in a different process (e.g. emergency response, if required) than trends.

Do you understand how frameworks would be implemented? If not, what are your key questions and concerns?

- The overall cost of the management frameworks was not discussed. An overview of the costs of the management frameworks, what principles are used (i.e. polluter pays) to determine who pays and an outline of who pays for what (taxpayer or industry) is needed.
- A summary of who makes budget decisions and how they are made is also needed.
- Not clear.
- How do all plans fit together?
- Regional vs. sub-regional triggers.
    - SSRP, MF's, Calgary Regional Plan, Dow River Plan, etc.
- Linkages between municipal plans, regional plans.
- Conflicts and overlaps?
    - How are these resolved?
    - What is the process to resolve?
- Management frameworks will be part of SSRP and high level and regulation.

- Clear understanding of linkages and components of MD is needed in text and graphical formats.
  - Circular rather than linear process.
- What are role of airsheds? Role in education, monitoring, communication?
  - How do they get engaged in MD process and at which levels?
  - When triggers are reached, they should be notified.

Once the framework is implemented: How do you see it affecting your organization? What changes would your organization have to make to your operations and approvals? What information or support would your organization require?

What can ESRD do to help work with stakeholders on the implementation of the frameworks?

- The role of and relationship to sub-regional stewardship groups was discussed. The role of these groups needs to be part of the management framework discussion and should consider:
  - Focusing of mandates of stewardship groups with the management frameworks and sub-regional groups.
  - Elimination of the duplication of effort.
  - A broad objective of the groups to partner and share their sub-region together.
  - Regulated emitters should be required to join stewardship groups.
  - Stewardship groups should recommend management responses.
  - Stewardship groups should participate in the five-year evaluation of the management frameworks and review annual reports and data.
  - Resources to support stewardship groups need to be commensurate with their role.
- Government needs to commit to respond in an informative and reasoned way to stewardship groups as they make recommendations and provide advice and play like a collaborative partner.
- Government could better plan and schedule ahead as it works with stewardship groups.
- The implementation of management frameworks was not discussed in the presentation.
- Management framework implementation needs to cover the following:
  - roles, authorities and mandates
  - budgets

    - clarity on who decides
    - clear enforcement rules
    - education
- Depends on how it is communicated.
- Management responses impact individual landowners:
    - Therefore landowners need to be involved in development of management responses.
    - Reward vs. punished – recognition for land management for agriculture operations/farmer and industry.
    - Collaborative relationship is needed between government and organizations (agriculture, industry, etc.).
    - Need good communication, research and information.
- impacts will be large on small industrial operations.
    - Costs to upgrade, comply, etc.
    - Collaborative solution with industry.
- Population growth could have indirect impact on organizations (e.g. agriculture, small industry, etc.).
- Feeding the cities at expense of land.
- Municipalities are:
    - Not sure exactly how management frameworks would impact municipalities at this point due to lack of information about frameworks and responsibilities of municipalities.
    - Municipalities are very concerned with implementing of management frameworks.
    - Very large challenge and expense to implement management frameworks – need to hire experts and spend more on review of plans.
    - Municipalities of different sizes will be impacted differently – industry reaching triggers and have to implement investigations.
    - Industry may need to be more proactive.
- Help is required for the following:
    - support
    - resources – personal, guidance
    - information/communication
    - collaboration
    - educational opportunities

Is there something else that the government should be considering in the management frameworks to manage the air and water quality in the SSRP area?

- Concern about impact of regional plan:
  - Education and communication are needed.
  - Open to interpretation – need to be more clear.
  - Opportunity for ongoing consultation.
  - Local autonomy and decision–making.
- All population is in south and water is in north.
- Cumulative effects management – looking outside of areas as well as within.
- Banff National Park should be included as a part of the management frameworks.
- Workshop participants would like to see the draft management frameworks and have the opportunity to provide comment.
- Is there something else that the government should be considering in the management frameworks to manage the air and water quality in the SSRP area?
- What specifically does prioritizing future facility upgrades mean? Who is impacted and what are the implications?
- E.g. cost for water treatment plant upgrades.
- Economics of upgrades is a major concern and needs to be practically considered.
- How are innovation opportunities factored into water management (e.g. licensing) and how can it impact facilities and operation (on a local and broader scale)?

Air and Water Management Framework Workshop Summary
Calgary
November 27, 2012

Are the purpose and intent of the frameworks explained in a clear way? Does the management approach – its indicators, triggers, limit, and implementation and reporting approach work? Did we get it right? If not, why?

- Management frameworks need to be targeted to manage future growth in the region. If they are tied to the regional plans, that will happen.
- The management frameworks need to be designed so they will work across all seven of Alberta's planning regions. The design of the frameworks needs to be flexible and adaptable to address the differences in indicators and land uses of each region.
- How do the management frameworks compare to practices in other provinces?
- Coordination with federal lands and federal agencies for the setting of indicators, monitoring, management response and compliance is needed.
- More detail on the management response, roles of the parties at each stage, management tools, levels of enforcement and forms of education and communication need to be elaborated.
- Intent of frameworks clear to knowledgeable audience.
- Preface the frameworks with "why."
    - Why important
    - Why doing this
    - Set the stage
    - Nice to have, but want to see the details, particularly for triggers.
- The approach needs to be collaborative.
- Key are the details to understand how it will function.
- How will it be resourced?
- Municipality responsibility?
- Who's paying to implement and maintain?
- Needs to be regulator-led to be implemented.
- Who is going to build required infrastructure?
    - Cumulative effects – cross ministry
- Set precedent with first regional plan (LARP)
    - Common template, but place-based issues.
- Closed basin = different approach.

- Non-regulated activities – how to deal with these?
- Non-source point air and water – how to deal with these?
- Assessing cumulative effects:
  - What's the formula for go/no-go situation?
  - LARP has triggers and limits – no go/no-go formulas.
- Closed base.
- Total limits approach.
- Regional planning documents ↑ growth.
  - Need to facilitate growth with water constraints.
- Air biggest issue is non-source point vehicle emissions.
- Management techniques for air.
  - Tolls – Singapore
  - Car taxes – London
- Regulated vs. non-regulated are critical to manage both.
  - Monitoring requirements
  - Technology
- Withdrawals of water has been neglected.
- Data availability, quality.
  - Airshed groups better at sharing data.
  - Water groups do not share data as well as air groups do.

Are the air and surface water indicators appropriate? If not, why? Are there any that should be added or removed?

Water

- Other potential water indicators are:
  - Pesticides – the "Prairie Seven" should be at least monitored and considered for future inclusion into the management frameworks.
  - Dissolved oxygen.
  - Temperature.
- Big suite of indicators.
  - Are there priorities within the list (there will be budget constraints).
- ESRD does collect more variables but does not include them in framework for many reasons.
  - May need to look at continuous monitoring of dissolved oxygen.

- Bacteria and e-coli are not being tracked back to source (human, cattle, wildlife, etc.).
  - Should be part of management response
- Assess where the increase is from – look at source through DNA analysis.
- Three-level vs. four-level frameworks
  - They should be the same
- Evaluations must be trending to increase level.
  - Peaks are not a concern due to many variables.
  - Median/averages are critical.
- Tools for managing response must be flexible by area and circumstance:
  - Provide potential options.
  - i.e. response options upstream will be different then downstream.
  - Cochrane vs. Carsland.
  - Is main stream enough?
  - Good place to start.
  - Cannot do it all at once.
  - Don't have enough info on tributaries.
- Actual numbers will be set in frameworks
  - This group would like to review numbers.
  - ESRD has proposed numbers, to be released with early draft in spring before final draft.

Air

- Other potential air indicators are:
  - Odour – it is recognized that odour is measurable but not quantifiable and hard to adopt as an indicator
  - Volatile Organic Compounds – although hard to track considering 92 per cent of VOCs are naturally occurring.
- The appropriate determination of indicators may vary by sub-region
- Need to be align with national standard
- With time there will be more
  - VOC
- Very expensive.
- Tough to deal with – spotty data.

- Linked to ozone.
- Info you get is not good enough.
- No historical data.
- Heavily regulated by ERDC
- Measuring and monitoring of non-point sources is problematic
- Done regionally

Is the approach to the air and surface water triggers appropriate? If not, why?

Air

- Good – PM, ozon, nox, sox.
- Trigger – cannot focus on peaks, focus needs to be here (arrow pointing to graph).
- Use national standards.
- Don't reinvent the wheel.
- Managing ozone will be difficult.
- Triggers must look at time frame.
  - Trending.
- Trend over the year, not over hours.
  - Timeframes on annual.
  - Location of monitoring is critical.
  - Technology.
- Need more permanent air monitoring stations in South Saskatchewan Region.
- Airshed boundaries do not match Land-use Framework boundaries.

Water

- Concept of triggers is appropriate.
- Process of developing triggers.
  - Triggers developed by ESRD (Golder report, 2009) not based on consultation.
  - To get buy in, we need consultation on triggers and numbers prior to finalization.
- Would like to review an early draft prior to finalization.
- Is there an ultimate scenario?

- Trading pollution “credits”?
- How do you set standards and design requirements?
- As a management response option

Is the approach to the air and surface water limits appropriate? If not, why?

Water

- There will be absolute limits on some things.
- Based on historical data.
  - How does growth affect this?
  - How to accommodate growth with limits set from 1999?
  - Water is limited – need to look at new techniques.

Air

- Well established.
- We are good from an industry perspective.
- Don’t re-invent the wheel.
- Encourage improvements, but who pays?
  - Need sustainable funding.
- Fuel tax

Are there other issues regarding the triggers and limits? If so, what are they and how should they be addressed?

- Define the rationale and methods for setting triggers and limits in the management frameworks and outline how triggers are set.
- Define the rationale for baseline data – the approach, term and comprehensiveness of baseline data should be reviewed.
- Indicators used within the management frameworks should be reviewed as a part of the five-year evaluation.
- Emission inventories lacking, availability of data is lacking.
- Principle is emitter pays, but get data two years late and cannot collect money.
  - Single regulator could make things easier.
- Participation in airshed councils is voluntary.
  - Need proactive participation.
  - Small players are not involved and therefore not paying.

- Access to information.
  - Readily available.
  - Collaboration between all players.
- Monthly water quality sampling may not be adequate to characterize NPS pollution.
- Wet and dry variability.
- Climate adaptation.

Are the monitoring criteria appropriate? If not, why?

- The approach to monitoring in the management framework presentation did not provide us with enough detail to really provide comment on the criteria.
- More monitoring stations (air) are needed in the rural areas.
- Monitoring needs to be sufficient to support the management framework.
- Airshed monitoring and an airshed zone is needed in southwest Alberta.
- Long-term commitment to monitoring is needed: need to ensure that the appropriate resources and monitoring system is in place to implement the management frameworks.
- Sustainable funding is needed for the AZs and WPACs.
- Monthly sampling may not be adequate.
- Ultimately want to get to continuous monitoring, but don't make us do it.
- Hope that air quality will be improved on federal methodology – science

Are the types of management actions appropriate? If not, why? Are the reporting periods appropriate? If not, why?

- Management responses require the following:
  - appropriate time and resources considering the complexity of each issue.
  - flexibility in option response.
- A guide on how management responses and triggers are determined needs to be a part of the review.
- Identify and set out roles for stakeholders in the management responses;seek collaborative management responses.
- Coordinate responses across regulated and non-regulated sectors.
- Prioritize carrot over stick responses. Provide incentives for private land owners.
- Mechanisms in LARP and PM and ozone framework, capital region air quality management framework should be used.

- Multi-stakeholder approval and support.
- Resourcing accordingly.
  - Tell us what to do and give us the ability to do it.
- Innovative Solutions
  - Best management practices very expensive, so need resources.
  - i.e., manure covers, composting on site.
- Sustainable funding mechanism for airsheds (and water basin groups) – tools
  - Mandatory industry levels of government (municipal). Money and participation
  - Gasoline tax
  - Licensing tax
  - Need good data to assess fees (pay fair share).
- Trending is critical
- Roles of airsheds in frameworks is significant.
  - Facilitating cross-industry collaboration.
- Government cannot do it.
  - Leveraging community assets.
  - Actions appear well thought out.
- Buy-in from sectors is good.
- Relying on pre-existing science is good.
  - See how it works and re-evaluate
- Adaptive management techniques
- Plan, do, act
- Is there flexibility in timing?
  - i.e. Five years too much, not enough?
  - Need flexibility.
  - If have poor results at year? The re-evaluate
- Yearly analysis of data, yearly timely reporting both qualitative and quantitative.
  - Province to analyze all available data.
  - Resource accordingly.
  - Access to data.
  - If raw data is continually updated and available then individual reports can be generated.

- Government data, including regulated data, to be readily publically available.

Do you understand how frameworks would be implemented? If not, what are your key questions and concerns?

- Management frameworks need clarity before regulations are set out.
- The implementation process must be open and transparent.
- When will the frameworks come into effect?
- Agricultural industry cannot/will not pay.
  - Need to build mechanisms and use existing resources (non-regulated).
  - Policy required puts industry at competitive disadvantage (non-regulated).
- Agriculture to lead the way – get involved in process and implementation.
  - Only way to success.
- Need a fair, equitable cost-sharing formula for implementation costs.
  - Extremely difficult, but extremely important.
  - Provincial subsidies for regulated industry.
- Who is going to implement?
  - Multi-stakeholder management team consensus based on CASA model.
  - Provincial-led process.
  - Resourcing at the municipal and provincial level.
  - Airsheds as a stakeholder.
  - Define rolls to determine resource allocation.
- How is it going to get resourced?
  - Cabinet priority.
  - Regulated to collect fees to do the job.
- Emitter pays or government Alberta thru existing taxes for non-point sources.
  - Education, promotion, encouragement.
- Railways.
- Head tax per cattle.
- Risk assessments.
  - Built into evaluation process.

Once the framework is implemented: How do you see it affecting your organization? What changes would your organization have to make to your operations and approvals? What information or support would your organization require?

What can ESRD do to help work with stakeholders on the implementation of the frameworks?

- The role of and relationship to sub-regional stewardship groups was discussed. The role of these groups needs to be part of the management framework discussion and should consider:
  - A broad objective of the groups to partner and share their sub-region together.
  - Stewardship groups should recommend management responses.
  - Resources to support stewardship groups need to be commensurate with their role as they will take time and resources to be involved.
- Government and regulators need to commit to respond in an informative and reasoned way to stewardship groups as they make recommendations and provide advice and play like a collaborative partner.
- Industry (CAPP)
  - Will walk the talk – be at the table.
  - Will pay our fair share – cannot fall only on oil and gas alone.
  - Should be user pay or emitter basis.
- Airsheds
  - Will be a participant as a stakeholder.
  - Prepared to take on a larger mandate, if resources are provided.
- Education, facilitation, promotion of clean air practices and encouragement of best practices at the personal level
- Municipalities
  - Manage point sources.
  - BMP and LID to manage NPS pollutions
  - Need adequate resourcing support.
- Guidelines for management practices
- Changes to your organization
  - Unable to answer without framework.
  - Ppl resource to participate.
  - Improvements in communications

- Information and support required
  - Need reporting system to be simple and easy to understand – decrease administrative burden.
  - Need clear, concise, consistent communications and reporting from government
  - Provide knowledge of trends early
- Yearly may not be frequenty enough
  - Municipal expertise
- Collaborative approach to solutions
  - Clarification of mandate – where do we fit, what do we do? (municipal and airsheds)
- ESRD can help, but it depends on our role – cannot answer today.
  - Very difficult to say.

Is there something else that the government should be considering in the management frameworks to manage the air and water quality in the SSRP area?

- Workshop participants would like to see the draft management frameworks and have the opportunity to provide comment.
- Creating Basin Water Authority
  - Specialized to this region.
  - Could speak to quality, operations, allocations, etc.
- More emphasis on collaborative approach.
- Managing and adapting this for growth.
- Process has to remain fluid.
- Political will to follow though.

Air and Water Management Framework Workshop Summary
Lethbridge
December 5, 2012

Are the purpose and intent of the frameworks explained in a clear way?

- Concept works – it's good.
- Issue is management of cumulative effects.
- Those who are engaged over the last few years get it.
  - We are now in a new era of environmental thinking.
  - Not just measuring pollution coming out of pipe.
- Collaborative process.
- Phosphorus management group.
- Tremendous info. Gaps.
- Water quality also needs to understand landscape – to be able to manage.
- Process on establishing triggers and managing actions are essential.
  - Cumulative management process.
- Need more clarification regarding management actions.
- Using Canadian Drinking Water Standards without limits is a concern.
- 50th percentile is a concern.
- Lack of bringing this all together and bring it back into SSRP.
- Too linear – needs to be integrated into the whole, i.e.,water allocation, etc.
  - If not aware of how it integrates into the whole, then our conversation today will be limited.
- Need to connect the dots.
- No integration between RAC consultation and these sessions.
  - Fear that it will not occur later either.
  - Needs to be a consultation that links the consultation activities.
- Devil is in the details.
  - At a conceptual level it makes sense.
  - Need to see more info and details.
- Like the communications element.
  - Good and bad news
- Yes the frameworks are clear, how to get there is not clear.
- Indicators that we don't have data for are still important.

- Biodiversity, for one – can't do cumulative impacts with out.
- Cottonwood, insects
- Need to start somewhere
- In conjunction with other indicators – provide better data to identify limits.
- SUGGESTION: need biological indicator.

- Frequency to identify new limits, indicators.
  - More detail written into framework.
  - Help robust data set over long term
- No detailed info on cumulative effects
  - What is it? How is it addressed?
  - How does it fit into the framework
  - Loading vs. point source in relation to cumulative effects.
- Air – does it cover construction sites?
  - Particulate matter impact – stripping and grading
- Drift from pesticide, non-point source.
- It still does impact/contribute to cumulative effect.
- *Impact for water – mystery.
- Glyphosate (Round-Up).

Does the management approach – its indicators, triggers, limits, and implementation and reporting approach work? Did we get it right? If not, why?

- Should be an interactive process that is adaptive to new realities as they arise.
- Emerging issues need to be accounted for.
- Must be a living document that can/will morph and change.
- Proactive approach is necessary to prevent a disaster.
- This is good.
- Constantly reacting – need to get away from this.
- Reporting – communication – where will it go?
  - System doesn't tell people about risk – industry in particular (re drinking water).
  - Clear and timely communication so it might make a difference.
  - Who are you communicating to? How? When?
  - Need to reach the people who can make the difference.

- Manage short term vs. long term expectations.
  - Benefits may take years
  - Tough to get people to buy in to long-term strategy.
- Have historical date and sources.
- General approach is fine, but how it is implemented is not clear.
- Regulated vs. voluntary; costs.
- Need a balance.
- Education – on triggers, indicators – how is your industry/group going to do?
- Level of government: federal, provincial, municipal.
- Some preference at municipal level but sometimes it is too close.
- Need secretariat.
- May not have local expertise.
- Need a process to gain expertise, rely on groups, NPOs, that have it.
  - For example, subdivision, development approval circulation (circulate to NPOs that aren't currently included).
- Reporting
  - Flexibility to make changes on the way outside of the one-year reporting, five-year status update and 10-year review.
  - Amendment process – needs to exist, be clear in order to address issues that come up before 10-year review and five-year status update.
- Two streams regulatory purpose of management framework and purpose of management framework to do the right thing.
- Different levels of management framework eg. Agriculture and public – triggers/ limits need to be the same for all groups
  - Purpose – health – public may not understand.
  - Needs to be made more clear.
- Clarity on what current triggers are. Do these exist or will new ones be developed?
- Stakeholders understand water quality work but not all do.
- Are indicators going to identify where and "who" sources are?
- Not clear about triggers may be changing.
- Reports/fact sheets simple for the public.
- Indicators, triggers, limits, implementation, reporting work? Did we get it right? If not, why?

- How do stakeholder groups bring data or new concepts/ideas to the attention of managers?
- Living document with review periods works.
- Irrigation districts to share reports and data provided to Alberta Agriculture to ESRD.
- Funding is needed to implement management frameworks, management responses, etc.

Are the air and surface water indicators appropriate? If not, why? Are there any that should be added or removed?

- Question for clarification – why aren't carbon monoxide, methane gas and carbon dioxide on the list anymore? Not suggesting they should be added.
- Water turbidity – may not be appropriate as an indicator.
    - Turbidity is important – need to have it but there is a lot of variability of turbidity.
    - Turbidity control measure for development is needed.
- Why is monitoring done only over 10-year period?
- Monthly monitoring can cause results to be skewed.
- Can't have triggers that cause management actions to be mandated by natural events.
- Excessive phosphorus and nitrogen should be monitored.
- Pharmaceuticals should be an indicator (is this just a city issue?).
- Trigger – number of antibiotic resistant organisms – water or airborne.
- Heavy metals (e.g. arsenic, mercury, selenium).
- Pesticides – things that impact health are most important to be monitored.

Air

- Good with indicators.
- Federal system is being implemented – this is consistent with provincial activities.
- Monitoring is good.
- Don't re-invent the wheel between regional plans.
    - Do use place-based triggers/limits.
    - Keep indicators consistent.

- Why not SOX and NOX
  - SO_2 concentrations are not high enough.
  - Long-term they will be included.
- Alberta has most stringent policies in country.
  - Federal government is using Alberta to determine theirs.
- Based on protection of health.
- How do you manage car pollution?
  - i.e., Non-point sources.
  - Easier to look at regulated industry.
- How do you balance for growth?
- “Regulatory creep”
  - Ammonia, SO_2, dust, odour.
  - Just keeps coming and next time around we’ll be discussing ammonia.
- Need an indicator, threshold for regulation.
  - Will regulate industry out of operation.
- Industry has to monitor.

Water

- EPT – measuring aquatic invertebrate numbers – Ian Martin
- Endocrine (hormone) data – why is it not here? Long term we need it.
- Data management system.
  - Is there a data management system being developed?
  - Yes – goal is to develop.
- E-coli is an indicator
  - Multiple sources of e-coli
- Total fecal counts don’t work due to naturally occurring.
- Need to look at type – pathogenic ones need to be analyzed.
  - Problems with public perception.
- Needs to have communication that doesn’t create false panic or a lack of concern.
  - Look at all indicators when managing.
- Salt levels.

- Heavy metals.
  - Mercury
  - Arsenic
  - Lots from fires
- We are good with triggers.
- Trigger levels/numbers are needed to comment on.
- How to handle?
  - point vs. non-point
  - regulated vs. non-regulated
- Management actions need to be developed with triggers.

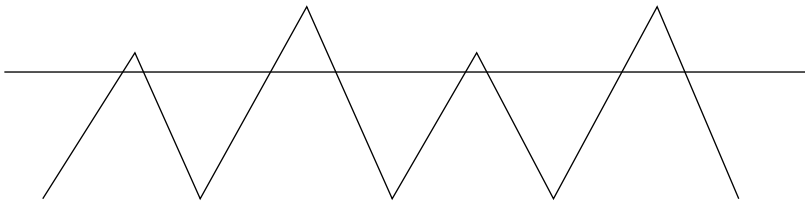
Is the approach to the air and surface water triggers appropriate? If not, why?

- Don't know if median is appropriate.
- Maybe it should be 75th percentile.
- Medium, by its nature, will happen all (half) the time.
- Exceedance of triggers will happen during events (based on median).
- Stations – multi-grab samples vs. continuous sampling – missing – low risk going to capture event.
- Automated stations – but – higher cost, risk disappear.
- Should be monitored more frequently than once a month.
- Not clear about triggers if you've never triggered one.
- If a peak event occurs, triggers shouldn't be the same as constantly reaching trigger.
- What is emergency response? Should be included in plan as a separate item to be implemented based on events.
- Sixty points with monthly monitoring for water is not a lot of data.
- Need to look at serious judgment on connecting hydrological and monitoring.
- Source needs to be identified to truly understand what is contributing to contamination before verified actions are taken.
- Are there more indicators that have to be monitored in certain areas – share data with Alberta Health (putting data into useful database (academe logical sense) [air or water issue] and other stakeholders to give

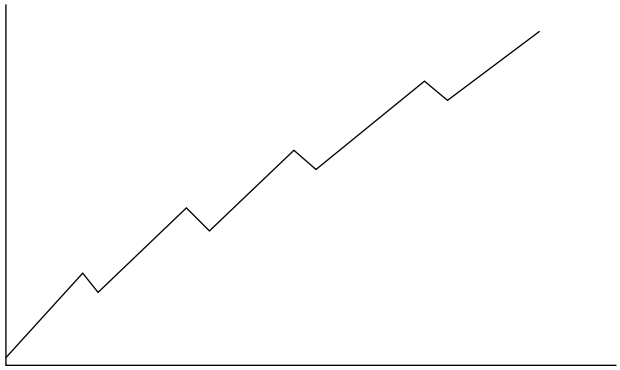
Water

- If the median is the trigger, then half the time you'll be in trouble.
  - More about trends, less about value.
  - Investigate trends not point values.
- Trends are more serious – but need to look at both.
- If continuous blips then you need to address it.
- Social aspect
  - Do we continually address the trigger points?
  - Fear of regulatory creep.
- Things change – we need to adapt.
  - Five years from now it will be a different conversation.
- Maybe 50th percentile is a place to start – have to start somewhere.
- Milk River plan – look into
  - Possible monitoring options:
  - > 25-75 = normal monitor
  - > 75-90 = concern
  - > 90th = threshold
  - Won't scare people with this process

Trigger



Trend



- Do the stats have significance?
- Importance of historical data for triggers.
- Trigger relative to limit.
  - Need this info.
  - Triggers close to limit means no room to address it before limit.
  - Need a risk model.
- Like that this is a simple system.
  - In flagging actions.
  - Is there enough here to address with management?
- Trigger doesn't tell you what to do.
  - How do management actions relate to triggers?

Air

- We are good with triggers.
- Trigger levels/numbers are needed to comment on.
- How to handle:
  - point vs. non-point.
  - regulated vs. non-regulated.
- Management actions need to be developed with triggers.

Is the approach to the air and surface water limits appropriate? If not, why?

- CC&B limited – federal
  - Not specific to the area.
  - Number for across Canada, not specific to region – generic.
- Long-term goal – establish local, provincial limits.

Water

- The ones we have set by science are good (until we have better science).
- Phosphorus needs to be looked at.
  - There is a natural cumulative effect downstream, so how do we deal with upstream polluters?
- Triggers need to adjust for upstream-downstream issues.
  - i.e. Calgary compromising all downstream issues.

- Limits will be consistent across region.
- Triggers cannot exceed limits at the start.
- Is it a cumulative monitoring across limits?
- What if we just maintain current water quality? Forget increases through triggers and limits.
    - Free up resources.
- Need limits for those that don't have them, i.e., drinking water limits.
    - Manage around triggers if no limits.
    - Need to add limit values if they are developed.
- If have multiple values, then most conservative trumps.
- Monthly testing is not enough.

Air

- Triggers and limits need to be flexible to address improvements in monitoring and measuring technology.
- Regulators and industry need to be on the same page.
- Regulatory creep.
- Technology increases, then past approvals should be required to change.
- Therefore, limits need to be revised to reflect new numbers (increases).
- Policy has to be based on best science available.
- Problem with considering odour – not sure how it's monitored.
    - Needs to be more clear about odour – intentional and non-intentional impacts – subjective and some health and non-health impacts.
    - Percentage of people impacted by odour as a threshold?
- Risk is where triggers and limits are set.
- What about rural air monitoring to measure (monitor where people are) limits? How do you site a monitoring location?
    - Cost of implementing more monitoring is a big concern.
- Monitor limits by event if needed by portable monitoring system if required.
- Why is white area not an airshed zone? It should be.
- Average of monitoring before trigger or limit is reached.

Are there other issues regarding the triggers and limits? If so, what are they and how should they be addressed?

- Monthly testing is not enough.
  - More is better.
  - Should be sampled daily.
- Regulatory creep – we can regulate everything, but it won't work.
- Need to link triggers and limits to the bigger picture.
  - Must be integrated.
- Society side must be addressed.
- Why are limits different beginning with Bow and others? (est. through WPAC).
  - Limits for Oldman and Milk (those outside Bow) are also different.
  - Supposed to be universal limits.

Monitoring

Are the monitoring criteria appropriate? If not, why?

- Economic
  - Polluter pays
  - Not just industry/regulated
  - Non-regulated industry/people – who pays? How?
  - Fuel tax
  - Pay for everything
  - Non-regulated industry needs to pay
  - Everyone pollutes, therefore, everyone pays
- Government needs to figure this out.
  - Fuel tax, levy, etc.
  - Industry will pay fair share – needs to be equal.
  - People have responsibility and need to be held accountable.
- Need to get people to care and be affected by their pollution.
- General revenue taxes don't seem to work because people don't see the connection.
- What is proposed is a good start. Doesn't mean we shouldn't strive for better.
- Adapt with technology.
- More continuous monitoring situations as technology improves.

- Should be more than nine water stations.
  - Focus on achieving Environment Canada and Prairie Provinces water boards
  - We don't have limit criteria for Prairie provinces stations, we should to compare – would have been nice to see different and historical data.

Air

- only five stations.
  - Need to invest in more stations.
- Palliser airshed – funded by membership fees.
- Can't make many comments on monitoring criteria because not a lot of detail provided.
- Don't know enough about this to comment.
- Use datasets from multiple sources to capture data from more areas.

Water

- Water – need to look more at upstream monitoring.
- Need more monitoring stations on the Milk River.
- Ten years – not having 10-year timeframe of history is not the end of the world.
  - Right location matters more than a 10-year history.
  - Concern with the 10-year approach is a budgeting excuse to just use what is existing.
- Headwater and tributary issues are critical.
- Development areas must be measured.
- Is the information valid if we don't have representative stations in the right locations?
- Need to monitor cause and effect!
  - Causes often happen off the mainstreams and this isn't addressed.
- Need more frequent data collection.
- All this leads back to what are we going to do about it?
- What are we monitoring for? Are the points adequate for that?
  - Integration beginning with monitoring for a location and frequency.
- Costs – affordability
  - Use strategic monitoring continuous systems and then target extra monitoring when triggers hit.

- Need to use data from community groups, etc.
  - Need to be confident in this data.
- Need local community groups monitoring to support trend analysis
  - Use existing groups – cost effective.
- Indicators
  - Need to monitor aquatic life – not just chemical monitoring.
  - Biology parameter.
  - Need indicators, triggers and limits related to biological life.
- Monthly monitoring works when you have multiple indicators.
- Phased approach re: new indicators vs. regulatory creep.
- Sampling techniques – are they appropriate?
- Strong support for increased monitoring.
- Caution monitoring for the sake of monitoring.
  - need monitoring based on science.
- Monitoring should be expanded to lakes (ridge reservoir, chin reservoir, Stafford reservoir).
- Not monitoring rivers coming into main stem – need to add additional sites to ID issues outside area that impact main stems.
  - Still worry about Lethbridge water site location – doesn't catch all issues.
  - Bow monitoring site location OK.
- Good to monitor tributaries but where do you stop limited resources.
- Monitoring sites are strategically placed.
- Monthly monitoring for water not enough – more frequent monitoring needed.
- As long as overall water average is good/safe – okay.
- Small contamination events dealt was required on one-off basis. Mostly doesn't impact large rivers.

Are the types of management actions appropriate? If not, why?

- Collaborative effort establish early before problems.
- Modeling of scenarios with possible actions.
  - Needs to occur before it's needed.
- Process needs to be laid out now to prevent crisis management
- Be proactive.

- Consultations must be integrated – beyond just this group.
  - Bigger than this table.
- Collaborative with all stakeholders
  - NGUs
  - Municipalities
  - Agriculture
  - Industry
- Mostly doesn't impact larger rivers.
- Point Source – regulatory sticks that exist are good and easy to deal with.
- Non-point source is hard to deal with.
- Need to clearly understand problem before we can start looking at answers.
- Motherhood statements do not do enough.
  - The devil is in the details.
  - need this in the framework.
- Non-point source
  - One-size does not fit all.
- Management actions need to be in place based on:
  - Don't reinvent the wheel.
  - Monitoring and modeling are linked.
  - Land-use changes need to be a part of the modeling.
  - What is going on the land is critical to the frameworks.
  - Coordination and leadership on all these integrated items needs to occur.
  - Government needs to take the coordinating role.
  - Or a multi-stakeholder coordinating body.
  - Biological needs to be a framework and integrated with air and water frameworks.
  - Collaborative management actions
- . Regulation is a backdrop/backstop.
  - Don't create new groups, when existing group can do it (i.e., WPACs)
  - Frameworks need to connect to other things to be effective.
  - We do not know what needs to happen.
- Linear process vs. holistic process.
- Link to the big picture.

- Actions:
  - Voluntary
  - Regulatory
  - Combination of above
  - Watershed groups, councils
  - Overlap with WPAC.
  - Comes down to money, funding, impact on taxpayers.
  - Municipal fears – Provincial mandates and impact on municipality
- Education – cheap
  - Should be first point of contact (low-hanging fruit).
  - Adapt with technology.
  - Start, stay the course.
  - Familiarize with issues.
  - Behavioural change.
  - Media, seminars, newspapers, articles, get the word out.
  - Get the people out – food.
  - Goes back to voluntary – getting buy-in, changing behavior.
- Water Treatment
  - Small changes in regulations, can have big impacts on costs, bills.
  - Therefore, small incremental changes.
  - Therefore, longer compliance periods.
  - Changes you can afford vs those that are forced.
- Development
  - Through permitting.
  - Knowing what is occurring (stripping)
  - Subdivision circulations.
- Extending reach – to NGOs to review and comment.
  - Drainage – control/criteria.
  - Municipal level
  - Example – dust from truck traffic, difficult to enforce when you don't have a monitoring station.
  - Alternative is to promote best practices.
  - Require complying with them as part of permit.
  - Education/funding. Educate why a practice is a good idea.

- Oil industry
  - Hit and run.
  - Seismic exploration.
  - Effect on environment.
  - Covered under enhanced approval process (notification) – how will it interface with SSRP?
- Development/production
  - More notice
  - Groundwater
  - No intent to take it on, but it is more important.
  - Interface beginning with surface and ground water [information void].
- Tiered approach dependent on type and level of contamination.
- High level and general actions OK.
- All government ministries to be added to management frameworks to make it more clear of groups involved.
- Management action for non-point source is more difficult to implement.
- Incentives vs. penalties is a better approach.
- Education and awareness of potential contaminants and issues.
  - Cautious of management actions – how and where contamination is coming from first.
- Don't allow contaminated water to be pumped back into water system.
  - Interesting to know more water quality history beyond 10 years.
- No instant solution to non-point source vs. point source that can add something to how they treat their water.
  - Hard to separate point- and non-point sources.
- Management actions for feedlot contamination to water – alternative siting of new feedlots or asking feedlots to relocate; ensure they are following guidelines for containing contaminants on site before river.
- Temporary increases in water flows to reduce concentrations.
- Farms are getting bigger and better – maybe less regulation is required?
- What is natural background of water bodies?
  - Point source easy to ID impacts.

- Separate non-point source from natural background.
  - What is natural cause vs. non-point source?
  - Hard to separate background from non-point source because of existing development.

Are the reporting periods appropriate? If not, why?

- Yearly is OK.
- Data has to be released in a timely fashion to be relevant.
  - Data access is more important than yearly reporting.
- Reporting must include quantitative and qualitative; all data and explanations; need to know why and how.
- Release immediately with caveat about unverified data.
- Instant reporting of anything critical
  - Compliance is different than reporting.
- Raw data should be online all the time.
- Data warehouse and management system is critical.
- Who does reporting go to?
  - Need to reach the right people.
  - Message to scientific stakeholders (target audience).
  - And message to general public (target audience).
- Water for Life – look at recommendations from them re: communication.
- Consistent with other practices.
- What is the lag between gathering data, validating data and reporting.
  - Has been two-three years, needs to be reduced.
- Need online, real-time reporting of information (water).
- Need report on actions – not just what action occurred.
- Establish/report on what a significant action/trigger is.
- Annual reports OK.
- Summary or highlights of year – OK.

Do you understand how frameworks would be implemented? If not, what are your key questions and concerns?

- Not understanding because we haven't discussed implementation.
- Who gets notified if trigger limits are hit?

- Stakeholders need to be responsible to be involved.
- Process is critical to ensure the right stakeholders are involved.
- Targeted stakeholder notification:
  - Early enough to notify well before triggers are met.
  - Collaborative communication should ensure stakeholders know well before triggers are met.
  - Continuous improvement must occur early.
- Because it is quasi-regulatory, it is ambiguous in how it is going to be implemented.
- How will it be affected year to year, because it is voluntary and political environment.
- What piece of legislation will it fall under – will others (Acts) be amended?
- "Some binding" legislation that lies with Minister – what does that mean?
- Pretty ambiguous at this point.
  - Fear as to certainty, compliance, consistency in implementation.
- Implement early, clear communication.
- Proactive media approach – know our story early.
- Create a marketplace for environmental good and services (ALSA).
  - Forget regulations.
  - Marketplace will force you to step up.
  - What is the tradable commodity? Big problem with this market as you need a buyer.
- Air and water principles need to work for biodiversity.
  - We have a biodiversity market.
  - What can you do for the environment.
  - Sort of like the Australian marketplace.
- Make sure it's clear in document.

Once the framework is implemented: How do you see it affecting your organization? What changes would your organization have to make to your operations and approvals? What information or support would your organization require? What can ESRD do to help work with stakeholders on the implementation of the frameworks?

- Depends on how it is implemented – CAPP - Canadian Association of Petroleum Producers.

- Irrigation districts and municipalities – no direct control on users, just influence.
- Livestock industry is changing.
- Frameworks will make this a serious issue for stakeholders – credibility and value.
- Decrease regulatory costs – needs to be zero sum value.
    - Regulate all you want, but don't cost us a penny.
    - Cumulative effect of regulations is too high.
    - Makes economic business very difficult (social value of product theoretically increases).
    - WPACs – does help support us.
    - Federal – implementation of this doesn't affect federal approvals.
- What should ESRD do:
    - Communicate
    - Are we implementing it??? – Who is doing the implementing?
    - For successful implementation, all roles and responsibilities of all stakeholders need to be clear and agreed upon.
    - Stakeholders need to help develop framework to support implementation.
    - ESRD needs to take the lead – this is their baby.
    - Listen to stakeholders – share notes.
    - Establish a marketplace for environmental goods and services.
    - ALSA (Section 23) require it – do it.
- ESRD needs to do this.
    - Do biodiversity framework with same principles at the same time.
    - Where will it be regulated (which Act?)
    - Who is leading the charge? Regulation vs. education and awareness (to get buy-in).
    - Not direct effect on organization, but better management practices.
    - How do we achieve the outcomes if we are all responsible? How do we do that?
    - Change to key messages, collaborate.
    - Have to tie all activities, goals together.
    - Framework needs to fit into other frameworks.
    - How is the government going to deal with, acknowledge, accept all the sub-regional plans that are designed to address local issues.

- Alberta Irrigation Projects Association (AIPA) – can adapt to what the frameworks will establish.
- Mystery of legislation
  - Who will we be working with?
- MONEY
- Need to decide collectively what are going to be the approaches to achieve the goals of the framework
  - Who will take on what?
  - Need to establish what we are going to do now to prevent reaching triggers/ limits.
- Need more information, discussion on implementation once frameworks are established.
- What's in it for me?
- Funding for implementation.
- Benefit for user – reason to make investment and change to behaviour.
- Help with messaging.
- Cost sharing (in-kind).
- Communicate upcoming concerns/issues (outcomes of reporting) and successes.
- Compensation, mill rate – municipal level.
- Evaluation of value – report back on value of money – actions, results.
- Competing pressures
  - Decrease pesticides, herbicides is good for water, but lower yield.
- Municipal perspective
  - Decision-makers confused by hierarchy of planning framework.
  - GOA needs to be very clear as to what needs to be followed and what rules and how it all works together.
- Need to work together
  - Good referee and support.
- Takes time to change minds.
- Riparian management – quality and quantity.
  - Improving riparian environment increases significant ability to store water to get back into system.
- Needs to be part of monitoring program/system.
- Proactive.

- Less impact from management framework versus risk with the limits, targets triggers.
    - Allow for fluctuations throughout timeframe.
    - Don't set limits/triggers too low.
- As long as rules aren't changed radically it's OK.
- As long as triggers/limits keep air/water safe – it's OK.
- Farmers/producers will continue to follow regulations to not reach triggers/limits.
- Will stakeholders be able to review/comment on triggers/limit numbers?
- Limits should be reviewed every six years to make sure it is correct or if it needs to be changed.
- Collaborative effort to provide education/awareness to be proactive.
- Doesn't affect water approvals/or operations for irrigation districts because only dealing with quantity not quality.
- May affect municipalities approval or operations.
- Monthly report of water quality – regular status report (small update/document).
- How are emergency situations responded to – make clear in management frameworks.
- Fact sheets/reports/apps (multimedia) to convey into/awareness/education to stakeholders.

Is there something else that the government should be considering in the management frameworks to manage the air and water quality in the SSRP area?

- Ask us in a year?
- Continuous improvement in the program without regulatory creep.
- Complete model to do scenario building and test mitigation techniques.
- One year from now question – can we identify causes now?
- Event monitoring is needed.
    - They are sporadic, but contribute to systems (long term).
    - Cause and effect of major events need to be monitored.
    - Over and above regular monitoring.
    - Helps for planning in the future.
- Track events over time.
- Monitoring events/projects will provide knowledge base for future repeat events.
- Snow melt = super bowl (both are events)

- Lead and champion.
- Detail sector involvement in implementation of framework.
- Acknowledge WPAC work and align, build into what has already been done.
- Give us MONEY and resources.
- Grant programming.
- Cost recovery, incentives.
- Tax structure.
- Cost share.
- IR – money received goes to all sorts of water quality activities.
    - Tie into framework.
- Share information.
- Partnership – monitoring goes on, some fear in reporting.
- Impact on licensing.
- More coordination of efforts.
- Needs to be formalized.
- SRD needs to communicate and bring everyone together.
- AIPA – doing a lot of good stuff already – needs to be shared.
- Some WPAC do share monitoring information.
    - Fear of ramifications.
- Work together – build comfort – towards similar goals.
- ESRD come to the table as a partner as opposed to a regulator.
- Education, sector, outreach support.
- Inventory of actions towards water quality.
    - WPAC is doing this.
- Sharing successes – positive impact – what is working.
- Sharing data compatibility.
- Stimulate interest in sharing information.
- Create excitement
    - Make it relevant – not necessarily SRD's role, but it is a challenge
    - Collective role – to bring issues up in daily conversations
    - Implementation play – published report?
    - Linked – coordination of groups, efforts, activities.

- Air only has three sites, while there are nine for water. More air sites needed.
- Look at rural air monitoring sites.
- Landscape should be considered before siting new air monitoring sites.