Cumulative Effects Management & South Saskatchewan Water Quality Management Framework

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Overview

- Overview of Cumulative Effects Management Approach
- Regional Planning
  - Environmental Management Frameworks
  - Examples from Lower Athabasca Regional Plan
- South Saskatchewan Regional Plan
  - Draft Surface Water Quality Framework

Cumulative Effects Management Approach

Cumulative Effects

- *'The combined effects of past, present, and reasonably foreseeable land-use activities, over time, on the environment'*
- Management of cumulative effects is a recognition of the finite capacity of Alberta's airsheds, watersheds, and landscapes
- The focus is on maintaining overall capacity of the environment in our region
  - The overall regional effect vs. the effect of a specific land development only

Cumulative Effects Approach

- **Outcomes-based** – what do we want our region or place in the region to look like in the future from an environmental, economic and social perspective?
- **Place-based –** LUF regions, watersheds, airsheds
- **Performance-based** – are we getting what we want? Monitor for results, adjust if off track
- **Collaborative –** share our experiences to date, work together on solutions
  - An absolute necessity with ‘outcomes’ approach, especially if outcomes not being met

Regional Plans and Cumulative Effects

Regional Plans

- Key strategy under the Land-use Framework policy released in 2008, and supported by the *Alberta Land Stewardship Act, 2010*
- Define economic, environmental, and social outcomes for a region in relation to land-use
- Align provincial policies related to land/ environment at a regional level
  - involves specific tradeoffs – clean air & energy strategy
- Define the cumulative effects management approach for the region – managing impacts to air, land, water, and biodiversity

Environmental Management Frameworks

Indicators, Triggers and Limits

- Indicators are chosen
- Triggers and limits (outcomes) are set

Monitoring and Modeling

- Monitor and assess actual conditions relative to triggers and limits

Management Response and Reporting

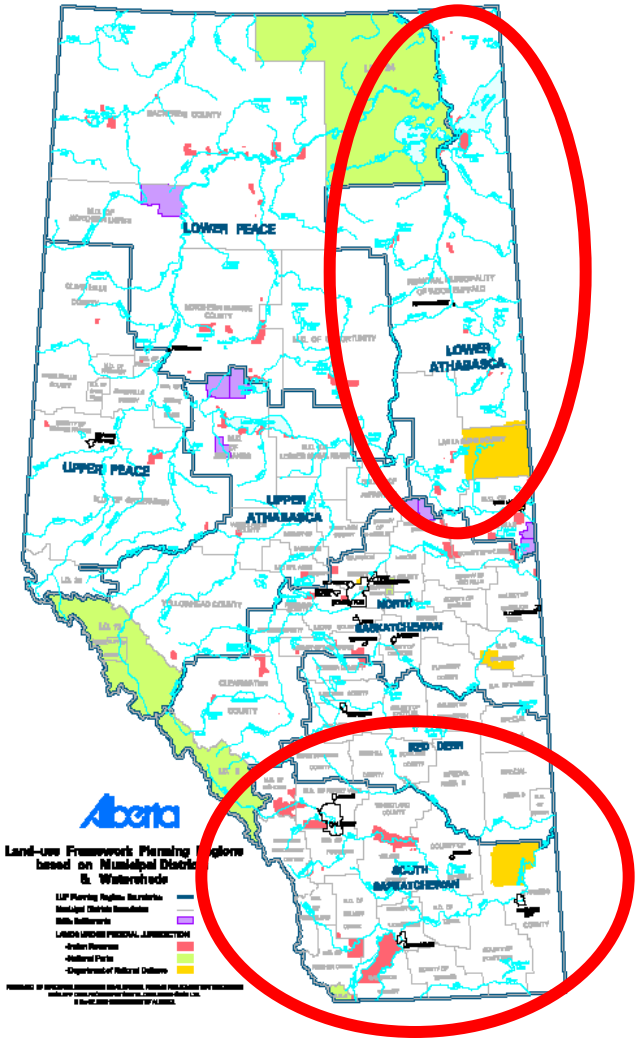
- Exceeding triggers or limits requires a response
- Results reported

Example – Lower Athabasca Air Framework – NO_2 Triggers and Limits

- Progressive action, based on level of measured air quality

Level	Description	Potential Actions
Level 4	Ambient air quality exceeding air quality limits	Emission reduction plan, amend approval, enforcement
Limit = 45 ug/m^3 (24 ppb)		
Level 3	Ambient air quality below but approaching the air quality limits	New operating conditions on facilities to maintain air quality below limits
Trigger = 30 ug/m^3 (16 ppb)		
Level 2	Ambient air quality below air quality limits	Enhanced monitoring
Trigger = 15 ug/m^3 (8 ppb)		
Level 1	Ambient air quality well below air quality limits	Standard monitoring

Lower Athabasca and South Saskatchewan Regions



- Lower Athabasca Regional Plan approved Aug 22, 2012
- Contains 3 environmental management frameworks
  - Water Quality
  - Air Quality – NOx,SOx
  - Groundwater
- South Sask Plan ToR
  - Water Quality
  - Air Quality
  - Groundwater
- SSRP Regional Advisory Committee
  - Support for frameworks in region

In Summary…

- Cumulative effects management approach in regional plans is through establishing environmental management frameworks for air, water, and biodiversity
- New approach that will be adjusted as we learn together
  - Specific to issues of concern in the region
- Cumulative effects management has and will continue to occur at many scales, not just through regional planning
  - Water management plans
  - Grazing disposition stewardship
  - Mine site development & reclamation plans

SSRP
Draft Surface Water Quality Management Framework

Starting Points

SSRP Terms of Reference – pg 24

- "Alberta Environment … developing a comprehensive water quality management framework for all of the mainstem rivers in the region."
  - mainstem rivers = Bow, Milk, Oldman and South Sask.
- To be developed with input of regional stakeholders including WPAC's.
- To include current state of knowledge of water quality in the mainstem rivers and identify appropriate triggers and thresholds.

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Surface Water Quality – Triggers & Limits

Selection of Water Quality Indicators

Of concern for specific water uses
Can be influenced by management actions
Exhibit a downstream increase
Have long-term data available

Parameters being proposed are:

- **Nutrients: Phosphorus and forms of Nitrogen**
- **Major Ions and Salts (Conductivity, Total Dissolved Solids, Chloride)**
- **Turbidity or TSS**
- **Total Organic Carbon**
- **Sulphate**
- **Bacteria – Fecal Coliforms and E. coli**

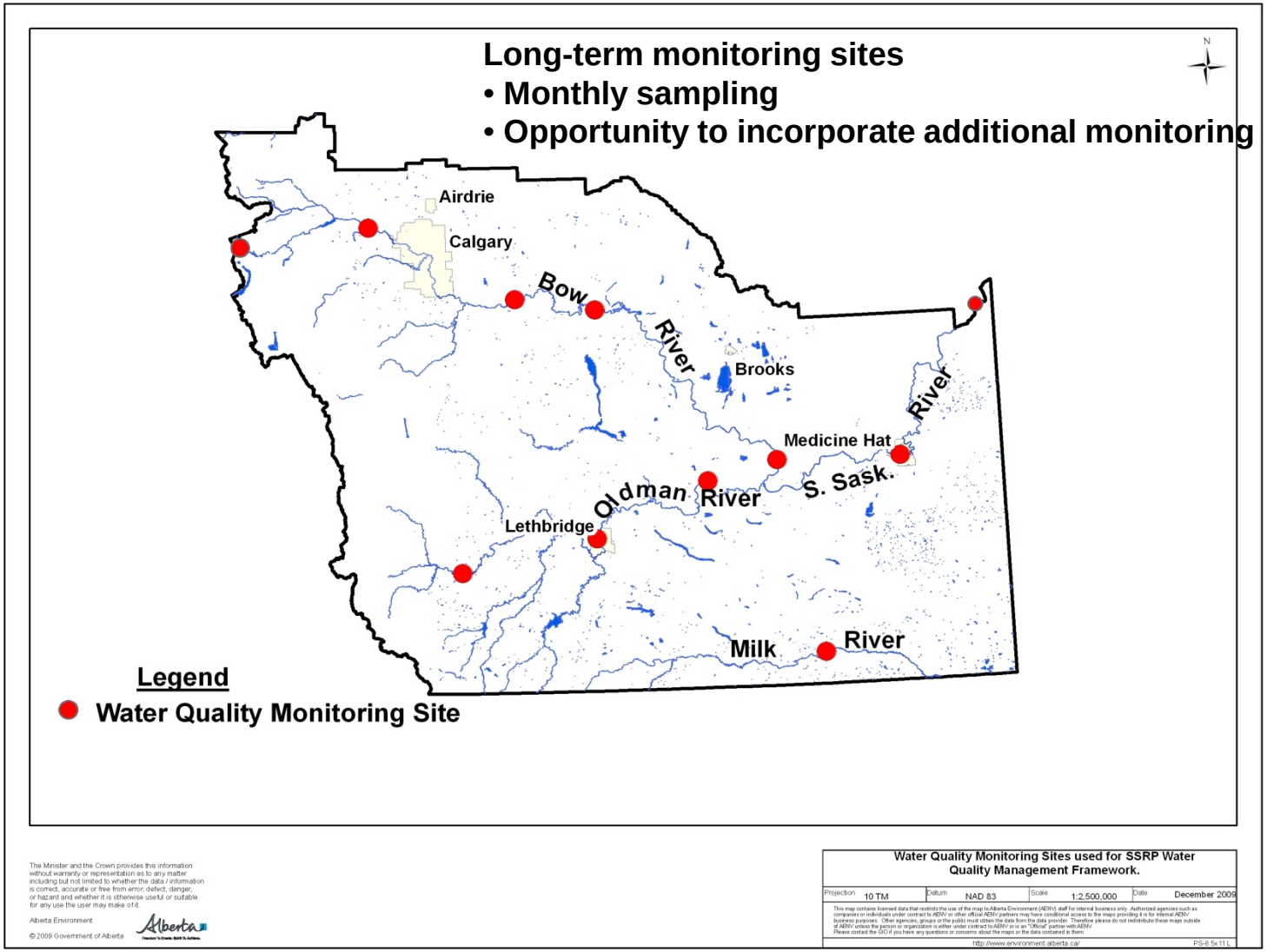
Establish Historical Conditions

Establish Water Quality Triggers	Establish Water Quality Limits
The point at which a statistically significant change in water quality can be detected.	**Protection of designated water uses Based on Alberta, CCME or US EPA guidelines**

Surface Water Quality – Levels

Level	Description	Management Intent
Level 3	Exceedance of water quality limits.	Mandatory management action. Evaluation and implementation of management options.
Limit		
Level 2	Exceedance of water quality triggers.	Management response and determination of need for management action Investigation of cause and effects and evaluation and implementation of management options, if required.
Trigger		
Level 1	Median and peak water quality conditions at or better than historic water quality conditions.	Ongoing implementation of existing management approaches All approval holders operate normally under approval conditions and all existing water, wastewater and aquatic ecosystem policies apply.

Monitoring Locations



Water Quality Monitoring Sites used for SSRP Water Quality Management Framework.

Projection	Datum	Scale	Date
10 TM	NAD 83	1:2,500,000	December 2009

http://www.environment.alberta.ca/ PS-8.5x11.L

Evaluation and Reporting

- Described in the framework and directed by the Regional Plan
  - Annual reporting
    - Reporting of water quality status regarding any exceedances of triggers and/or limits
    - Significant management actions or planning
  - Additional Trend Assessment Evaluation
    - Multiple years needed to assess whether trends occurring relative to triggers/limits
    - Propose every 5 years

Management Frameworks and Regional Planning Regulation

For Lower Athabasca Regional Plan the regulatory part of plan refers to each management framework and specifies:

- Requirement to establish and maintain programs
  - monitor, evaluate and report ambient environmental quality
  - evaluate and report on the effectiveness of the framework in meeting objectives outlined in the regional plan
- Adopts limits and triggers
  - legal effect of limits in decision making
- Requirement for a management response when a trigger or limit has been exceeded
  - report on details and effect of management response

** Must remain adaptive and enable various delivery tools*

SSRP Water Quality Management Framework Development Process

Led by Alberta Environment

- Facilitated Stakeholder Engagement sessions
  - November and early December 2012
  - 4 planned for Calgary (2), Lethbridge and Medicine Hat
- Completed draft Water Quality Management Framework document
  - Completed by spring 2013

Consultations on Draft Regional Plan including Framework

Final Regional Plan including Framework

Questions?