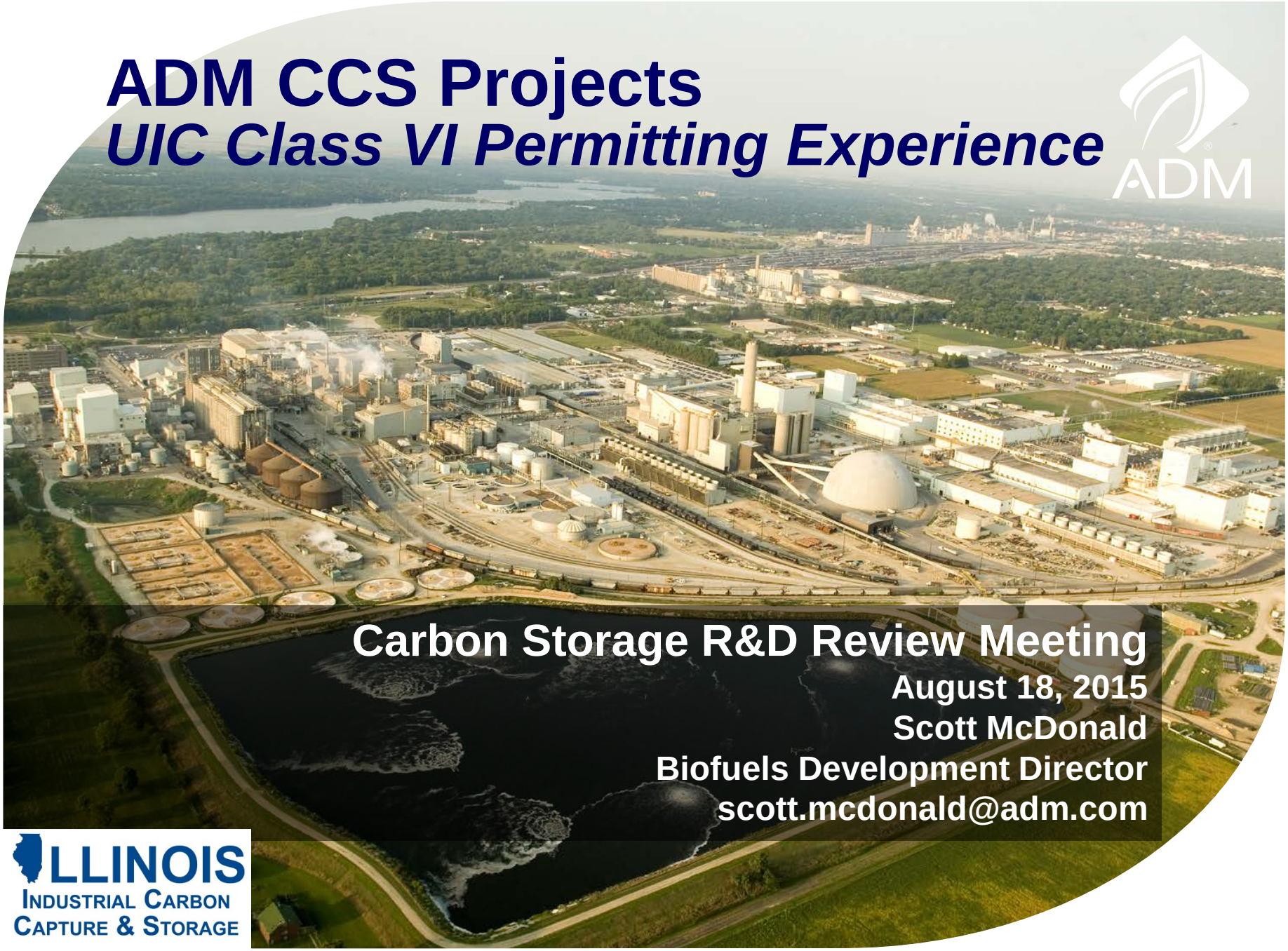
# ADM CCS Projects
## *UIC Class VI Permitting Experience*



**Carbon Storage R&D Review Meeting**

**August 18, 2015**

**Scott McDonald**
**Biofuels Development Director**
**scott.mcdonald@adm.com**

ILLINOIS
INDUSTRIAL CARBON
CAPTURE & STORAGE

# Acknowledgements


- The Industrial Carbon Capture and Storage (ICCS) project is administered by the U.S. Department of Energy's Office of Fossil Energy and managed by the National Energy Technology Laboratory (award number DE-FE-0001547) and by a cost share agreement with the Archer Daniels Midland Company, University of Illinois through the Illinois State Geological Survey, Schlumberger Carbon Services, and Richland Community College. This ICCS project received DOE funding from the American Recovery and Reinvestment Act of 2009 ($141.4 million).
- The Midwest Geological Sequestration Consortium is funded by the U.S. Department of Energy through the National Energy Technology Laboratory via the Regional Carbon Sequestration Partnership Program (contract number DE-FC26-05NT42588) and by a cost share agreement with the Illinois Department of Commerce and Economic Opportunity, Office of Coal Development through the Illinois Clean Coal Institute.
- The Midwest Geological Sequestration Consortium (MGSC) is a collaboration led by the geological surveys of Illinois, Indiana, and Kentucky

# ADM - Decatur CCS Projects

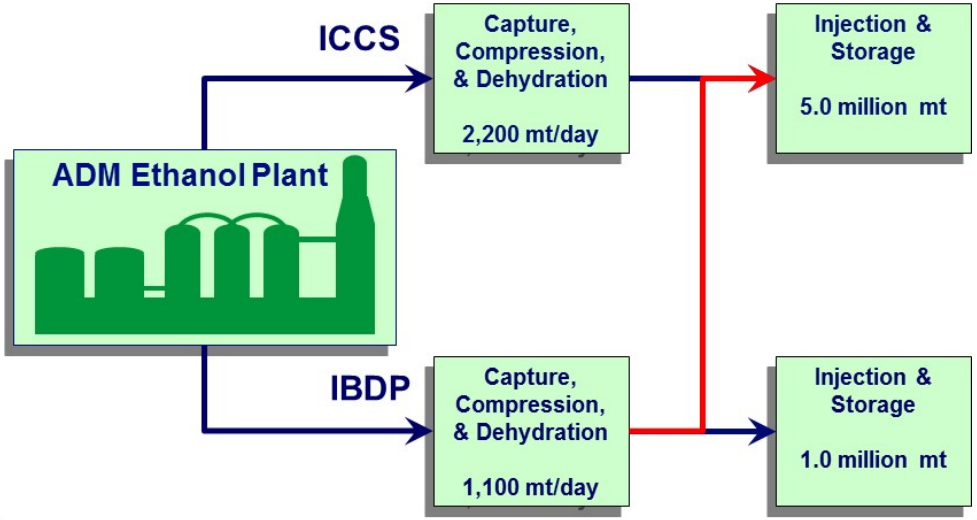
ILLINOIS INDUSTRIAL CARBON CAPTURE & STORAGE

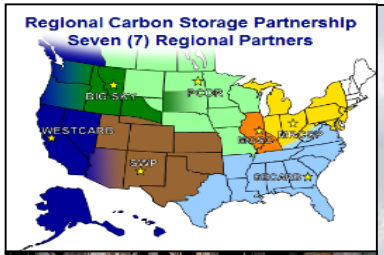
## Illinois Basin Decatur Project

- *Large scale geologic test to inject 1.0 million mt of $CO_2$ over a three year period (1,000 MT/day).*

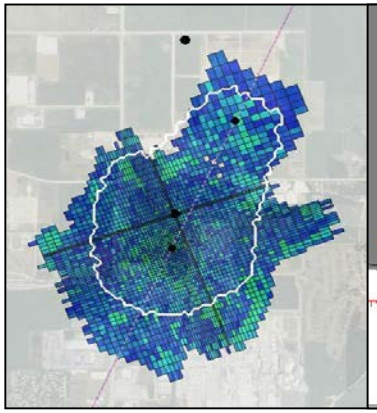
## Illinois Industrial CCS Project

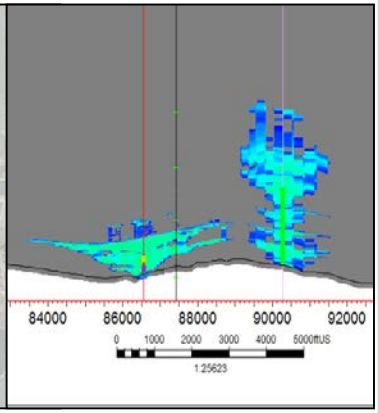
- *Target & demonstrate advanced CCS technologies at industrial scale facilities.*
- *Inject and store 1.0 million mt $CO_2$ per year (3,000 tons/day).*
- *Study the interaction of two separate plumes.*

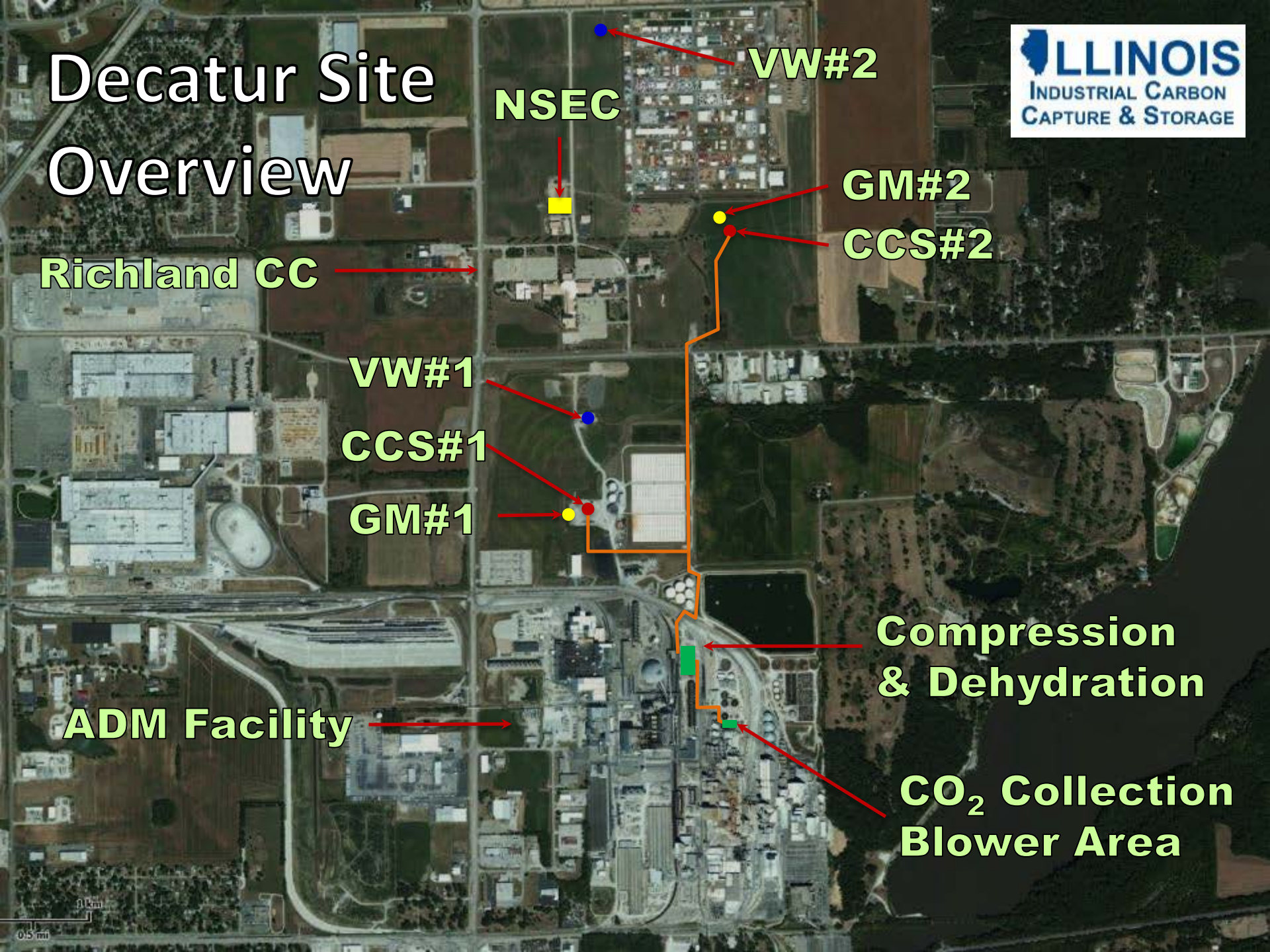


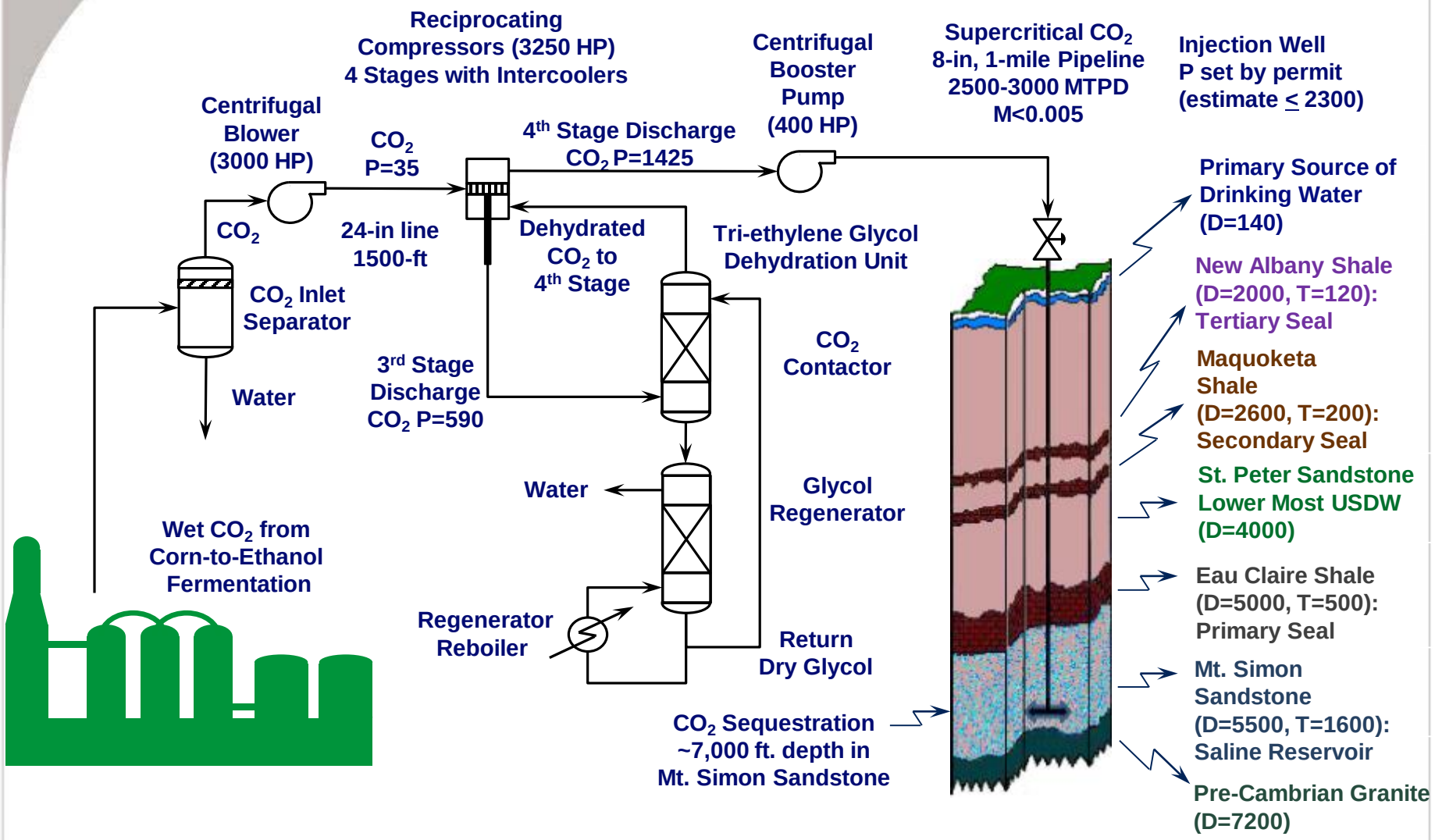

ADM NETL Schlumberger Carbon Services Richland Community College





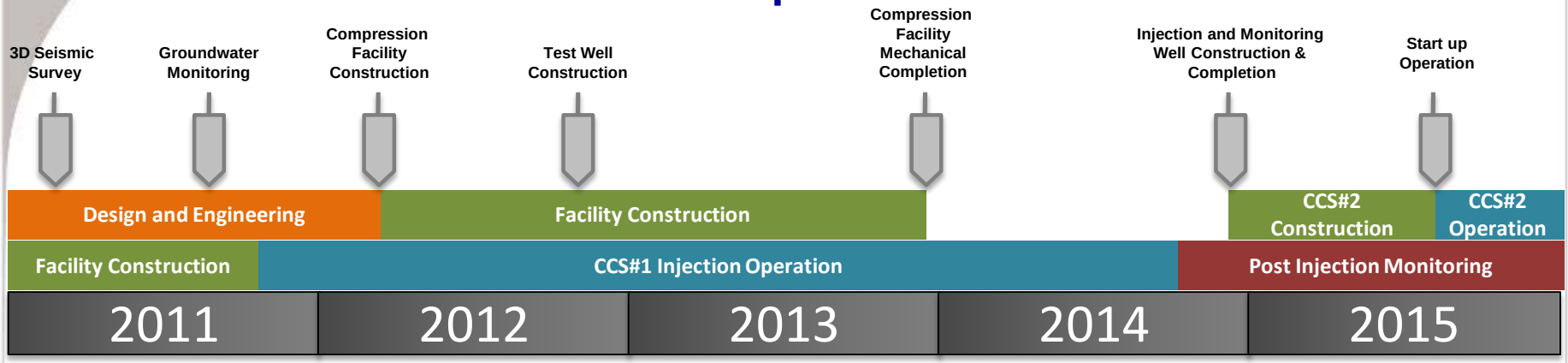

Decatur Site Overview
ILLINOIS
INDUSTRIAL CARBON CAPTURE & STORAGE
VW#2
NSEC
GM#2
CCS#2
Richland CC
VW#1
CCS#1
GM#1
Compression & Dehydration
ADM Facility
$CO_2$ Collection Blower Area

# Project Process Flow Diagram

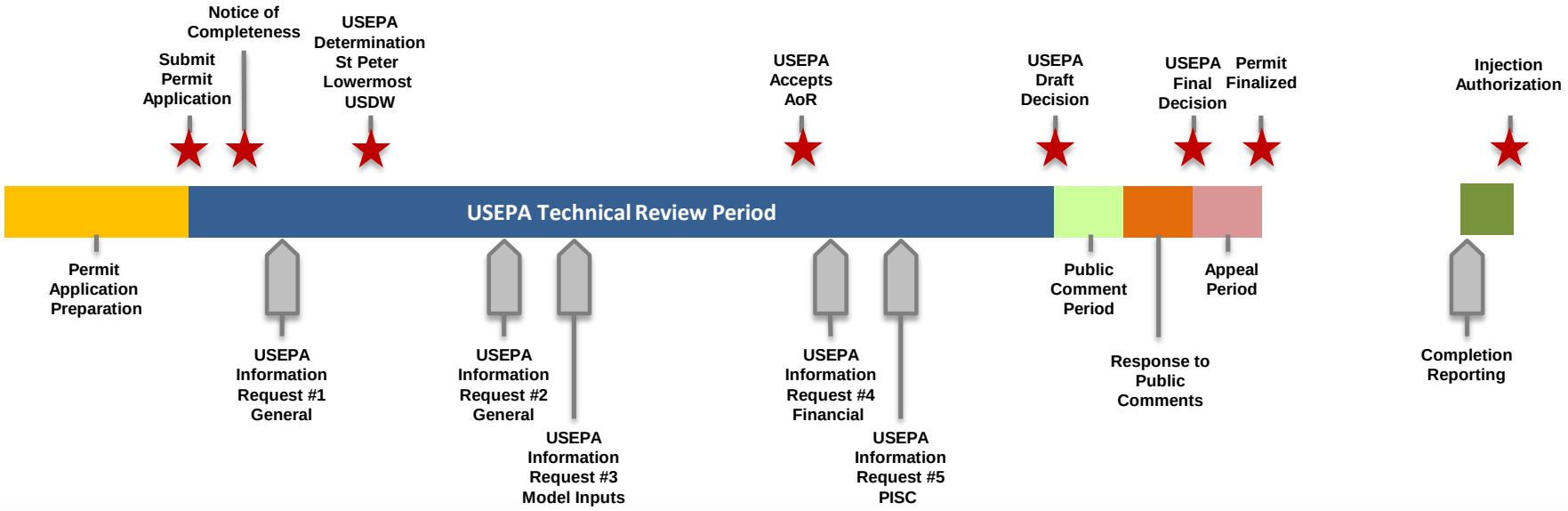


# ICCS & IBDP Project Timelines

## ICCS & IBDP Construction and Operations Timeline




## ICCS Permitting Timeline

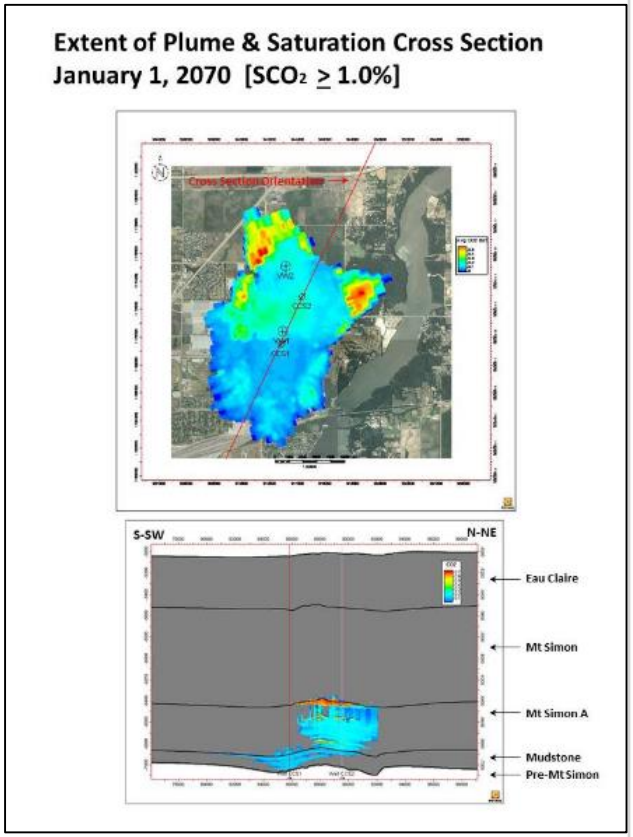


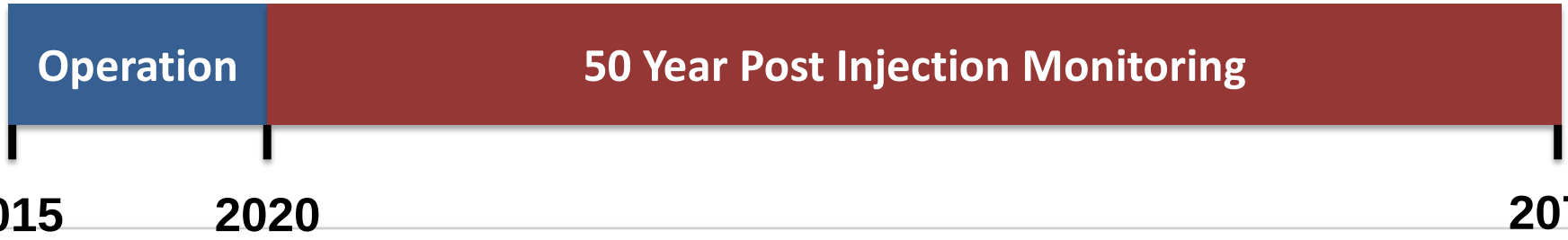
# Main Challenges

## *Alternative PISC Timeframe*

ILLINOIS INDUSTRIAL CARBON CAPTURE & STORAGE

- **Default PISC is 50 Years**
- **Applicant allowed to petition for an alternative timeframe**
- **ADM Proposed 10 Year PISC**
  - **Reservoir Pressure Decline**
  - **Plume Stabilization**
  - **$CO_2$ Partitioning**



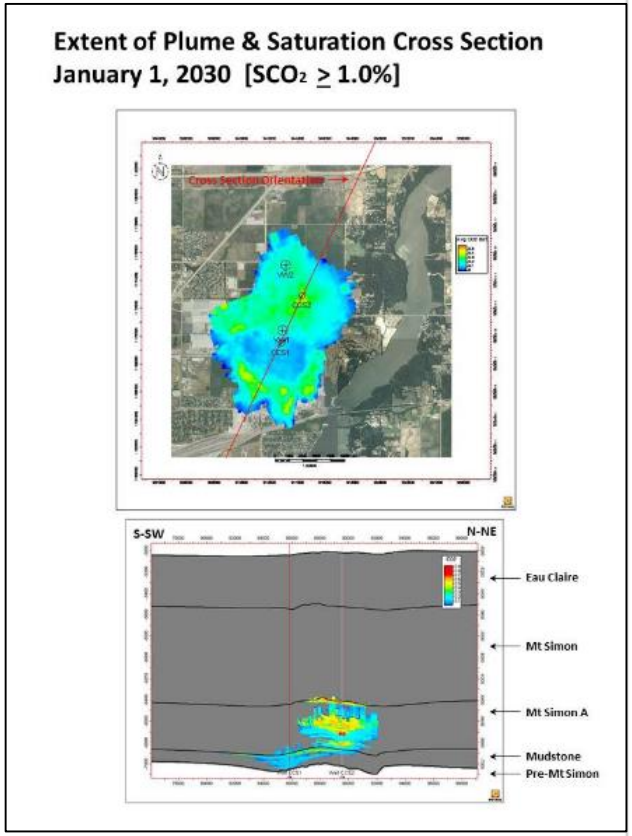



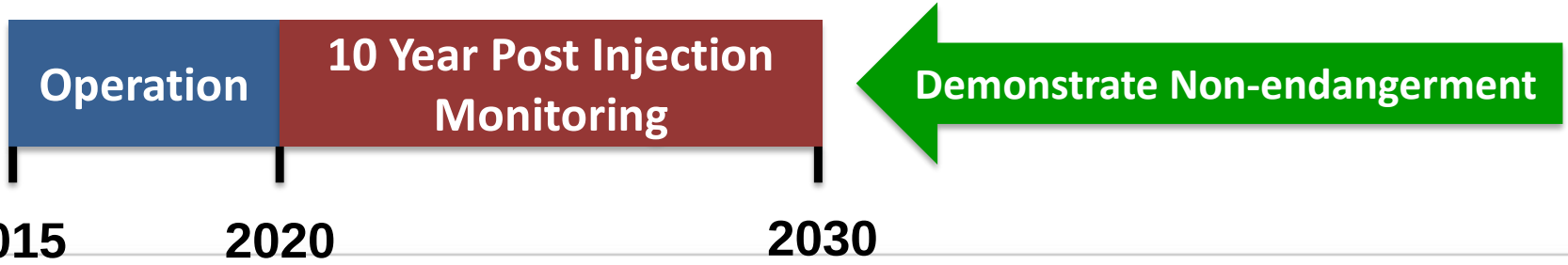
# Main Challenges

## *Alternative PISC Timeframe*

ILLINOIS INDUSTRIAL CARBON CAPTURE & STORAGE

- **Default PISC is 50 Years**
- **Applicant allowed to petition for an alternative timeframe**
- **ADM Proposed 10 Year PISC**
  - Reservoir Pressure Decline
  - Plume Stabilization
  - $CO_2$ Partitioning

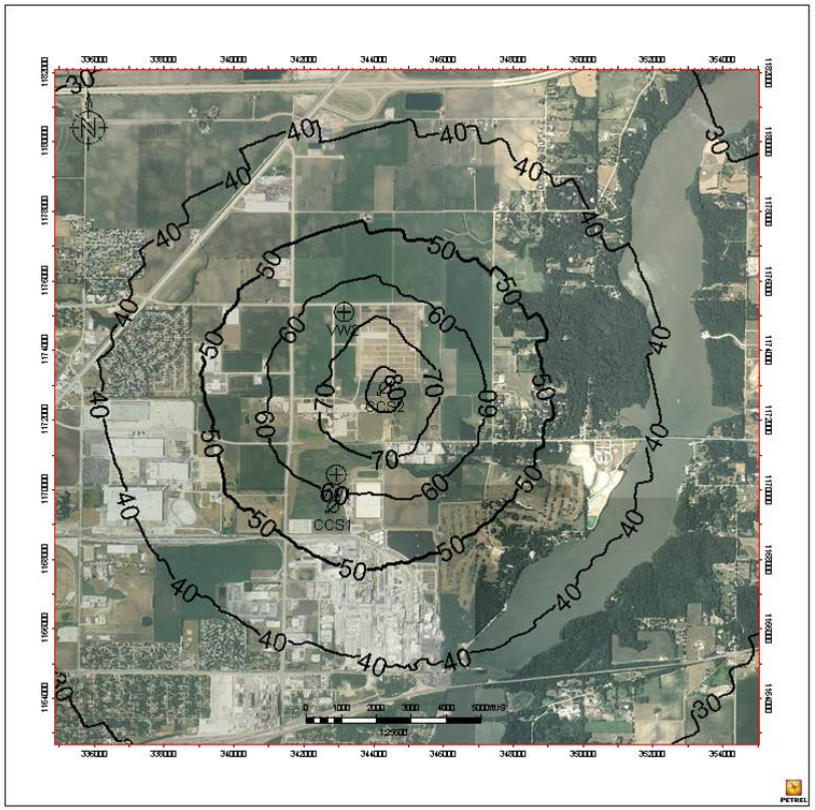


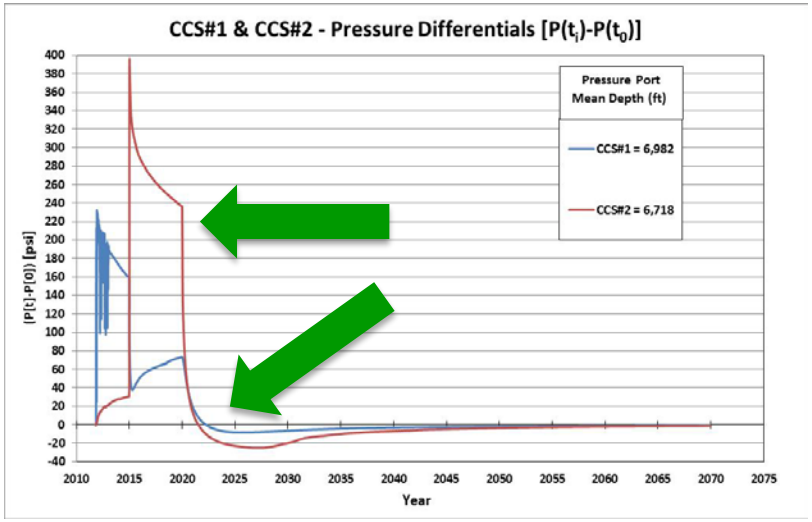



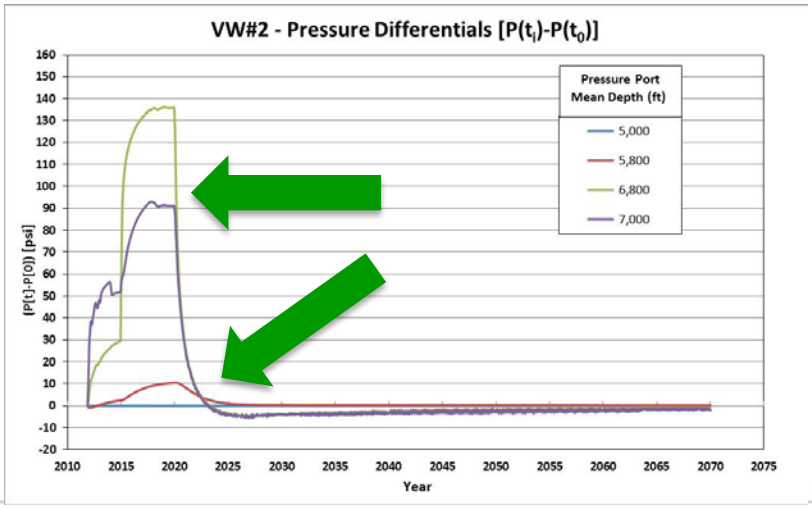
# Alternative PISC Timeframe

## *Reservoir Pressure Decline*

**Aggregate differential pressure contours at the end of the operational period.**

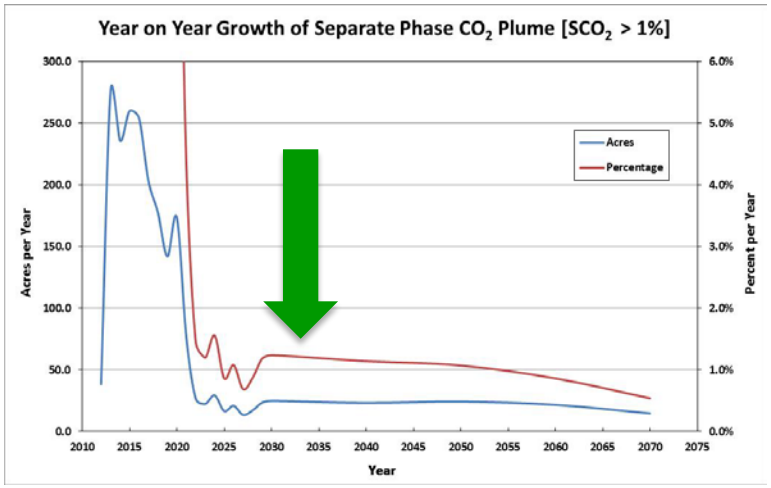


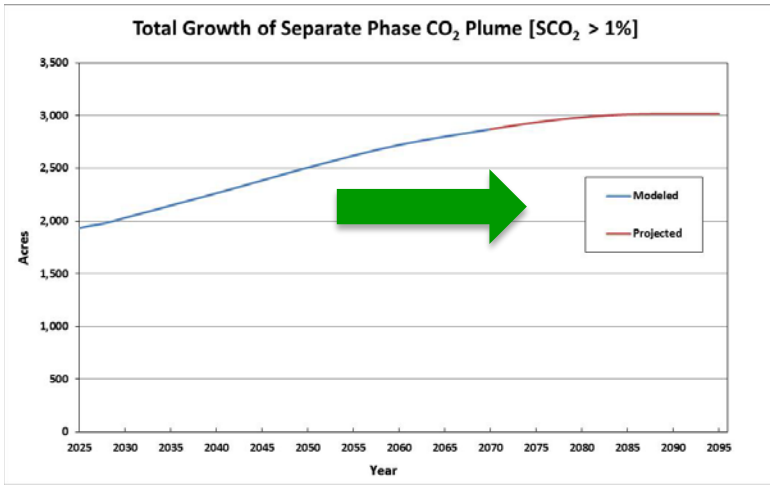



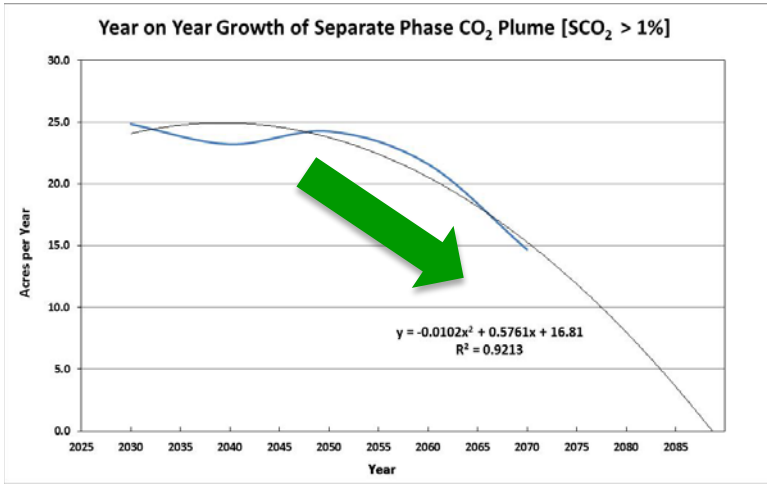



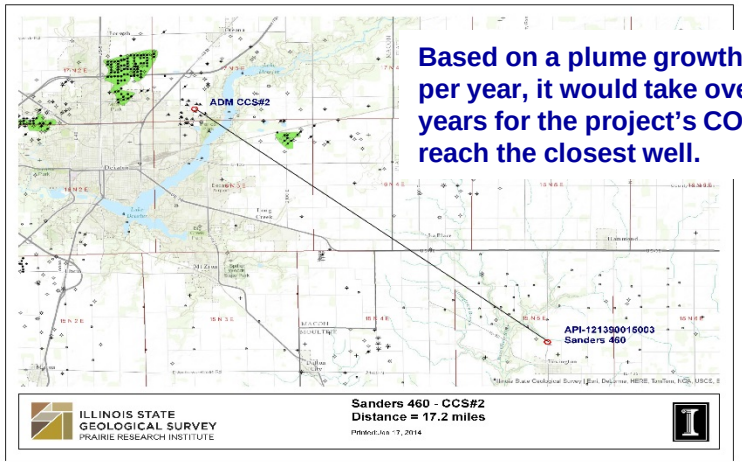
# Alternative PISC Timeframe

## $CO_2$ Plume Stabilization



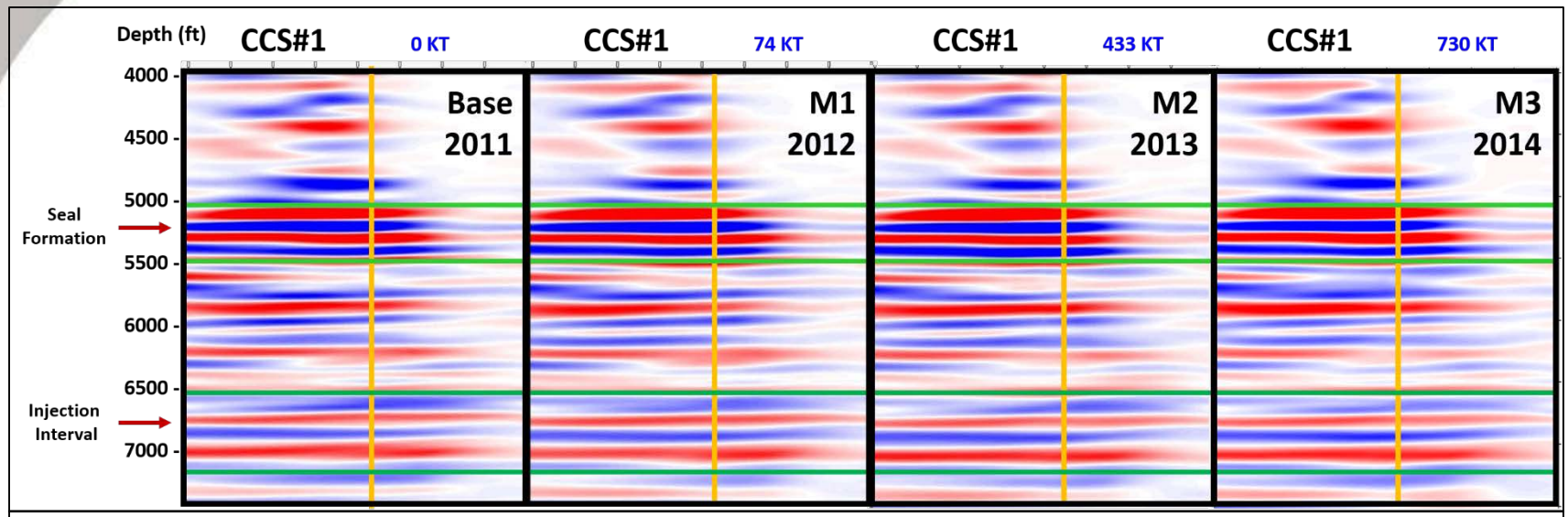



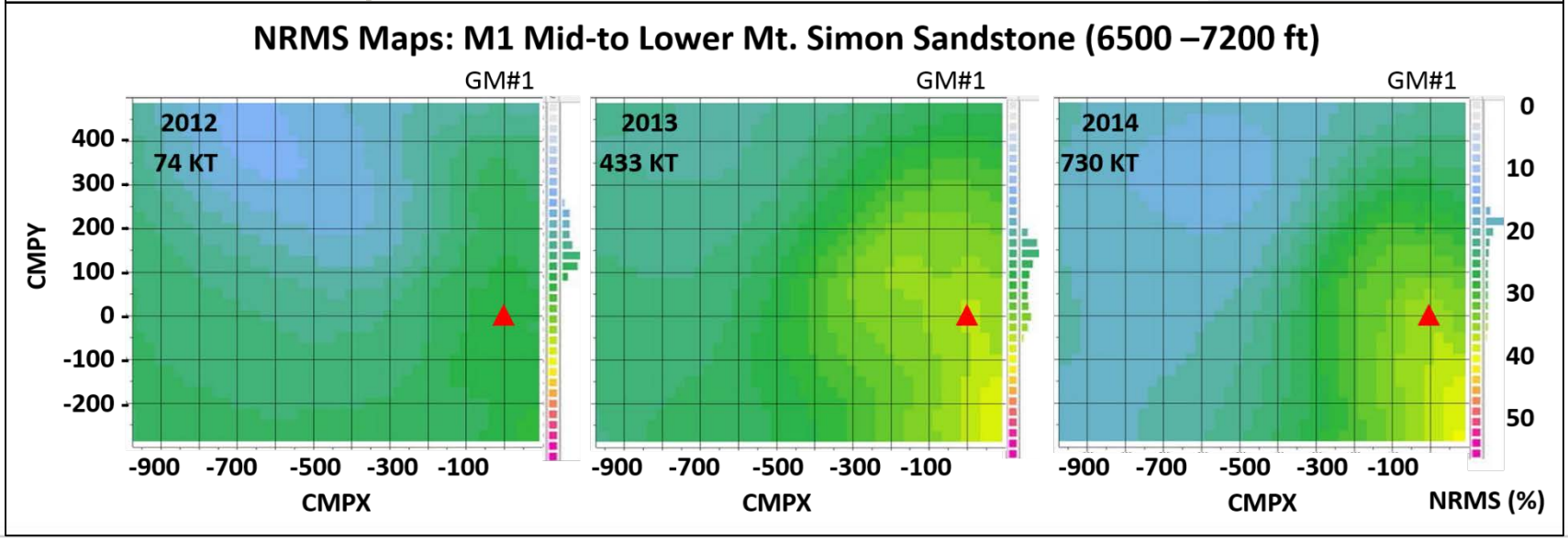



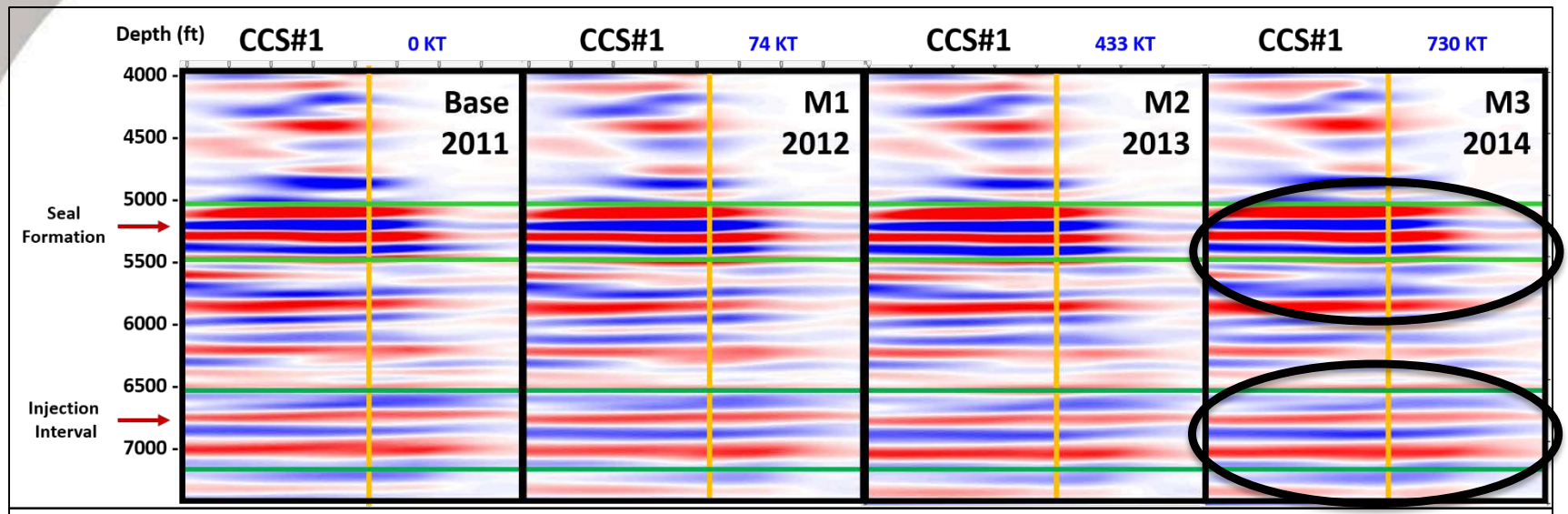

**Based on a plume growth of 1.0% per year, it would take over 600 years for the project's CO2 plume to reach the closest well.**

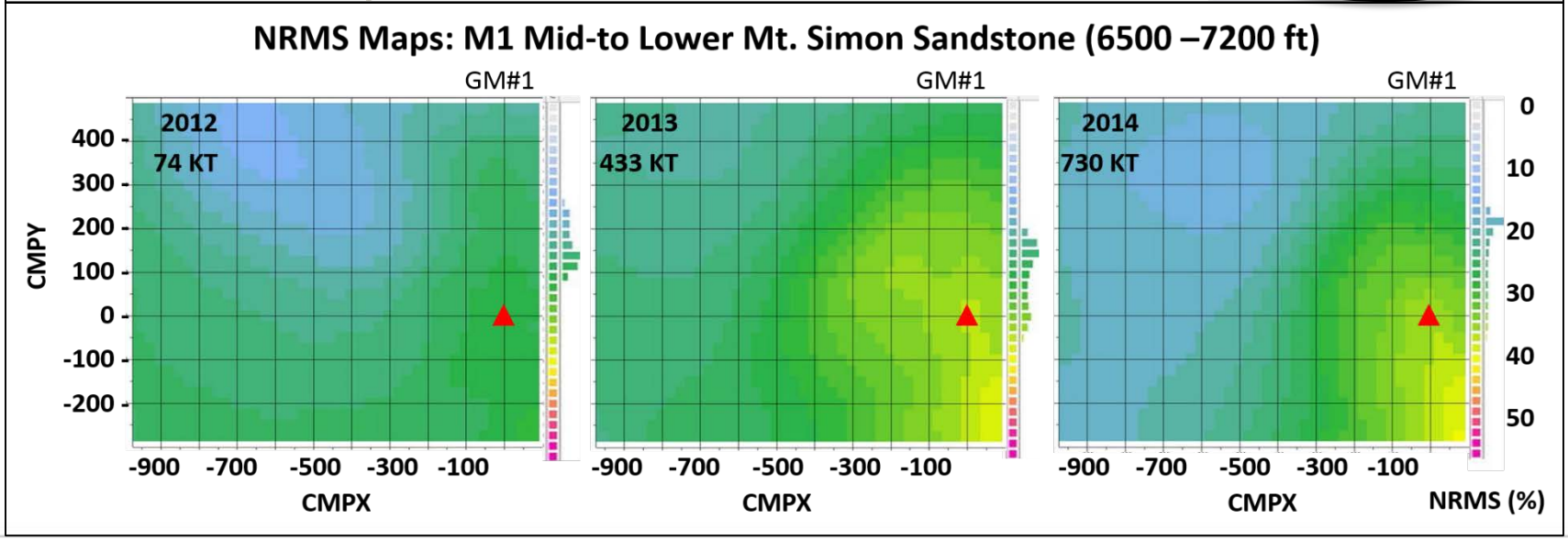
# Time Lapse VSP Surveys



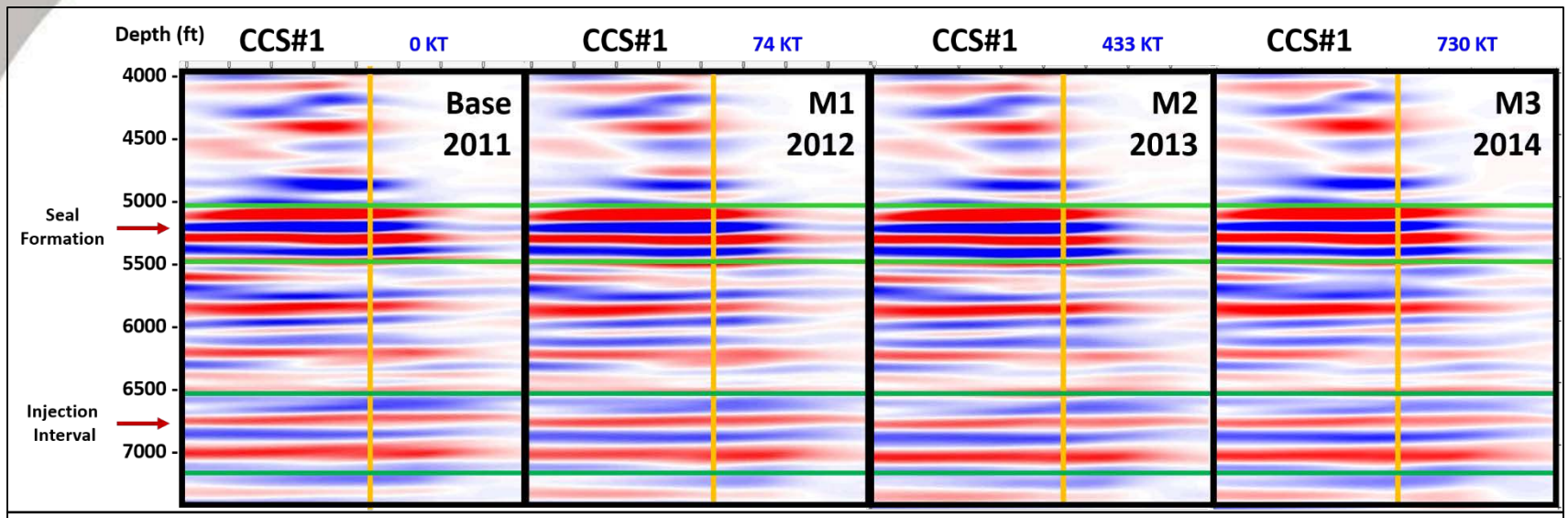



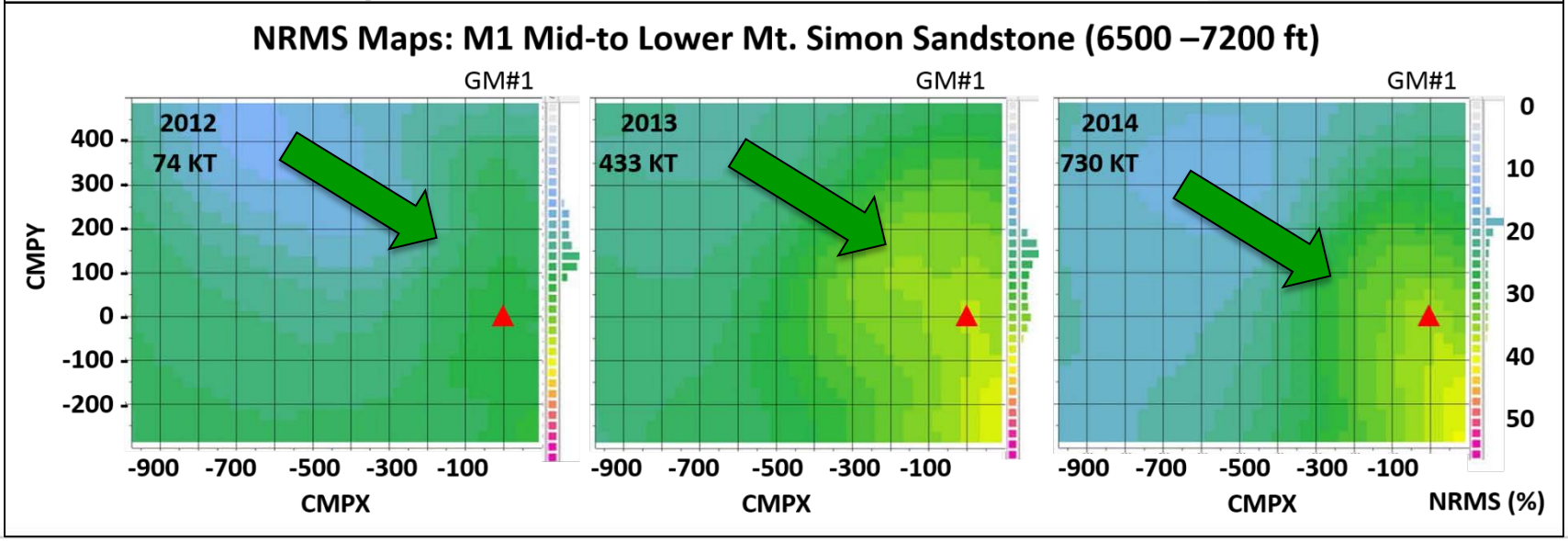
# Time Lapse VSP Surveys



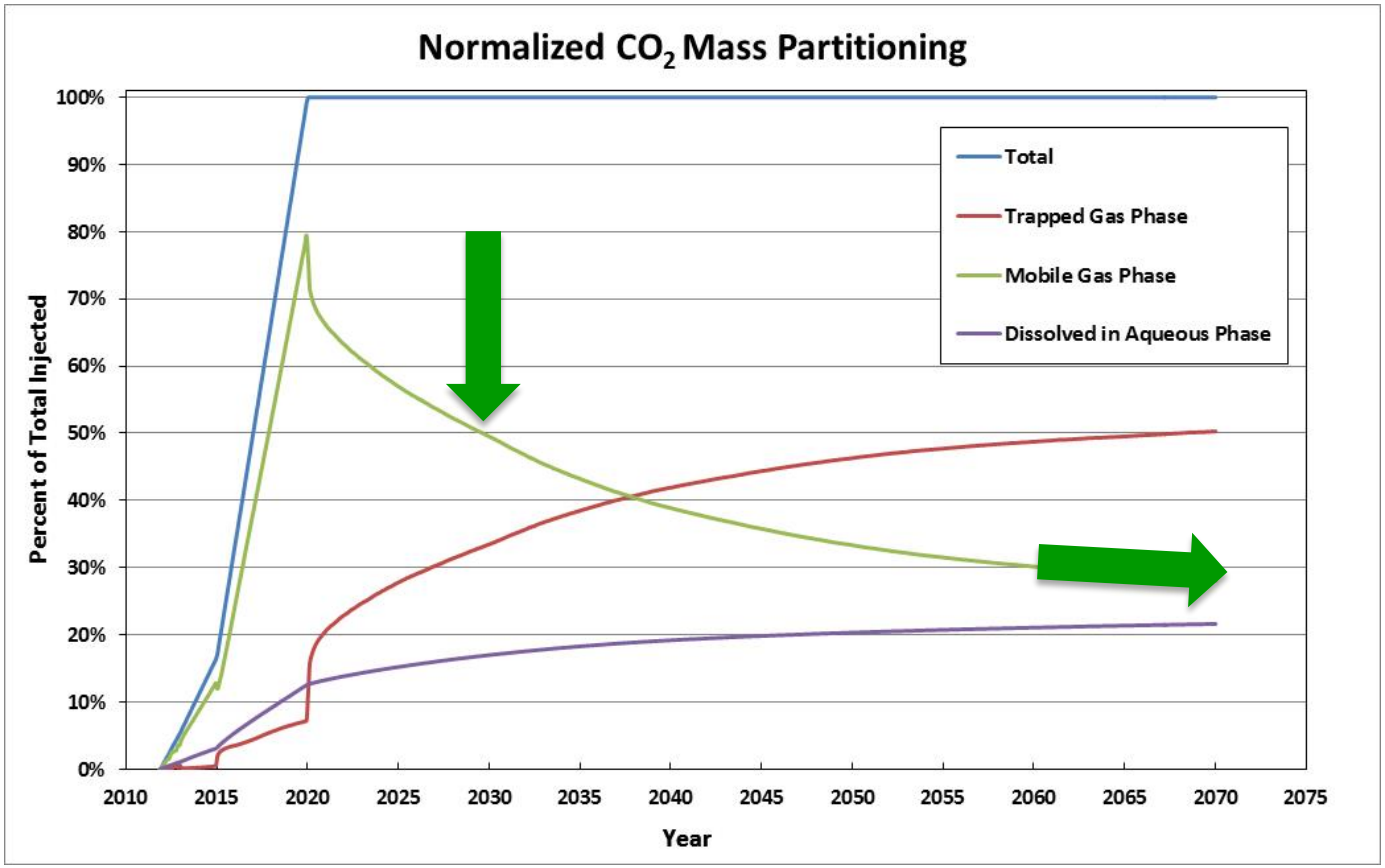
# Time Lapse VSP Surveys



# Alternative PISC Timeframe

## *$CO_2$ Mass Partitioning*




**Over 50% of the $CO_2$ is trapped within the reservoir after 10 years.**

# Thank You!

## Industrial Carbon Capture and Storage Project:

- U.S. Department of Energy Award No. DE-FE-0001547
- Administered by the DOE's Office of Fossil Energy
- Managed by the National Energy Technology Laboratory
- DOE cost share from American Recovery and Reinvestment Act of 2009

## Cost Share Agreements:

- Archer Daniels Midland Company
- University of Illinois through the Illinois State Geological Survey
- Schlumberger Carbon Services
- Richland Community College

## Project Team Members Contacts:


- Dr. Sai Gollakota (NETL-DOE) Sai.Gollakota@NETL.DOE.GOV
- Dr. Robert Finley, (ISGS) finley@isgs.illinois.edu
- John Medler, (Schlumberger Carbon Services) jmedler@slb.com
- Dr. Douglas Brauer (RCC) dbrauer@richland.edu