

Overview of an Environmental Risk Screening Tool for Confined Feeding Operations



NRCB | Natural Resources
Conservation Board

Walter Ceroici
Water Technologies Symposium 2009

- NRCB is under the jurisdiction of the Minister of Sustainable Resource Development
- Responsible for administering two Acts:
 - ***Natural Resources Conservation Board Act***
 - Ensure projects affecting Alberta’s natural resources are in the “public interest”
 - Decisions attempt to balance economic prosperity, environmental protection and social acceptability
 - ***Agricultural Operation Practices Act***
 - Regulation of confined feeding operations within Alberta since January 1, 2002 (responsibility transferred from municipalities)

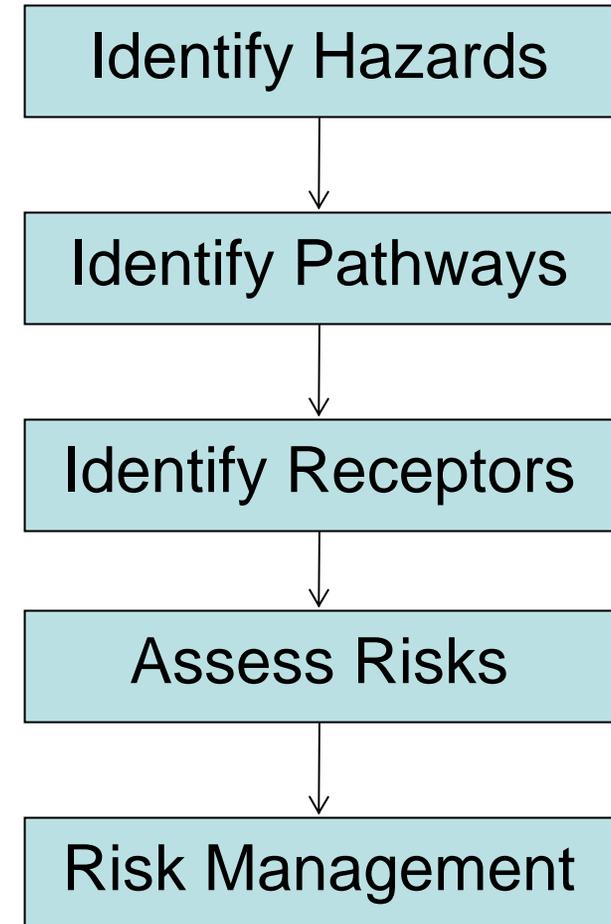
Confined Feeding Operation (CFO)

- Fenced or enclosed areas where livestock are confined for purpose of growing, finishing or breeding by means other than grazing
- Livestock includes cattle, horses, swine, poultry, etc.



- There are environmental risks associated with manure handling and storage
- AOPA requires action at a CFO site when there is risk to the environment
- Risk has been difficult to quantify on a consistent, transparent basis

- Accepted by Policy Advisory Group (PAG)
 - NRCB
 - Government Departments
 - Municipal Organizations
 - Industry
 - ENGOs



- PAG advised that a risk tool should be:
 - Consistent with the Risk Management Framework
 - Developed in consultation with stakeholders using a phased approach
 - Clear and flexible
- The focus of the tool should be on water quality protection (groundwater and surface water)
- Working Group established to design an environmental risk screening tool (RST)

- Data required, data collection, analysis
- Weighting assigned to risk factors
- How to deal with data uncertainty
- Appropriate risk ranking

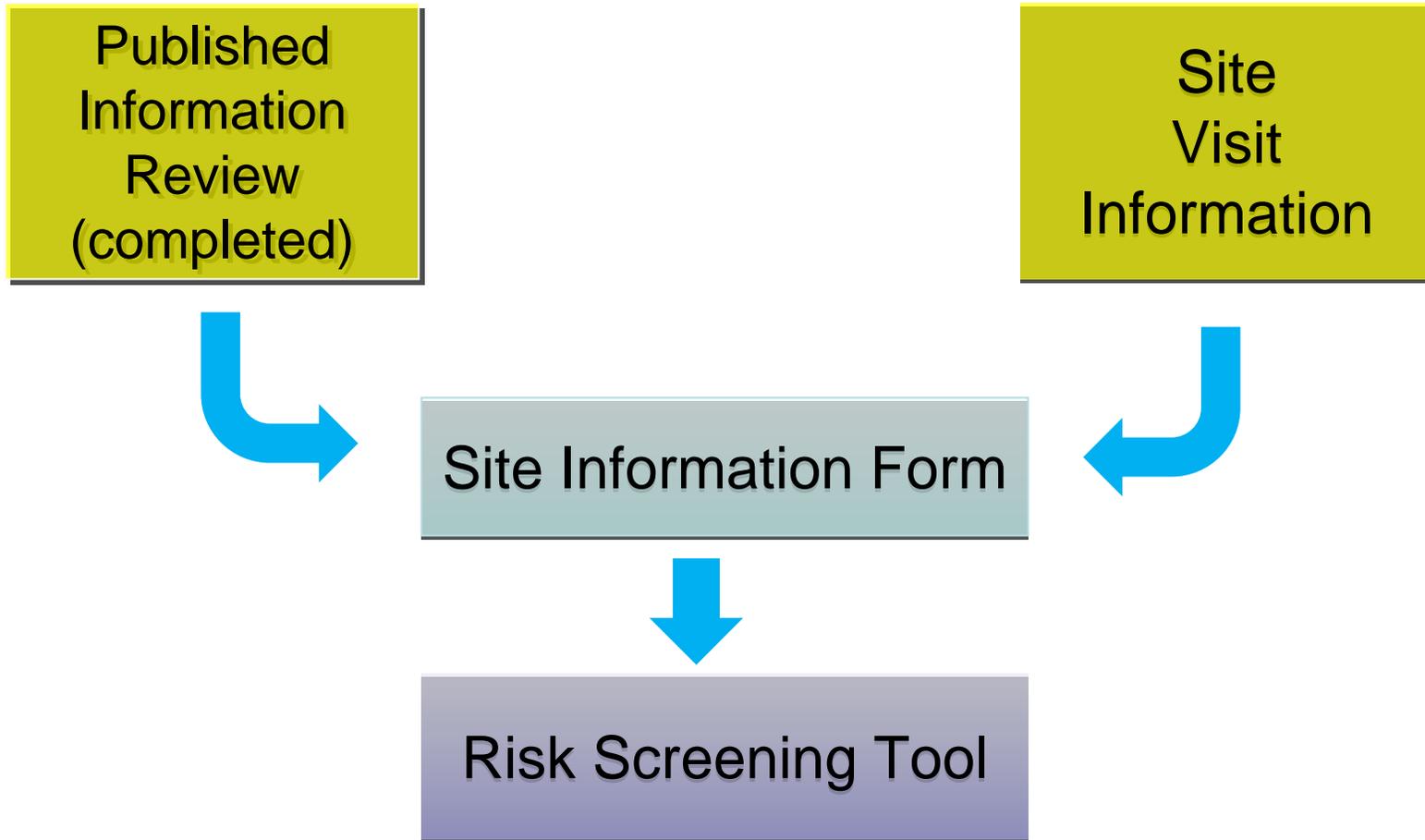


- Transparency
- Consistency
- Promotes due diligence
- Scientifically based
- Credibility
- Consistent with GOA policy (e.g., Water for Life Strategy)

- Conducted review of how risk is assessed at CFOs in other jurisdictions
- RST modeled after the CCME Contaminated Sites Classification System
 - Developed in response to government, industry and public requirement for a simple to use, scientifically based system for assessing risk
 - Developed with expertise from across Canada
 - Variants have been used in Alberta

- A **screening tool** only – not a quantitative risk assessment
- Numeric value assigned to factors based on risk / latest science
- To the extent possible factors reflect terminology in AOPA
- “Special considerations” to allow for some flexibility
- Intended to be a “living” document

RST Use



- Risk screening tool scoring draws on expertise from Compliance, Approval and Sci-Tech staff at the NRCB.

Risk Screening Tool Components

Hazard
Potential

- Manure type, volume

Pathways
Analysis

- Surface water, groundwater

Exposure
Potential

- Multipliers are used
- Three levels of risk.

Manure Sources



Solid Manure



Runoff Water
with Manure



Liquid Manure

Risk Screening Tool Components

Hazard
Potential

- Manure type, volume

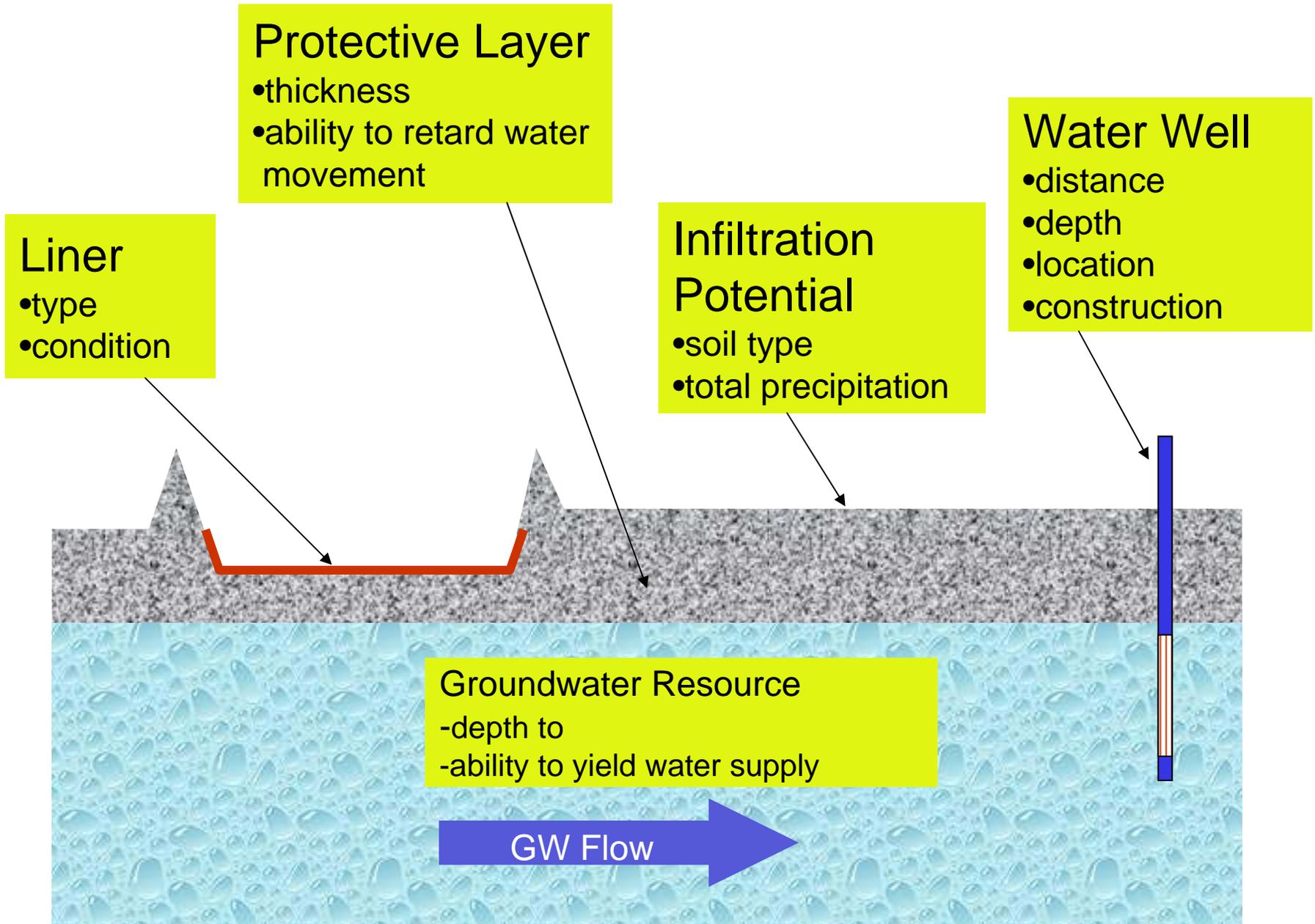
Pathways
Analysis

- Surface water, groundwater

Exposure
Potential

- Multipliers are used
- Three levels of risk.

Groundwater Pathway Factors



Surface Water Pathway Factors

Run-off Water
Control

Flood Plain?



Common Water Body

- distance
- up slope/down slope
- flow path characteristics

Run-on Water
Control

Runoff
Potential

- soil type
- total precipitation



RSTComponents

Hazard
Potential

- Manure type, volume

Pathways
Analysis

- Surface water, groundwater

Exposure
Potential

- Three levels of risk.

- Multipliers are used to reflect likelihood and consequence of exposure
- Two final scores – a risk level for groundwater and a risk level for surface water

Hazard Potential Score ____ + Groundwater Pathway Score ____ = ____ × Exposure Potential Multiplier ____ = Risk Score ____

Risk Level	Hazard Potential Score + Groundwater Pathway Score (maximum score – 109)
High Potential <i>Risk to the Environment</i>	>90
Moderate Potential <i>Risk to the Environment</i>	70 – 90
Low Potential <i>Risk to the Environment</i>	<70

- Tool has been verified through:
 - Extensive desktop testing conducted by NRCB and Alberta Agriculture and Rural Development
 - Field testing completed summer of 2008
- Tool will be continuously improved as required

- Extensive desktop and field testing
- Regular internal audits conducted
- RST reviewed by risk experts at Alberta Health and Wellness
- Staff training a critical component



First Application of the RST Leak Detection Program

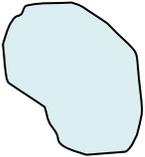
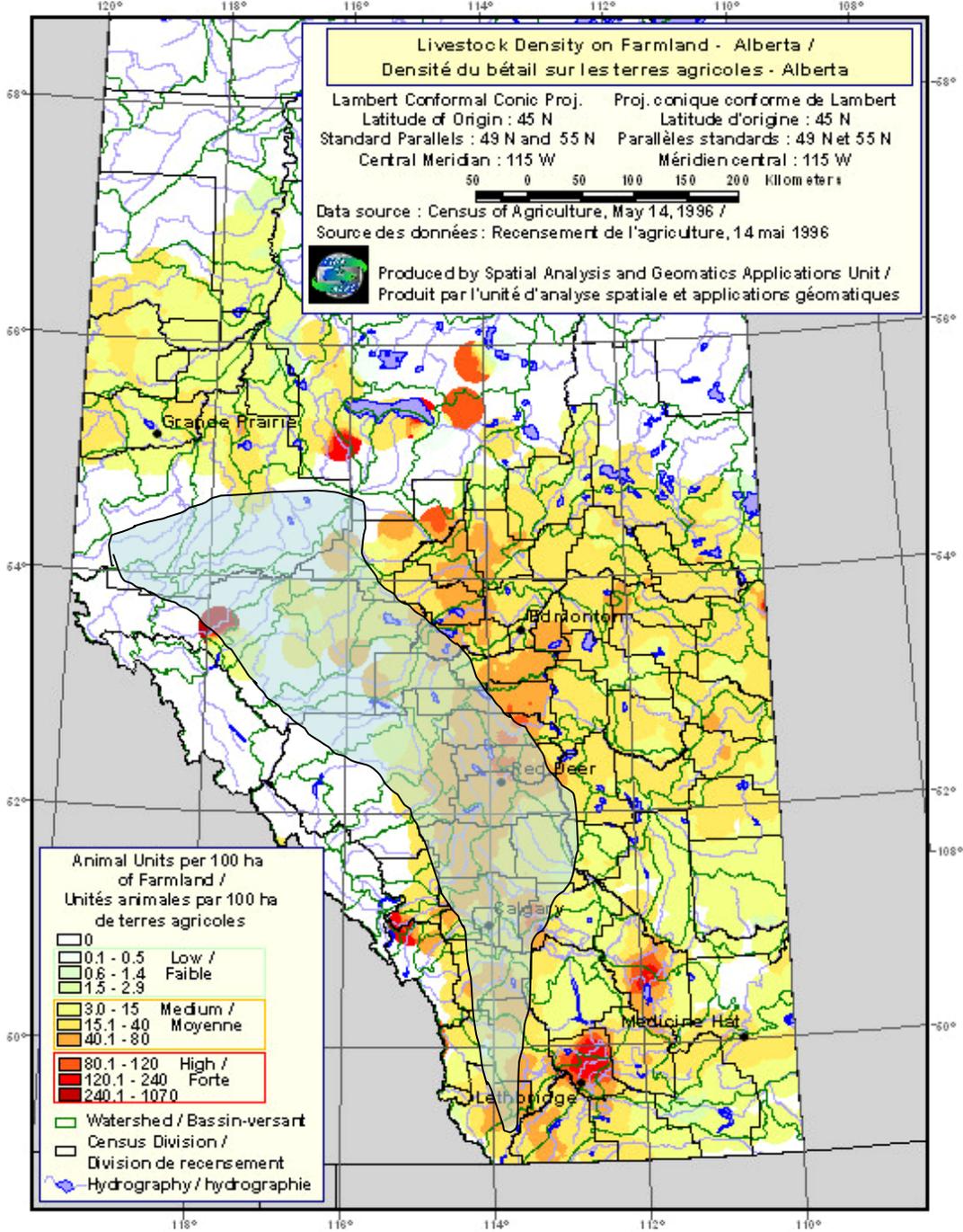
- The NRCB's CFO database contains ~275 operations that have leak detection as a condition of their permits
- This total represents permits issued with leak detection requirements before (municipal) and after 2002 (NRCB)
- There was a need to establish leak detection requirements based on environmental risk
- The most common method of leak detection on CFO facilities is through groundwater monitoring wells



- Only the groundwater risk level was assessed
- Completed the risk screening on approximately 60% of the operations with leak detection conditions

	Low	Medium	High
Southern	61	1	0
North Central	4	0	0
Peace	7	1	1
Central	57	30	8

Location of CFOs in Alberta



Approximate extent of Paskapoo Formation

Conclusions

- The screening tool has allowed for a determination of environmental risk at CFOs in an consistent, transparent manner
- The tool is dynamic and will evolve with changing science and practice
- The tool has been successfully used for determining the need for leak detection
 - Other uses being explored in consultation with stakeholders



NRCB | Natural Resources
Conservation Board

Questions?