

The Future is Liquid

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The Future Is Liquid

- Presentation Outline
 - *The Alberta Advantage*
 - The Impacts of Growth on Water
 - Growth Management (Growing Pains)
 - Case Studies
 - The Future is Liquid – Why?
 - Questions and “Some” Answers



The *Alberta Advantage* (Benefits)

Natural resources



+

Stable economy



+

Open-door investment policy



=

Growth

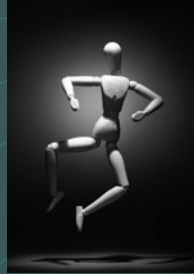


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The *Alberta Advantage* (Challenges)

➤ Growth

➤ Since 2000



➤ Remember the 1990s?



➤ Growth out-paced

➤ Regulations

➤ Water professionals

➤ Classic Econ 101 (S&D)

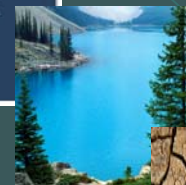


The *Alberta Advantage* (Challenges)



➤ Growth

- Varies by region
- Water avail. varies by region
- All growth requires water



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Growth and Water – What Do We See

- Public – increased concern

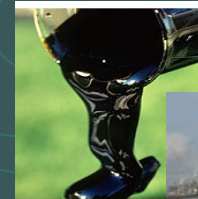
- Droughts



- Global warming



- Alberta's "dirty oil"



- Lack of water understanding

- How much is there?



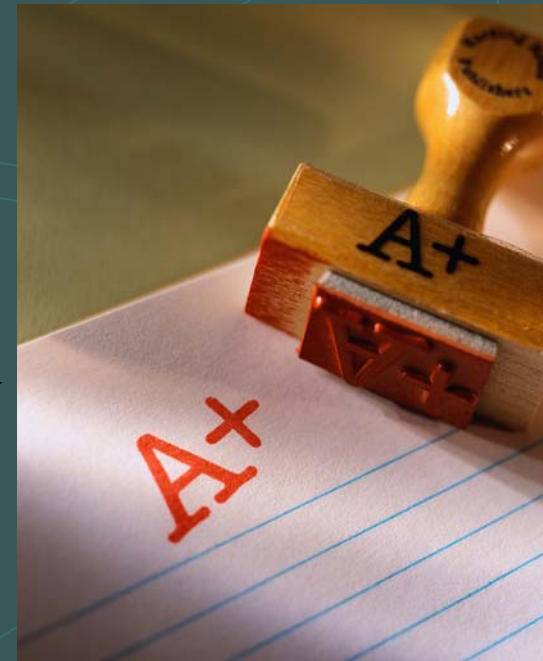
- How is it used?



- What are Albertans doing about it?

Regulatory Setting – Alta Govn't

- *Water For Life* Strategy (Alta Gov., 2003)
 - Comprehensive
 - Integrated (GW + SW)
 - Dovetails with earlier studies
 - All Alta watersheds
 - Right direction
 - Years and millions \$\$\$

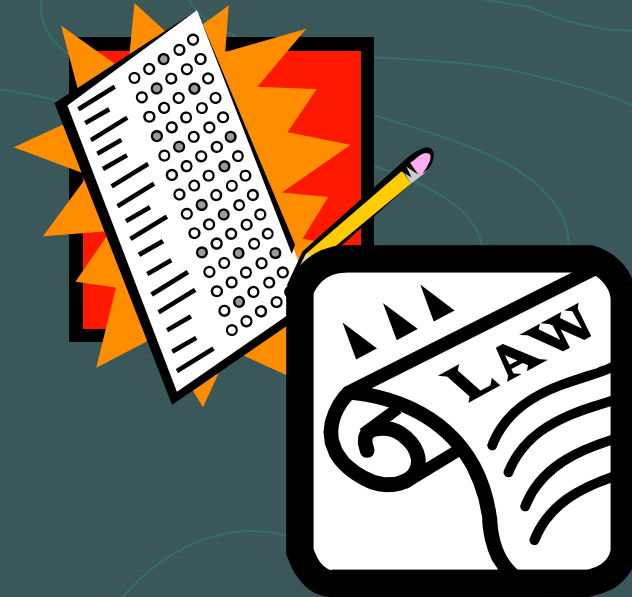


Regulatory Setting - AENV

➤ New or updated regulations

- Water Act (2006)
- Oilfield Injection (2007)
- CBM (with ERCB, 2006)
- ERCB MOU (2007)
- 3PC process (2007)

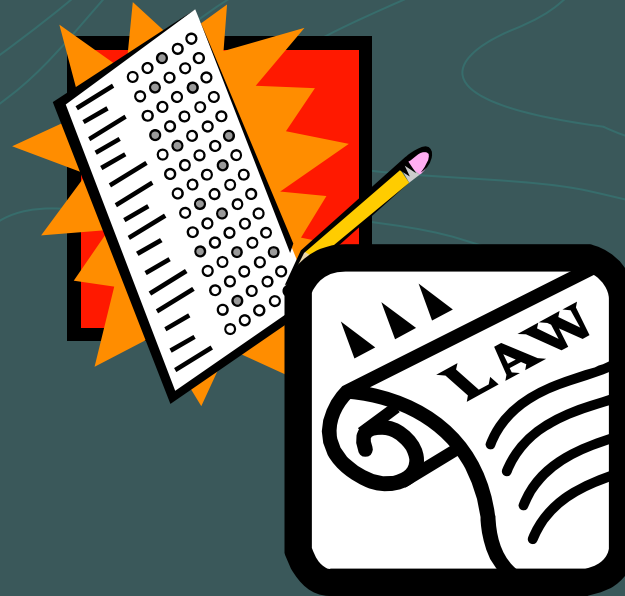
- Tier I/II update (2007)
- Revised Rec. Cert. (ongoing)
- Record of Site Condition (2008)



Regulatory Setting – ERCB

- New or updated regulations

- Directive 35 (2006)
- Directive 27 (2007)
- Directive 51 (2007)
- AENV MOU (2007)
- 3PC process (2007)



Transitioning to New Paradigm

- So..., as we transition from old to new
 - Growing pains (no pain no gain)
- Case studies
 - Coalbed methane
 - Large energy projects
 - Counties (several issues)
 - Watershed management plans



Case Studies – Coalbed Methane

➤ Public Issue: CBM impact on GW supplies?

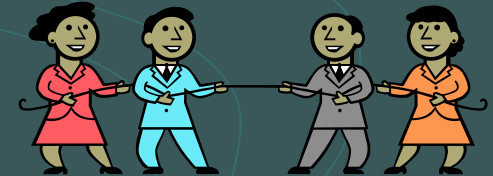
➤ Why?

- New industry
- Shallow activity
- Old regulations not for CBM



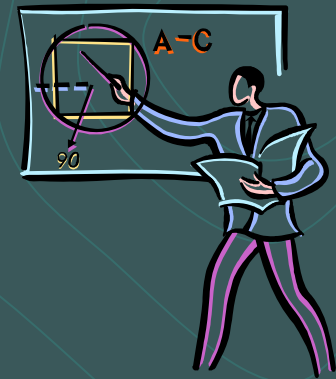
➤ The future?

- CBM here to stay, expansion likely
- Education and ownership



➤ What role must GW professionals play?

- Govn't = Increased staffing and funding
- Private = Mentoring and education



Case Studies – Large Energy Projects

➤ Public Issue: Energy sector water use, CO₂ footprint

➤ Why?

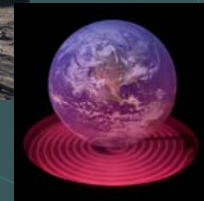
- Water use, global warming
- Cumulative issues

➤ The future?

- Resolve approval process
- Shrinking market for “dirty oil” ?, carbon tax
- Water treat. R&D (membrane technology, polymers-H₂S-TDS)
- CO₂ sequestration, nuclear alternative?

➤ What role must GW professionals play?

- Govn't = Increased staffing and funding
- Academic = Retool to big picture
- Private = Mentoring and education



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Case Studies – Counties

➤ Public Issue: Is Water Managed Sustainably?

➤ Why?

- Limit understanding of GW
- Limited monitoring



➤ The future (present)?

- Initiating GW monitoring
- Provincial or federal funding assistance required



➤ What role must GW professionals play?

- Work with Counties (AENV, ARC, AGS, PFRA, etc)
- Direct and execute studies
- Interact with related disciplines
- Knowledge transfer and mentoring



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Case Studies – Counties (continued)

➤ Issue: Approving residential developments?

➤ Why?

- Approved on an individual basis
- No cumulative consideration



➤ The future?

- Improved understanding of GW resources
- Cumulative approach

➤ What role must GW professionals play?

- Work with Counties (AENV, Alta Ag., PFRA, etc)
- Direct and execute studies
- Interact with related disciplines
- Knowledge transfer and mentoring



Case Studies – Watershed Mgmt Plans

➤ Issue: Where is watershed mgmnt going?

➤ Why?

- SW well understood, GW - not
- Components considered in isolation
- Who is taking the lead (AENV, ARC, AGS)?



➤ The future?

- **Uncertain because of uncertain commitment to funding**

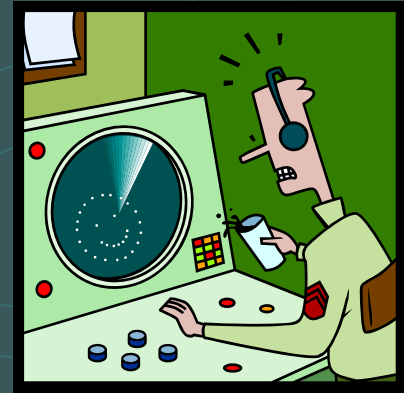
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- Direct and execute studies
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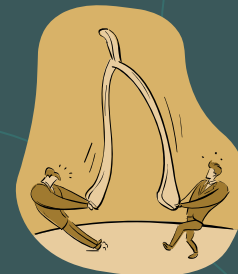
So..., where do we go?

- Stable funding
 - \$50-100 million/yr for next 5-10 yrs
- How do we do that?
 - Get water on radar screen
 - Increase dialogue
 - Alberta requires a high profile water conference
 - Could be WaterTech



The Future is Liquid

- It will happen, but how?
- Wishful thinking inadequate
- Future generations will judge us
- What role will you play?



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Closure

- Thank You
- Questions & "Some" Answers



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