EERC

EERC Technology… Putting Research into Practice

# The Plains $CO_2$ Reduction (PCOR) Partnership

## Zama Field Validation Project

PCO2R Partnership

DEPARTMENT OF ENERGY · UNITED STATES OF AMERICA

NETL NATIONAL ENERGY TECHNOLOGY LABORATORY

# PCOR Partnership

**Phase II Goals**

- Increase public understanding of $CO_2$ sequestration
- Perform field validation tests that develop:
  - Monitoring, mitigation, and verification (MMV) protocols
  - Regional sequestration strategies
  - Best separation/source matches
  - Regulatory and permitting strategies
  - Environmental benefits and risks
  - Information needed to monetize C credits
- Continued regional characterization
- Creating a vision for practical environmentally sound carbon management strategies

**The PCOR Partnership currently has over 60 partners representing public agencies, utilities, oil and gas companies, engineering firms, associations and nonprofit organizations, and universities.**

# Acknowledgments to “The Zama Team”


- Bill Jackson – Apache Canada, Ltd
- Doug Nimchuck – Apache Canada, Ltd
- Rob Lavoie – CalPetra
- Stefan Bachu – Alberta Energy and Utilities Board (EUB)
- Matt Grobe – Alberta Geological Survey
- Maja Buschkuehle – Alberta Geological Survey
- Pat Mclellan – Advanced Geotechnology, Inc
- Lyle Burke – APA Petroleum Engineering
- Bill Reynen – Natural Resources Canada
- Anne-Marie Thompson – Natural Resources Canada
- John Litynski – US Department of Energy, National Energy Technology Laboratory (NETL)


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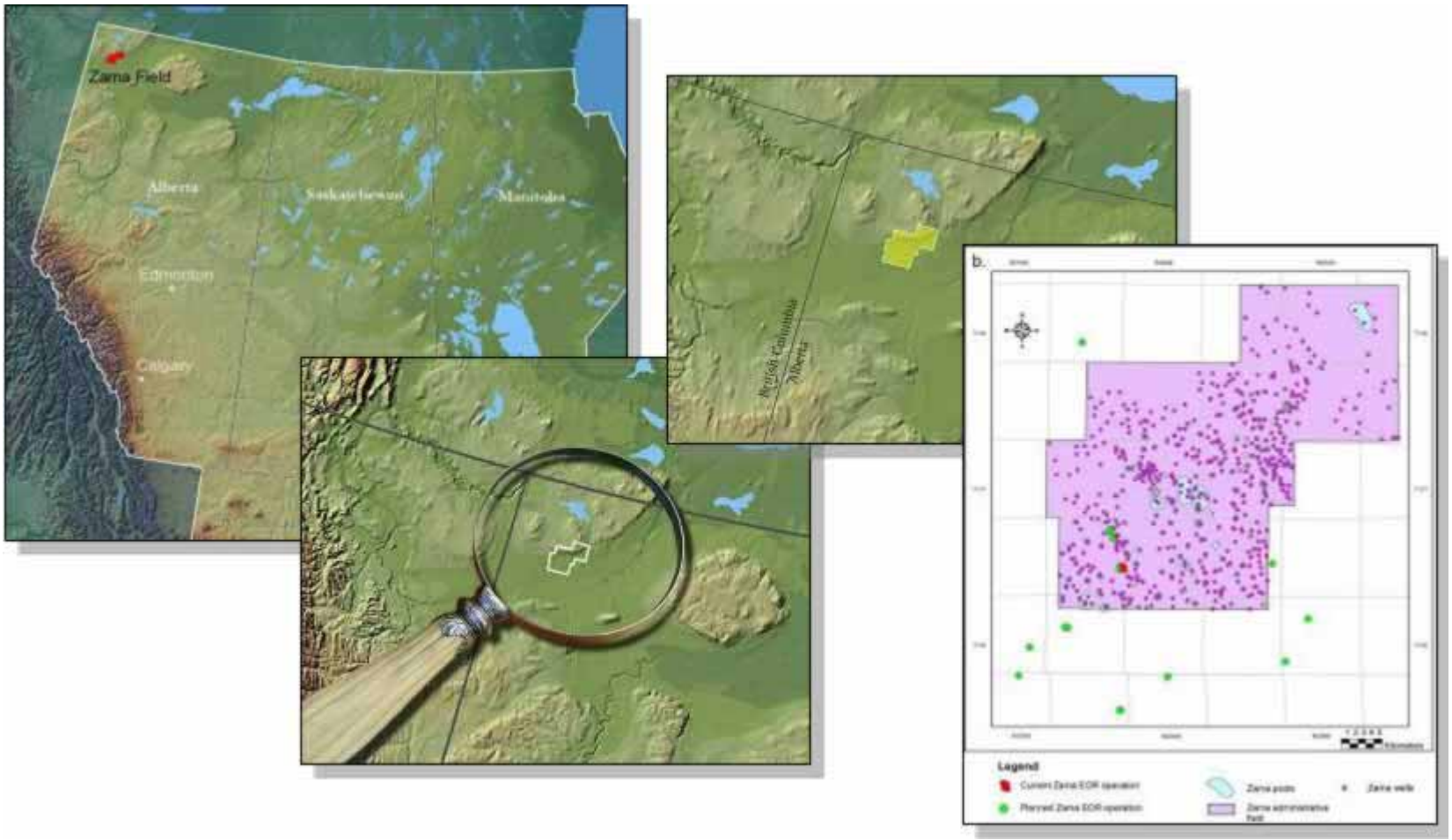
EERC Energy & Environmental Research Center

UND University of North Dakota

# Where's Zama?


Zama Field
Alberta
Saskatchewan
Manitoba
Edmonton
Calgary
British Columbia
Alberta
b.
Legend

# Zama Acid Gas EOR Project

- One of four Alberta demonstration projects to receive royalty credits for injecting $CO_2$ for EOR
- Unique approach combining acid gas disposal and $CO_2$ EOR
- Potential to expand to over 600 additional pinnacles

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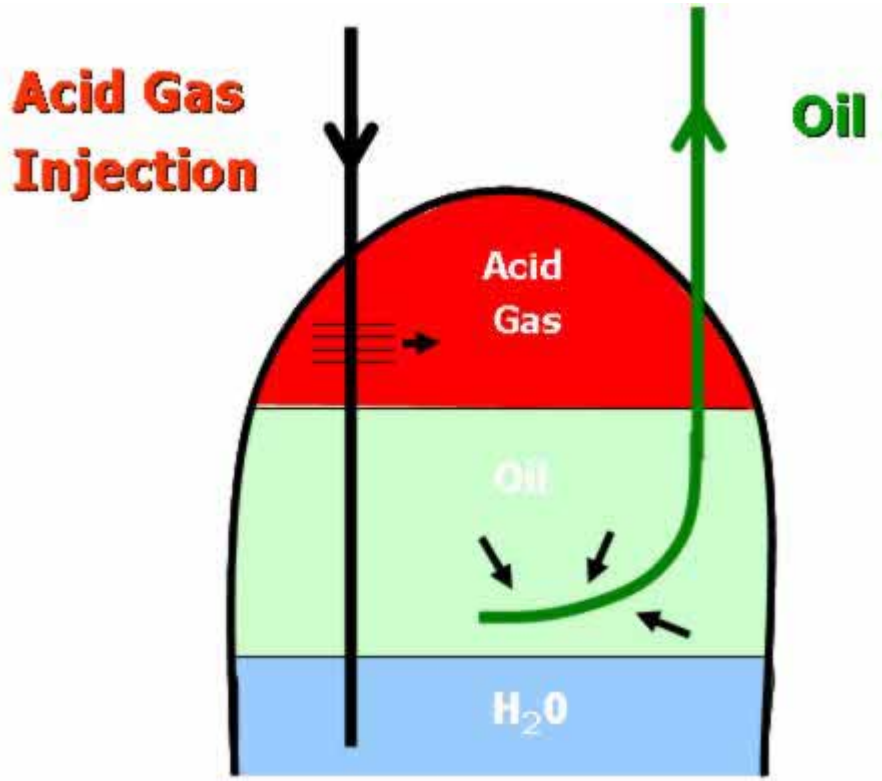
# PCOR Partnership Objectives




- Predict, monitor, and evaluate fate of the injected acid gas
- Determine affect of $H_2S$ on $CO_2$ sequestration
- Develop BMP for MMV

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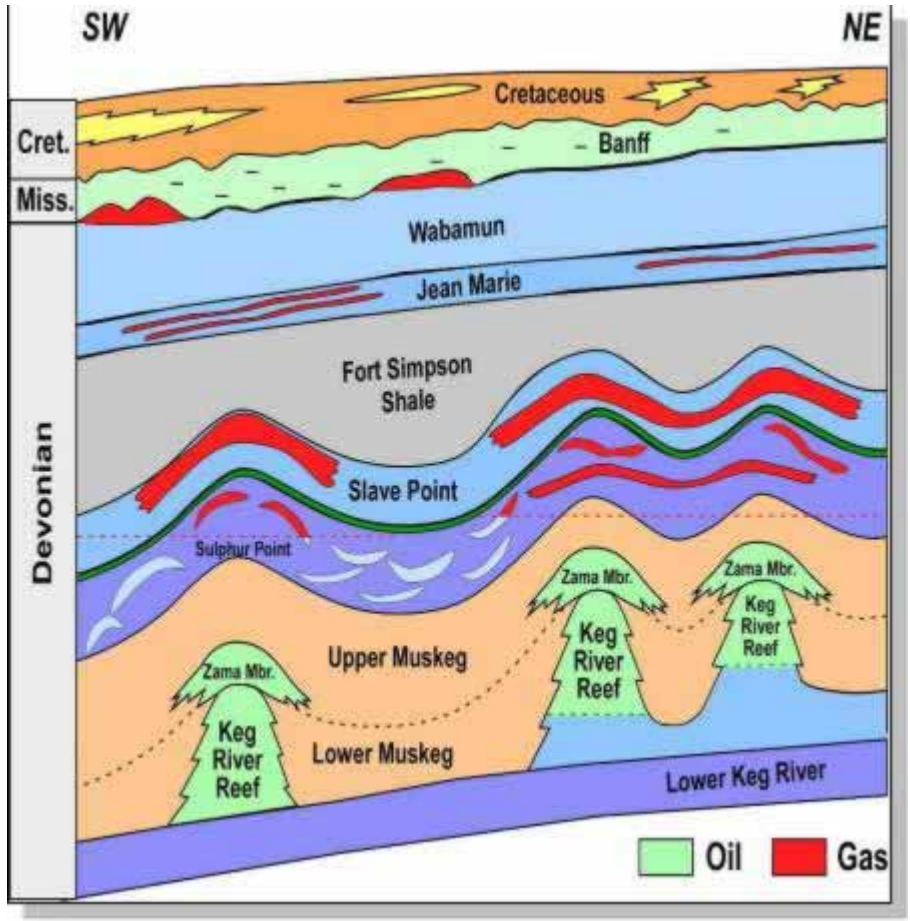
# Technical Goals

- Ensure that acid gas is not migrating to adjacent strata
- Determine the integrity of the cap rock
- Understand the effect of acid gas injection on this system

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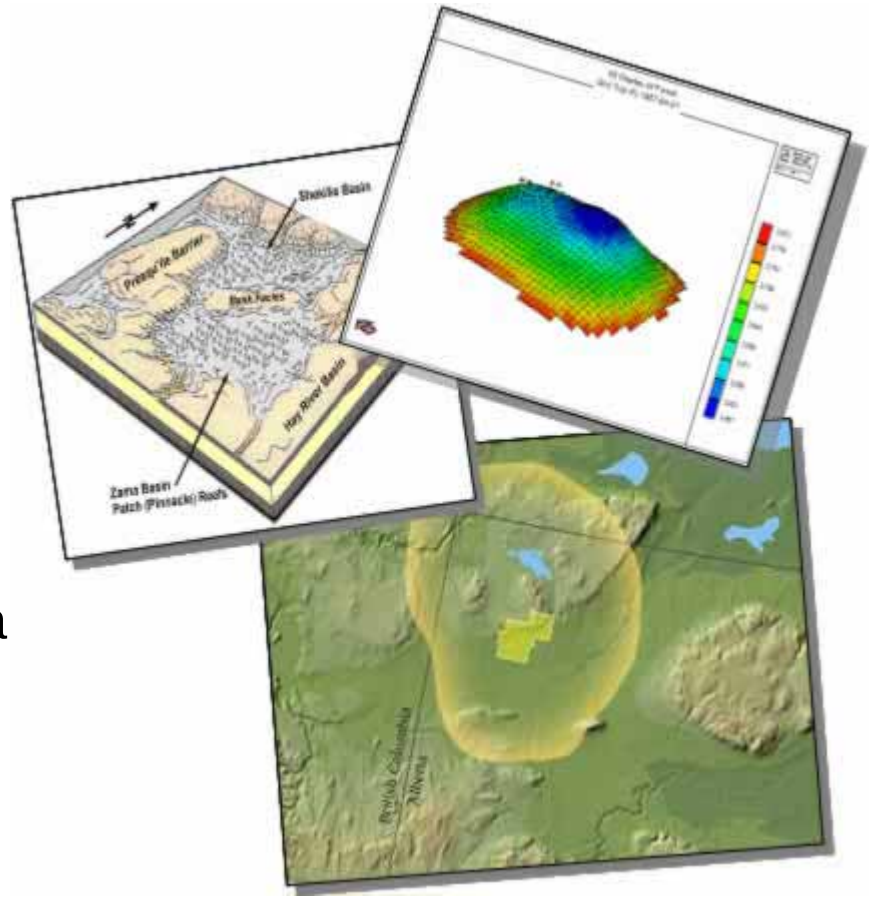
# Scales of Examination

- Reservoir scale
  - Zama F Pool and immediately underlying and overlying confining units
- Local scale
  - Zama F Pool and a few adjacent pinnacle reefs.
  - Entire stratigraphic column from basement to surface.
- Regional or subbasin scale
  - Relevant data from basement to surface over the entire Zama oil field/subbasin.
- Basin scale
  - Flow regime of the underlying Keg River aquifer.



# Summary

- Injection started December 2006
- Injecting approximately 90 tons per day
- Sequestration of 25,000 tons (375 MMcf) of $CO_2$ per year
- Production is expected to increase by 10-15%

# Thanks!

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