

**Plains CO<sub>2</sub> Reduction (PCOR) Partnership Monthly Update  
April 1–30, 2009**

**PHASE II ACTIVITIES**

**Task 1 – Project Management and Reporting (Edward N. Steadman/John A. Harju)**

Highlights

- As of April 28, 2009, the PCOR Partnership has 82 (Phase II and III) partners. Please note that Phase II members in good standing are automatically enrolled in Phase III for the first budget period that overlaps with the last 2 years (October 1, 2007 – September 30, 2009) of Phase II. Some of the most recent additions to the PCOR Partnership are:
  - Nebraska Public Power District, which joined the PCOR Partnership in February 2009.
  - Baker Hughes Oilfield Operations, Inc., which joined the PCOR Partnership in April 2009.
- Preparations have begun for the 2009 PCOR Partnership Annual Meeting. Details will be released to members shortly.
- During the 2008 PCOR Partnership Annual Meeting (held in Maple Grove, Minnesota, September 16–18, 2008), the need for a regulatory update meeting was discussed. In response, preparations have begun to hold a brainstorming session in Deadwood, South Dakota. The workshop is tentatively being planned for summer 2009.
- The PCOR Partnership participated in the Fish and Wildlife Service Meeting (April 15–16, 2009, Bozeman, Montana).
- The PCOR Partnership is leading the North American Energy Working Group–CO<sub>2</sub> Storage Capacity Estimation Subcommittee, and a meeting has been scheduled to be held May 4, 2009, in conjunction with the 8th Annual Conference on Carbon Capture and Sequestration in Pittsburgh, Pennsylvania.
- As we are in the final year of our Phase II efforts, work has begun on the Phase II Final Report. At this time, the field validation tests are drawing to a close and summaries on the results are being developed.
- On April 24, 2009, Prairie Public Broadcasting (PPB) and the Energy & Environmental Research Center's (EERC's) PCOR Partnership documentary "Out of the Air: Into the Soil" won a 2007–2008 Gold Aurora Award in the category of entertainment documentary for nature/environment.
  - The Aurora Awards is an international competition designed to recognize excellence in the film and video industries. Entries have come from the United States, Russia, Denmark, Hong Kong, Germany, Australia, and Mexico (source: [www.auroraawards.com](http://www.auroraawards.com)).
- Phase II Deliverables/Milestones completed for April
  - D3: Task 1 – Quarterly Report
  - D47/M13: Task 2 – Williston Basin Field Validation Test Sampling Protocols
- Upcoming Phase II Deliverables/Milestones for May
  - D48: Task 8 – Best Practices Manual: Outreach

- D46: Task 8 – Documentary: Geologic Sequestration
- Upcoming Phase II Deliverables/Milestones for June
  - D49: Task 6 – Regional Atlas
  - D50: Task 7 – Roadmap Document

**Task 2 – Field Validation Test at a Williston Basin Oil Field, North Dakota (James A. Sorensen)**

Highlights

- D47/M13: Task 2 – Williston Basin Field Validation Test Sampling Protocols was submitted to the U.S. Department of Energy (DOE) for review on April 30, 2009.
- In close cooperation with Eagle Operating and Schlumberger Carbon Services, the EERC conducted a variety of baseline characterization activities as part of the CO<sub>2</sub> huff ‘n’ puff (H&P) test in the Northwest McGregor oil field in Williams County, North Dakota. Specific activities included the running of cement bond logs to determine preinjection wellbore integrity; application of Schlumberger’s reservoir saturation tool to examine the near-wellbore environment; application of Schlumberger’s vertical seismic profile tool to examine reservoir conditions out to several hundred feet from the wellbore; the collection and analysis of reservoir fluids from the surface and from the deep reservoir environment; the collection of downhole reservoir pressure and temperature data; and the execution of a pressure build-up test in the study well.
- A summary of the goals, approach, and status of the Northwest McGregor H&P test was presented at the 2009 Williston Basin Petroleum Conference in Regina, Saskatchewan, Canada.

**Task 3 – Field Validation Test at Zama, Alberta, Canada (Steven A. Smith)**

Highlights

- Currently working on a draft for deliverable D52: Task 3 – Zama Field Validation Test Regional Technology Implementation Plan (due July 31, 2009).
- The geochemical evaluation is completed. The final report is scheduled for delivery at any time.
- Injection and production continue at the site.

**Task 4 – Field Validation Test of Lignite Coal in North Dakota (Lisa S. Botnen)**

Highlights

- Postinjection logging and surveys are complete. Staff have downloaded all data collected during injection and immediately postinjection. Evaluation and analysis of the injectivity and sequestration ability of the lignite seam are under way.
- The injector and monitoring wells continue to be instrumented to record pressure and temperature readings postinjection.
- Numerous meetings and conference calls continue to be conducted with various partners and field service providers to discuss the analysis of CO<sub>2</sub> injection and monitoring, mitigation, and verification (MMV) data. Results and reports from Schlumberger, Z-Seis, Praxair, and Pinnacle are expected sometime next month.

## **Task 5 – Terrestrial Validation Test (Barry W. Botnen)**

### Highlights

- PCOR Partners have obtained CCBA (Climate Community and Biodiversity Alliance) certification for grassland carbon credits. This certification is at the Gold Rating (the highest rating available), the first approved project by the CCBA in North America.
- Progress continues on the Regional Technology Implementation Plan for terrestrial sequestration.
- Analysis of wetland catchment gas sample continues (U.S. Geological Survey); reporting on these data is in process.
- An analysis of the economic impact of easement payments is ongoing (North Dakota State University).
- Grassland sampling has been completed in Montana, north central and northeast North Dakota, and north central Iowa. The samples have been analyzed, and reporting is in process.
- A topical report entitled “Technical, Regulatory, and Economic Feasibility of Wetlands as a Greenhouse Gas Mitigation Strategy” is in final review at the EERC.
- As part of the wetlands study, an in situ experiment on nitrogen amendments on greenhouse gas emissions is complete.
- Working on characterization inputs and the terrestrial portion of the Decision Support System (DSS, © 2007 EERC Foundation).

## **Task 6 – Continued Characterization of Regional Sequestration Opportunities (Wesley D. Peck)**

### Highlights

- Work is progressing on modifications to the current PCOR Atlas. The upcoming third edition will contain individual page spreads for each of the Phase II validation sites as well as one for Phase III activities.
- Great progress on the new geographic information system (GIS) interface for the DSS continues. There will be several new functions that will make the site more versatile.
- Maps were created to be used in the upcoming Geological Sequestration documentary and a student is working on acquisition of additional demographic data for Canada.
- Results of the six Washburn area formation sequestration capacities have transferred from the Petrel model into a GIS format that can be integrated into the DSS.
- The EERC’s graphics department began work on the new PCOR Partnership regional atlas.

## **Task 7 – Research, Safety, Regulatory, and Permitting Issues (Lisa S. Botnen)**

### Highlights

- Various state, provincial, and regional greenhouse gas (GHG) reduction and carbon capture and storage (CCS) initiatives are being tracked and analyzed.
- Analysis of carbon market strategies continues.
- A review of the U.S. Environmental Protection Agency (EPA) positive “endangerment finding” that GHGs endanger public health has begun.

- A review of the Waxman/Markey draft bill is ongoing as it proceeds through subcommittee hearings.
- Recent publications relating to regulating CO<sub>2</sub> sequestration and MMV issues continue to be reviewed.
- Work continues on the Road Map document.

## **Task 8 – Public Outreach and Education (Daniel J. Daly)**

### Highlights

- Met with PPB on Tuesday, April 12, 2009, and discussed current and future documentary activities.
- The updated slides on carbon cycle and atmospheric issues as well as background for the geologic documentary and for the Footprint documentary were reviewed.
- Deliverable D35: Documentary on Reducing Carbon Footprint
  - Trip schedules for Cameroon and India were updated.
  - A list of interview subjects for Cameroon (supported by Embassy suggestions) and India (supported by EERC background research) is currently being prepared.
  - A draft write-up of background information on energy use in the countries of interest and on household energy use was prepared.
    - ◆ PPB scheduled the interviews of a Minneapolis family and the video shoot for the week of May 3, 2009.
    - ◆ A shot list and a set of photos to support the list are being compiled.
- Deliverable D46: Documentary on Geologic Sequestration
  - Historical photos were obtained and provided to PPB.
  - Finalized narration was provided to PPB.
  - Conducted an interview in Fargo at PPB on April 12, 2009.
  - EERC internal review sessions are scheduled for April 30, 2009, and May 1, 2009.
- D22: Public Web Site Update was approved by DOE on April 23, 2009.
  - Minor modifications are being addressed.
  - Additional links for the August 2009 update were identified and collected.
- The contract and consulting agreement with Lipman Hearne Inc. of Chicago, associate of The Goodman Group (a public relations group based in Oakland, California) were finalized.
- Best practices manual
  - Internal reviews for the manual were completed and written up.
  - A draft was completed and is being edited for review.
- Participated in the monthly Outreach Working Group conference call on Thursday April 16, 2009, which featured a review of upcoming federal legislative activities by NatSource representatives.

## **Task 9 – Identification of Commercially Available Sequestration Techniques Ready for Large-Scale Deployment (Melanie D. Jensen/Michael L. Jones)**

### Highlights

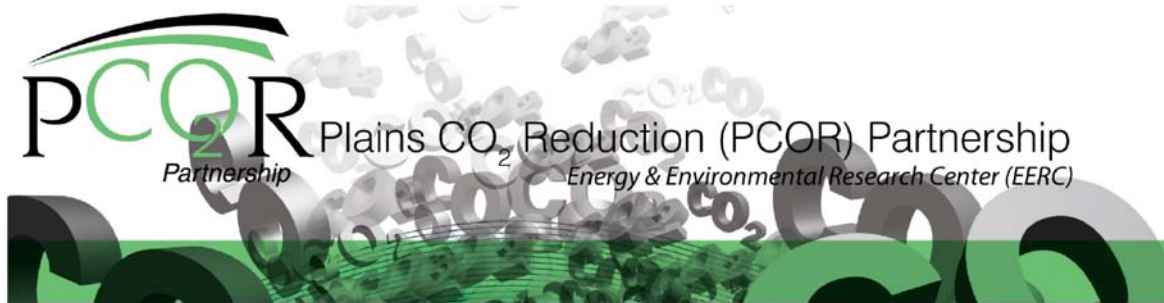
- The quality assurance/quality control check of the master CO<sub>2</sub> sources spreadsheet reference columns continued.

- The task leader responded to a query about the method that the PCOR Partnership uses to calculate CO<sub>2</sub> emissions from different types of coal.

### **Task 10 – Regional Partnership Program Integration (Edward N. Steadman)**

#### Highlights

- The PCOR Partnership also continued participation in working group conference calls, including the following:
  - GIS
  - Capture and Transportation
  - Geologic
  - Outreach
  - Simulation and Risk Assessment
  - Water
- The PCOR Partnership participated in a Regional Carbon Sequestration Partnerships (RCSP) conference call on April 16, 2009. Discussions included personnel transitions at DOE headquarters, the stimulus package, the underground injection control regulation and EPA notice of data availability, and other topics.



## **PHASE III ACTIVITIES**

### **Task 1 – Regional Characterization (Wesley D. Peck)**

#### **Highlights**

- Spoke with the Nebraska Geological Survey regarding possibly working out a contract to characterize the geologic sequestration potential of Nebraska. They will talk this over with the Nebraska Oil and Gas Commission and determine the best next step.
- The requested new server has arrived and is in operation. EERC staff and management have utilized a Microsoft SharePoint application for housing pertinent project management documents, spreadsheets, and images related to the project. Diagnoses of recent server problems have identified a serious conflict of the SharePoint services with other traditional Web site services. Without a new dedicated server, the existing PCOR Partnership data management system will need to be abandoned. The purchase of this new machine will ensure that the management efforts of the past several years will not be lost.
- A secure socket layer certificate from Verisign has been purchased and installed on the [www2.undeerc.org](http://www2.undeerc.org) (hydrogen) server. This software will ensure that our partners will log in through a secure mechanism. Without this setup, it would be possible to intercept passwords and hack into the DSS.
- A booth background for the upcoming CCS meeting in Pittsburgh, Pennsylvania, was developed.
- Attended the Latitude Geographics annual meeting. Latitude Geographics developed the software currently being used to assist in the development of the new GIS interface on the DSS. The general meeting is 2 days, and there is an additional day for training sessions.
- Participated in a conference call with the GIS working group of the DOE regional partnerships. The brief call focused on any logistical questions that needed attention before the meeting to be held in Pittsburgh, Pennsylvania, on May 6–7, 2009.

### **Task 2 – Public Outreach and Education (Daniel J. Daly)**

#### **Highlights**

- The contract and consulting agreement with Lipman Hearne Inc. of Chicago, associate of The Goodman Group (a public relations group based in Oakland, California), was finalized.
- D12: Demonstration Web Pages on the Public Site (follow-up)
  - Internally met and discussed the Web pages for demonstration projects; changes are currently under way.
- Bismarck Teachers Seminar

- A presentation for the teacher seminars to be held in June was sent to the Lignite Council (Petroleum Council on June 10; Lignite Research Council on June 17).
- Presentation to teachers
  - The videotape of a previous presentation at the University of Minnesota, Crookston, was received.
- Video clippings including animation
  - Internal requests for Web page examples that feature the video clips for use in the EERC review process are being addressed.
  - Examples for both the public PCOR Partnership Web site and a sample of a YouTube page are being prepared.
- Keystone Climate Status Investigation
  - The initial contact with the University of Nebraska Omaha was completed and passed the activity on to Keystone which will handle the formal arrangements.
  - Discussions regarding partner involvement will take place once details are confirmed.
- A Draft D16: Fort Nelson Test Site Fact Sheet (due May 29, 2009) has been prepared and is being reviewed internally.
- Participated in a conference call with Lipman Hearne Inc. of Chicago, associate of The Goodman Group (a public relations group based in Oakland, California), as a first step in the outreach assessment.
- Participated in the monthly Outreach working group conference call on Thursday April 16, 2009, which featured a review of upcoming federal legislative activities by NatSource representatives.
- A binder of materials and a summary of available materials are being compiled for the Outreach Information System.

### **Task 3 – Permitting and NEPA Modeling (Lisa S. Botnen)**

#### Highlights

- Various state, provincial, and regional GHG reduction and CCS initiatives are being tracked and analyzed.
- A regulatory brainstorming meeting is being planned for June to discuss existing and evolving regulatory frameworks for CO<sub>2</sub> transportation and storage. It will potentially involve regulators from states and provinces in the region that are currently dealing with these issues.
- An update to the regulatory section of the DSS is under development.
- A review of EPA’s positive “endangerment finding” that GHGs endanger public health has begun.
- A review of the Waxman/Markey draft bill is ongoing as it proceeds through subcommittee hearings.
- Recent publications relating to regulating CO<sub>2</sub> sequestration and MMV issues continue to be reviewed.
- Analysis of carbon market strategies continues.
- Frequent updates are provided to task leaders with regard to federal, state and provincial actions.

#### **Task 4 – Site Characterization and Modeling (James A. Sorensen)**

##### Highlights

- Continued the development of a Project Risk Assessment Plan for the Fort Nelson demonstration. A draft plan has been developed by the EERC and was presented to representatives of Spectra Energy; the British Columbia Ministry of Energy, Mines, and Petroleum Resources (BCMEMP); and the British Columbia Oil and Gas Commission (BCOGC) in Victoria, British Columbia, Canada.
- Development of the MMV plan for the Fort Nelson demonstration continued. Efforts were focused on gathering and evaluating subsurface geological data, including historical seismic data.
- Attended the 2009 Williston Basin Petroleum Conference in Regina, Saskatchewan, to meet with key PCOR Partners that may be involved in the Phase III Williston Basin demonstration.
- Regional Characterization Activities
  - Estimates of storage capacity of several saline aquifer systems in the northeastern flank area of the Williston Basin, an area including parts of North Dakota, Saskatchewan, and Manitoba, have been completed. The development of a topical report that summarizes the results of this activity has been initiated.

#### **Task 5 – Well Drilling and Completion (Steve Smith)**

- This task has not begun (Quarter 1 – Budget Period 3; Year 2). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

#### **Task 6 – Infrastructure Development (Melanie D. Jensen)**

##### Highlights

- Evaluation of a gas treatment model was completed. It appears that it would be useful for the PCOR Partnership to have this model in its toolbox. An order was initiated, and a sole-source justification was prepared.
- Materials about the PCOR Partnership were sent to a potential new partner and were followed by a phone call.
- Corresponded via e-mail with the North Dakota Pipeline Authority regarding near-term discussions to focus on integrating Task 6 activities and to utilize any possible synergies.
- Preparation of the updated carbon capture technologies overview continued.

#### **Task 7 – CO<sub>2</sub> Procurement (John A. Harju)**

##### Highlights

- Numerous discussions with potential CO<sub>2</sub> suppliers have taken place. Because of the sensitive nature of negotiations, specifics cannot be shared at the present time.



### **Task 8 – Transportation and Injection Operations (TBA)**

- This task has not begun (Quarter 1 – Budget Period 4; Year 3). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

### **Task 9 – Operational Monitoring and Modeling (TBA)**

- This task has not begun (Quarter 1 – Budget Period 4; Year 3). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

### **Task 10 – Site Closure (TBA)**

- This task has not begun (Quarter 1 – Budget Period 5; Year 9). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

### **Task 11 – Postinjection Monitoring and Modeling (TBA)**

- This task has not begun (Quarter 1 – Budget Period 5; Year 9). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

### **Task 12 – Project Assessment (Stephanie L. Wolfe)**

- Assessment was conducted for all 13 Phase III tasks for October 1, 2007 – September 30, 2008, and was illustrated in the Project Assessment Annual Report (D57). The report was submitted on December 31, 2008.

### **Task 13 – Project Management (Edward N. Steadman)**

#### Highlights

- Work is under way to provide our partners with a topical report on past, present, and future carbon market activities.
- A DOE Fossil Energy Techline (to be posted online) has been drafted in conjunction with Spectra Energy on the core-sampling and well-logging activities at the Fort Nelson, British Columbia, Canada, carbon capture and storage project site.
- Preparations have begun for the 2009 PCOR Partnership Annual Meeting. Details will be released to members shortly.
- A workshop on CO<sub>2</sub> sequestration technologies and environmental impacts is being assembled by PCOR Partnership members for the Air Quality VII Conference (Arlington, Virginia October 25–29, 2009).
- Work has begun on the PCOR Partnership Continuation Application that is contractually due to DOE on or before July 31, 2009.
- Phase III Deliverables/Milestones completed for April
  - D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report
  - M23: Monthly Water Working Group (WWG) Conference Call Held
- Upcoming Phase II Deliverables/Milestones for May
  - D2: Task 1 – First Target Area Completed
  - D16: Task 2 – Fort Nelson Test Site Fact Sheet

- M22: Draft White Paper on the Nexus of CCS and Water Available for Comments
- M23: Monthly WWG Conference Call Held
- Upcoming Phase II Deliverables/Milestones for June
  - M4: Task 4 – Williston Basin Test Site Selected
  - M5: Task 4 – Data Collection Initiated for Williston Basin Test Site
  - M23: Monthly WWG Conference Call Held

**Task 14 – Regional Carbon Sequestration Partnership Water Working Group Coordination (Charles D. Gorecki)**

Highlights

- Milestone M23: Monthly WWG Conference Call Held (approved by DOE on April 27, 2009)
- The first monthly conference call was held on April 15, 2009, where members of the WWG commented on Milestone M21 – Outline of White Paper on Nexus of CCS and Water, and discussed the agenda for the WWG annual meeting.
- The date for the WWG annual meeting will be May 7, 2009, from 12:30 to 5:00 p.m. EST in Pittsburgh, Pennsylvania, at the Sheraton Square Hotel in the Waterfront Room.
- It was determined by the members of the WWG that the White Paper on the Nexus of CCS and Water should stay internal (DOE National Energy Technology Laboratory RCSP's) until everyone in the WWG was comfortable with the content and terminology.

**Travel/Meetings for Phase II and III**

- April 1–4, 2009: Traveled to Stanley and Tioga, North Dakota, to supervise field activities at the Northwest McGregor field H&P site.
- April 6–9, 2009: Met with Spectra Energy, BCMEMPR, and BCOGC regarding the progress of the Fort Nelson project in Victoria, British Columbia.
- April 7–9, 2009: Met with representatives from Spectra Energy and provincial and regulatory representatives to discuss the Fort Nelson demonstration project in Victoria, British Columbia.
- April 20–23, 2009: Met with new partner Baker Hughes Incorporated, in Houston, Texas, and with existing partner Encore Acquisition Company, in Fort Worth, to discuss potential partnerships for the Williston Basin demonstration project.
- April 26–28, 2009: Presented a summary of the Northwest McGregor H&P at the 2009 Williston Basin Petroleum Conference in Regina, Saskatchewan.
- April 27–29, 2009: Attended the Latitude Geographics annual meeting in British Columbia.
- May 4–7, 2009: Eighth Annual Conference on Carbon Capture and Sequestration in Pittsburgh, Pennsylvania.
- May 19, 2009: Attend a CO<sub>2</sub> pipeline infrastructure public meeting sponsored by Enhanced Oil Recovery Institute in Casper, Wyoming.