



**Managing Alberta's Forests:  
Lessons from Research Basins**

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# Forest Management in Alberta is Guided by...

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- Alberta Forest Management Planning Standard
  - CSA Z809-02
- Operating Ground Rules
  - Framework for Renewal
- Mountain Pine Beetle Action Plan for Alberta
  - Interpretive Bulletin: Planning Mountain Pine Beetle Response Operations
- Alberta's First Nation Consultation Guidelines

# Scope and Timelines of Planning

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- Forest Management Plan Scope:
  - A Current landscape condition (Classified Landbase)
  - Limited to Forest Management planned activities
  - Forest Watershed Assessment is mandatory

# Scope and Timelines of Planning

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- Timelines for Planning
  - Forest Management Plan: 20 years
  - Forest Management Plan Replacement: every 10 years
  - Operational Planning: General Development Plan, Area Operating Plan – usually for two years

# Alberta Policies

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- Water for Life Strategy

- Goals:-

- Safe, Secure Drinking Water Supply
    - Healthy Aquatic Ecosystems
    - Reliable, Quality Water Supplies for a Sustainable Development

- Directions:-

- Knowledge and Research
    - Partnerships
    - Water Conservation

# Alberta Policies

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- Land Use Framework
  - Goal: Sustain economic growth while balancing this with social and environmental goals
  - Builds on previous land-use policies eg Eastern Slopes Policy
  - Prepare regional plans for each of the seven land use planning regions
  - Overarching policy to all other watershed related policies
- Water Act
- Environmental Protection and Enhancement Act

# Policies and Legislation

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- Other Provincial Policies
  - Eastern Slopes Policy
  - Water Act Regulations and Code of Practice for Water Course Crossings
- Federal legislation
  - Fisheries Act
  - Navigable Waters Protection Act
  - Canadian Environmental Assessment Act

# Alberta's Research and Innovation Strategy

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- Development of policies and regulations
- Manage cumulative effects of multiple activities on the landscape
- Sustainably manage resources over the long-term
- Overall, create an impact on prosperity and quality of life while protecting the environment



# A Shared Responsibility

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- Shared responsibility for watershed management, achieved through collaboration:
  - Public consultation
  - Advisory groups eg WPACs, WSGs, AWC
  - Strategic alliances
  - Community and individual stewardship

# Challenges to Forest Watershed Management

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- Vulnerable age class structure
- Climate change
- Insect infestation eg mountain pine beetle – spread from foothills to mixedwood boreal plains
- Increased frequency of high intensity wildfires

# Impact on watershed values

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- Shift in watershed yield/timing of flows
- Water quality impacts:
  - Increase in sediment yield, nutrient loads, organic compounds, trace metals
- Increased cost of drinking water treatment
- Impacts on stream health
- Incremental effects of management intervention eg salvage logging
- How long do these effects last? Hydrologic recovery

# Lessons from Watershed Studies

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- Hydrologic response
  - Increased snow accumulation
  - Increase in watershed yield
  - Change in timing of flows (peak flows, low flows)
  - Increase in peak flow magnitudes
  - Decrease in low flows

# Lessons from Watershed Studies

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- Water quality response
  - Overall decline in water quality
  - Water quality parameters recover at different rates, thus posing some management challenges
- Ecosystem response
  - Increase in nutrients caused increased productivity across many trophic levels
  - Change in aquatic community structure

# Lessons from Watershed Studies

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- Post-fire and post-beetle salvage have incremental impacts, along with the benefits of quick recovery
- Forest protection – a priority to reduce wildfire risk
- Forest health
  - Mountain pine beetle attack increases wildfire risk
  - Uniform age class structure pose risks to insect attack

# Lessons from Watershed Studies

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- Fuel management
  - Impacts from prescribed burns lower than wildfire
- Source water protection
  - Potential of forest management as a tool to augment water supplies eg water stressed regions
  - Strong linkages of cumulative effects in headwaters and downstream impacts
  - Increased cost of drinking water treatment

# Going into the future.....

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- Better understanding of influence of topographic orientation on hydrologic response due to forest removal
- Detail study of forest cover removal influence on soilwater regime and groundwater
- Effect of non-stationarity
  - Does “range of natural variation” still serve as a viable metric for decision-making?
  - How does non-stationarity vary across ecosystem components?



# Going into the Future....

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- Watershed resilience
  - Is there more than one stable stage for a healthy watershed?
  - Which state is most desirable based on social and economic values
  - What are thresholds for various indicators of healthy watersheds
  - How will these thresholds change under non-stationarity?

# Thank You

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Questions?